D. T. DOMAN

FRANKLIN FACTS

A Handbook for Franklin Dealers and Salesmen

1931

FRANKLIN AUTOMOBILE COMPANY

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Revision 2

Brief History

The H. H. Franklin Manufacturing Company had its inception July 4, 1893, when H. H. Franklin began the manufacture of die castings in a small room in Syracuse, New York.

In December 1895 this business had grown substantially and was incorporated with a capitalization of $100,000.

In 1901 Mr. Franklin became interested in an air-cooled car which John Wilkinson had designed in 1898, and employed Mr. Wilkinson to develop an entirely new car based on his original model.

This was equipped with a motor of Mr. Wilkinson's design, the first four cylinder, air-cooled, valve-in-the-head gasoline engine ever made in America and in 1902 took form as the first Franklin automobile. Scientific light weight, full-elliptic springs all around, flexibility of both construction and control, and simplicity were the outstanding features of this first Franklin.

That the fundamental idea of light weight inherent in the first Franklin car was correct is amply demonstrated by the trend of motor car design, particularly during the past four or five years.

The output for the first year, 1902, was the Franklin lucky number—13. By the winter of 1904-05 the factory output had reached 9 cars per day.

In August 1904 Messrs. L. I. Whitman and C. S. Carris left San Francisco in a 10 H.P. Franklin Roadster, stock model, and reduced the trans-continental record from 61 days to 32 days, 2 hours and 20 minutes.

In November 1929 a Series 14 Franklin Sedan, piloted by Cannon Ball Baker crossed the continent from New York to Los Angeles in 69 hours 31 minutes, breaking the then existing record by 4 hours and 29 minutes.

Mr. Franklin's one-room shop of 1893 has expanded to eighteen factory buildings occupying thirty-one acres of floor space. Today production has reached 70 cars a day and 2,500 men are on the payroll.

Growth of the company may be further realized by a comparison of the original capitalization of $100,000 with today's authorized capital stock of $15,000,000 preferred and 600,000 shares common of no par value.

It is a significant fact that Mr. H. H. Franklin is today the executive the longest at the head of any automobile manufacturing company in existence.

Hand in hand with business growth came design developments, outstanding among them being the noteworthy advance in air-cooling in 1910 and 1922. The latter particularly placed Franklin on an enviable power basis while retaining all the roadability, comfort, easy handling, safety and economy for which Franklin had been previously noted.

During the World War, Franklin developed the air-cooled trench motor, a single cylinder portable power plant. This was cooled by air forced from the top through vertical steel fins cast around the cylinder and was the forerunner of the pressure air-cooled automobile engine presented by Franklin in 1922. Franklin experience with high grade, light weight motors resulted in a large amount of war work on Rolls-Royce and Hispano-Suiza aircraft engines.

Since the introduction of pressure air-cooling in September 1922, the Franklin motor has afforded an operation range and a performance ability unequalled by any other automobile as demonstrated in the severest full-throttle laboratory tests for indefinite periods. Subsequent improvements in the motor, notably the patented copper-fin air-jacketing, resulted in notable power increases without increase in cylinder size.

The new aluminum-head aviation-type engine and cross-draft cooling introduced in 1930 made still further increases in Franklin power, raising the horsepower to 95 without increase of cylinder capacity, while another 5 horsepower has been added in the 1931 Series by further refinements of this principle.

Recent developments in modern production methods and scientific rearrangements of machinery, space and assembly operations have made possible Franklin's current expansion program — practically doubling factory output with no increase in building space and with comparatively small increase in labor employed.

In line with the most progressive manufacturers in the field, Franklin has always made the great majority of all parts in its own plant.

Franklin Records in Speed and Efficiency

Franklins have broken records so persistently and have been such consistent winners in contests of every sort as to cause manufacturers of water-cooled cars several years ago to arrange many runs to be made for water-cooled cars only, at a time when such contests were at their peak of interest. Listed below are some of the major Franklin records. They are conclusive proof of the superiority of the Franklin car. They show, for instance, that the air-cooled Franklin motor is virtually immune to overheating under fantastically severe operating conditions, that Franklin is, as it has always been, the fastest road car and that Franklin efficiency has always been beyond the reach of any water-cooled car.

JULY 25, 1903

John Wilkinson, with 10 H. P. Franklin, won 5-mile race in Yonkers. Time, 6 min., 54 3-5 sec.

AUGUST 1, 1904

Trans-continental run, San Francisco to New York. 10 H. P. Franklin. Time, 32 days, 23 hrs., 20 min. Best former record 61 days.

JULY 10, 1905

Economy tour, Brooklyn to Southampton and return. 10 H. P. Franklin.

MAY 4, 1906

4-cyl. 12 H. P. Franklin ran 87 miles on 2 gallons gasoline with 4 passengers. Supervision A. C. of A.

AUGUST 2-17, 1906

Trans-continental run, San Francisco to New York. 10 H. P. Franklin. Time, 15 days, 2 hrs., 12 min.

SEPTEMBER 6, 1906

Same car that made trans-continental run, ran from Chicago to New York in 56 hrs., 58 min. Best former record 58 hrs., 43 min.

AUGUST 21-22, 1907

Model D Franklin lowered Chicago-New York record to 39 hrs., 53 min. From Cleveland to Buffalo, 214 miles, machine beat by one hour the Chicago, Boston and N. Y. Express, on which were the relief relay of drivers.

FEBRUARY 25, 1908

Long Island Auto Club Economy Contest. Franklin averaged 26.5 miles to a gallon of gasoline, $.012 per mile operating cost for 242 miles.

MARCH 2, 1909

Kansas City Auto Show. A challenge was issued to exhibitors to run as far as possible on low gear. Franklin only car finishing. Drove over 60 miles city and country roads. Ran idle for 60 hours in garage, then backward on road for 12 miles, then ahead into town at 30 miles an hour.

MAY 7, 1909

A. C. of A. Economy Contest. 18 H. P. Franklin driven 36.6 miles on 1 gallon gasoline, 5 passengers.

JULY 11, 1909

Automobile Club of Buffalo 1 gallon Efficiency Contest. 18 H. P. Franklin Touring Car made 46.1 miles on 1 gallon gasoline.

OCTOBER 26, 1912

Ralph Hamlin won Los Angeles-Phoenix Desert Race with Franklin 6-cyl. 42 H. P. Model D.

JUNE 20. 1913

S. G. Averell, with special Franklin 4-cyl. car, made 83.5 miles on 1 gallon gasoline. Supervision A. C. of A.

APRIL, 1914

In efficency test conducted by the Worcester Polytechnic Institute stock Franklin Touring Car deliv-

ered at the rear wheels 84.4% of its engine power.

MAY 1, 1914

94 stock Franklins in different parts of the country averaged 32.8 miles on 1 gallon gasoline.

SEPTEMBER 24, 1914

116 stock Franklins in different parts of the country made 100 miles on low gear in ten hours or less.

DECEMBER, 1914

In fuel economy test conducted by Yale University stock Franklin Touring Car used the least gasoline of any car tested having six or more cylinders.

MAY 1, 1915

137 stock Franklin Cars in all parts of the United States averaged 32.1 miles to a single gallon of gasoline, the greatest mileage obtained by any one car being 55 miles, which at that time was the worlds' record for gasoline consumption of six cylinder cars.

AUGUST 1-4, 1915

During an elapsed time of 83 hours and 40 min., and going the entire distance on low gear, a Franklin Car ran from Walla Walla, Washington to San Francisco, Cal., 860 miles, without once stopping the engine.

NOVEMBER 1, 1915

In the New York to Chicago oil test, supervised by the Auto Club of America, a Franklin Sedan made the distance of 1046 miles on 1 gallon of oil.

JULY 13, 1917

179 stock Franklin Cars in all parts of the United States averaged 40.3 miles on a single gallon of gasoline. All records were sworn to before notaries. At this time Cowles Tolman, of New Haven, Conn., made his record of 82.8 miles, which today is the world's record mileage not only of six-cylinder cars but of all stock types of gasoline propelled vehicles on a single gallon of gasoline.

MAY 30-31, 1919

Stock Franklin Touring Car won Los Angeles-Yosemite Economy Run, taking all three prizes. Established new ton-mileage record of 49.9. 374 mile run included climb of 6,800 feet.

In the summer of 1919, a number of long distance road runs were made by Franklin users in various places, demonstrating Franklin ability to outdistance other cars in a day's run.

729.5 miles over dirt roads in 23½ hours, elapsed time, averaging 33.72 m.p.h., J. T. Peacha, Duluth, Minn.

746.1 miles, 24 hours elapsed time, averaging 33.16 m.p.h., J. H. Manion, Indianapolis, Ind.

832.6 miles, 24 hours elapsed time, averaging 34.69 m.p.h., Will Diddel, Indianapolis, Ind.

725.2 miles, 24 hours elapsed time, 22 hours running time, or average of 32.96 m.p.h., L. W. Snotin, Indianapolis, Ind.

458 miles, 12 hours 45 minutes, 35.98 m.p.h. speed average for running time. J. W. Banks, Newark, N. J.

865.4 miles, running time 23 hours, 4 minutes, average speed 37.51 m.p.h., 23 hours, 20 minutes elapsed time, R. H. Cramer, Waterloo, Iowa.

553 miles, 15 hours, 45 minutes running time, average speed 35.11 m.p.h., elapsed time 16½ hours, Cliff Leuders, Cincinnati, O.

398 miles, 9 hours, 59 minutes, speed average 38.86 m.p.h. New York to Montreal, J. W. Banks, Newark, N. J.

486 miles, from Boston to Fort Kent, Me., in dead of winter, 11 hours, 56 minutes running time, average speed 40.72 m.p.h., elapsed time 12 hours, 37 minutes, P. E Frost, Portland, Me., Wm. Sawyer, and Haven Sawyer.

398 miles, 9 hours, 27 minutes elapsed time, average speed 41.6 m.p.h., New York to Montreal, J. W. Banks, Newark, N. J.

AUGUST 17, 1919

P. E. Frost of Portland, Me., in stock Franklin Touring Car made 98 mile run from Portland, Me., to summit of Mt. Washington (6,293 feet high) in low gear without a stop. Gasoline used averaged 10.6 miles to the gallon.

JUNE 1920

B. B. Crow of Montevideo, Uruquay. Franklin stripped and Franklin Touring car took first and second places in two-day road race from Montevideo to Mercedes and return. Total distance 530 miles.

OCTOBER 19-20-21, 1920

Franklin stock touring car made 500-mile run in low gear in Imperial Valley, Calif., without stopping engine. Temperature varied from 72 degrees in early morning to 125 degrees at noon. Maintained speed of 11 miles per hour. Intermediate and high gears removed from transmission before start.

MAY 18, 1921

Stock Franklin Touring Car driven by George Sherwood of Pasadena, Calif., made 34.8 miles on a measured gallon of gasoline on Los Angeles speedway. During test, average speed maintained was twenty miles an hour.

JUNE 7, 1921

Stock Franklin Touring Car, demonstrating cooling efficiency of Franklin car, climbed a nine-mile stretch on Mt. Wilson near Pasadena in reverse gear. Elevation at start 1250 ft. Elevation at finish 5886 ft. Total climb in nine miles 4636. One-way road with turn-outs about every 1,000 ft. Total elapsed time 1 hour 25 minutes. Two short stops made, but motor kept running. Actual running time 1 hour 10 minutes. Carried four passengers, including driver.

JANUARY 6, 1922

Frank R. Beall of Atlanta reduced by 1 hour 28 minutes fast time of Dixie Flyer (railroad) between Atlanta and Jacksonville, making trip between these cities. Official elapsed time 10 hours 27 minutes. Distance 371 miles. Averaged 36.1 miles per hour.

NOVEMBER 6-7, 1923

In New York to Chicago oil economy and fuel efficiency test, a Franklin Sedan registered record of 5992.6 miles to gallon of oil and 19.6 miles to gallon of gasoline. Technically supervised by Automobile Club of America.

MAY 17-28, 1924

Franklin demi-Sedan won 1900 mile El Paso Herald endurance run — beating the whole field for economy, except for the Ford, Overland and Chevrolet.

JANUARY 10, 1927

Franklin stock touring car won the 1500 Kilometer Uruguay efficiency and endurance run. Driver, Matias Fresnedo of Buenos Aires. Four passengers. Only car entered carrying full equipment. The route followed was the same as that followed by B. B. Crow, who established a previous Franklin record.

JANUARY 30, 1927

Stock Franklin touring car startled South America, when as the official pathfinder for the Buenos Aires paper, La Razon, it traveled from Tupiza, Bolivia across Argentina and thence south to Punta Arenas in Chile. Emilio Karstulovic the famous South American racer drove this Franklin from the tropics to the Antarctic in the amazing time of 22 days encountering every conceivable driving condition.

JULY 14, 1927

Driving a 9 year old Franklin, William Feigel won the low-gear run on the Houston, Texas Speedway by covering 1000 miles under auspices of A.A.A.

JUNE 16, 1928

Cannon Ball Baker shattered cross-continent and return record of the Chrysler 80 by 10 hours and 36 minutes. Baker's time from Los Angeles to New York and return was 157 hours, 23 minutes (approximately 6½ days).

AUGUST 4, 1928

Cannon Ball Baker in a Franklin Airman Sedan broke his own record in dash up Lookout Mountain, near Chattanooga, Tennessee. Baker's time was 20 minutes and 38 seconds. His previous record had been made in a Rickenbacker touring car in 1925.

SEPTEMBER 21, 1928

Up Mount Washington, N. H., in 14 minutes, 49½ seconds, a Franklin Special, driven by Cannon Ball Baker broke the previous record by 2 minutes, 10 and 2-5 seconds.

OCTOBER 8, 1928

Cannon Ball Baker in a stock Franklin Sedan broke the previous record for the Mount Mitchell, Carolina climb by 5 minutes 25 seconds. His time was 35 minutes, 35 seconds for the 17.5 mile standard course. Continuing the climb without stopping at the end of the standard course, Baker turned around and established a world's record for the entire round trip up and down making it in 1 hour, 31 minutes and 21 seconds. On reaching the bottom, and without stopping the motor, he made the round trip again in almost as good time as at first (1 hour, 31 minutes, 41 seconds). This was telling proof of the continuous power flow and cooling ability of the air-cooled motor.

NOVEMBER 20, 1928

Driven by Cannon Ball Baker, a stock Franklin Sedan dashed from New York to Chicago for a new World's Record, covering the 840 miles in 18 hours 59½ minutes, clipping 7 hours, 50½ minutes off the previous record time. Three hundred miles from Chicago, Baker was more than an hour and twenty minutes behind the Twentieth Century Limited, which he beat to Chicago.

JANUARY 16, 1929

Driving from New York to Miami, Fla., in a Franklin Sedan in 31 hours, 10 minutes, Cannon Ball Baker beat the time of the Miamian Ltd., fastest train of the Florida Coast System, by one hour fifty minutes, and lowered the former automobile record by 7 hours, 57 min. The highway travelled was 154 miles longer than the route covered by the train. The temperature ranged from 20° above zero at start to 70° above zero at finish, and the run represents the great efficiency of the air-cooled engine in accommodating itself to wide variations of temperature.

MARCH 14, 1929

Beating by 1 hour, 44 minutes the best previous automobile time between Dallas and El Paso, Texas, Cannon Ball Baker, driving a Franklin Sedan, established a new record of 12 hours, 54 minutes. The start was made at an elevation of 525 ft. above sea level, and finish at 3713 ft. above, with country in between necessitating climbs of 2375 ft., 2000 ft., 5700 ft., 3800 ft., 5000 ft.

APRIL 2, 1929

The automobile time for the round trip between Los Angeles and Phoenix, Arizona was lowered 1 hour, 11 minutes by Cannon Ball Baker in a Franklin Sedan. The train time was lowered by 3 hours, 53 min., establishing a record for the round trip of 17 hours, 47 minutes. The one way trip to Phoenix was made in 8 hours, 31 minutes, one hour, 53 minutes faster than the best previous performance on this leg of the journey.

APRIL 14, 1929

Cannon Ball Baker drove his Franklin Sedan up Mt. Diablo, Calif., for two round trips in 1 hour, 34 minutes, 15½ seconds. The first round trip was made in 47½ minutes and the second round trip was covered in 46 minutes, 32-1 /5 seconds.

APRIL 23, 1929

A Franklin Sedan driven by Cannon Ball Baker covered the distance between San Francisco and Los Angeles—412 miles in 7 hours, 32 minutes, beating the best previous automobile time made in a touring car by 1 hour, 25 minutes.

MAY 3, 1929

The Salt Lake City-Los Angeles record was captured by Cannon Ball Baker in a Franklin Sedan in 14 hours, 57½ minutes beating by 19½ minutes the former automobile record. The best limited train on the Union Pacific was beaten by 8 hours, 42½ minutes.

LABOR DAY, 1929

Franklin special, piloted by Cannon Ball Baker flashed up the 12.4 miles of the Pike's Peak course in 19 minutes, 12-4 /5 seconds.

SEPTEMBER 13, 1929

Cannon Ball Baker drove Franklin Model 135 sedan 6 times up and down Pike's Peak in 4 hours, 25 minutes—a total distance of 150.28 miles at an average speed of 34.2 m.p.h.

SEPTEMBER 24, 1929

Cannon Ball Baker made the 4.4 miles over Clark's Road to Corry's mine across main Rockies range through Deer Lodge National Forest to the summit of Continental Divide and return in 18 minutes flat, averaging 14.66 miles per hour. Entire run made in low gear because of extremely rocky and dangerous condition of the course.

SEPTEMBER 27, 1929

Covering the 46.8 miles between Butte and Anaconda, Montana and return in the astonishing time of 37 minutes and 36 seconds, Cannon Ball Baker in a Franklin 135 sedan smashed all known records for this trip. The average time of 74.68 miles per hour (75.7 from Butte to Anaconda and 73.7 for the return dash) is the highest average speed Baker has ever made on a record run.

OCTOBER 5, 1929

Clipping 46½ minutes from the former mark set by an eight cylinder water-cooled touring car, Cannon Ball Baker sent a Franklin 135 sedan for a new world's record when he drove the 180 miles from Great Falls to Butte in 3 hours, 56 minutes, 30 seconds. The time included 6 minutes for tire changing and beat by 1 hour, 38½ minutes the fastest Great Northern trains between the two points.

OCTOBER 11, 1929

Baker made the 34.2 miles between Ogden and Salt Lake City, Utah in 30 minutes, 17-2 /5 seconds at an average of 67.8 miles an hour, clipping 6 minutes, 3 /5 second from his own previous record.

NOVEMBER 18-21, 1929

A Franklin sedan, powered with the new Series 14 airplane type engine, hurled Cannon Ball Baker across the continent in 69 hours and 31 minutes. This lightning trip between New York and Los Angeles broke the former Franklin record by 4 hours and 29 minutes and established a time 8 hours and 9 minutes faster for the run than the best speed ever made by a water-cooled car. The fastest limited trains take 8 hours and 29 minutes longer to make the trip than Baker's latest time. During the entire grueling run, in which the astonishing average of 46.89 m.p.h. was established, the motor was not stopped nor was a tire repair made.

DECEMBER 30, 1929

A Franklin Series 14 standard production engine mounted on a standard Waco "90" airplane piloted by E. A. Johnson of the Johnson Aircraft & Supply Company took the ship off a muddy field at Dayton, Ohio for a successful flight.

JANUARY, 1930

Averaging a mile a minute, Cannon Ball Baker made the distance betweeen New York and Miami, Fla. (1451 miles) in 24 hours, 20 minutes in a Franklin 5-passenger Series 14 Sedan.

MARCH, 1930

Flashing along at speeds which often exceeded 90 miles an hour, a Franklin Series 14 Sedan driven by Cannon Ball Baker crossed the Gandy Bridge between St. Petersburg and Tampa, Fla. in 3 minutes 43.4 seconds, averaging 83.4 miles an hour for the 5.2 miles.

MARCH, 1930

Ft. Myers to Miami, Fla.—133½ miles in one hour, 46 minutes, 2-2 /5 seconds, an average speed of 75.6 miles an hour. *Faster than the normal air service between these two centers.* In making this trip, Cannon Ball Baker passed 51 cars, crossed 185 bridges and nine railroads, to say nothing of making 49 turns.

APRIL, 1930

Although he had to pass through 37 cities and towns between Atlanta, Ga. and Asheville, N. C., Cannon Ball Baker made the distance of 207 miles over a mountainous route at an average speed of 57 miles an hour in a Franklin Sedan.

APRIL, 1930

Traffic is heavy between Atlanta and Macon, Ga. but Cannon Ball Baker did the 85.6 miles separating these points in one hour, 8 minutes and 8 seconds, averaging 75.3 miles an hour.

APRIL, 1930

Knoxville to Chattanooga—Covering 103 miles over rolling country abounding in sweeping and hairpin curves, in one hour, 35 minutes and 10 seconds, 24 minutes and 50 seconds under previous record, Cannon Ball Baker averaged 64.9 miles an hour, in a Franklin 5-passenger Sedan.

APRIL, 1930

Lookout Mountain is 46 per cent. steeper than Pikes Peak, yet Baker drove a stock air-cooled Franklin up it in 17 minutes and 39½ seconds, beating former record by three minutes, 12½ seconds and making an average speed of 47.58 miles an hour.

MAY, 1930

With 11 towns and villages to go through; 85 bridges and culverts to cross and 403 turns to make, the trip between Indianapolis and French Lick is a tough one. Nevertheless it was made in one hour, 39 minutes and 40 seconds by Cannon Ball Baker in a stock Franklin Sedan. His average time for the 101 miles was 66.2 miles an hour.

JUNE, 1930

A 7-ton U. S. Army tank powered by a stock Franklin air-cooled engine out-performed every water-cooled tank in a series of tests at Ft. Meade, Md. In spite of beating its water-cooled competitors in speed and hill climbing on one of the hottest days of the summer, this Franklin-powered tank established an economy record averaging 50 per cent. of its water-cooled competitors' showing.

JULY, 1930

Tests with armored cars and "crash wagons" over every conceivable type of road, field and broken terrain, proved the superiority of the Series 14 stock Franklin engine for military work at Camp Holabird, Md.

Development of Air-Cooling

The public knows that aviation has turned to air-cooled motors for the utmost power and dependability. Such epochal flights as those of Lindbergh, Chamberlain and Byrd across the Atlantic were made possible by the steadfast performance of air-cooled motors, as were the trans-Pacific flight and all the recent flights in the polar regions. Although some part of the public may just now have awakened to the significance of air-cooling, it has been the subject of constant study and improvement by Franklin engineers ever since the first Franklin air-cooled car was built in 1902.

The first Franklin motors depended on the forward motion of the car for cooling. This was later supplemented to a very slight extent by a small fan, of the type used in water-cooled cars.

In 1910 we introduced a turbine fan, built into the flywheel. This *sucked* air through vertical steel fins enclosed in air jackets which surrounded each cylinder individually.

In 1915, however Franklin engineers developed the pressure air-cooling system — which as an advancement toward automobile perfection meant as much to the automobile industry as the electric starter meant in 1911 or the closed car in 1913.

The First Franklin Pressure Air-Cooling System

In the first Franklin pressure air-cooling system, a powerful air turbine, mounted on the forward end of the crankshaft, drew fresh cool air through the grille and forced it through an air-duct leading over the top of the cylinders. Deflectors in this duct directed the air in the greatest quantities to those parts of the cylinder where the most heat was developed. This kept cylinder temperatures equalized even under the most extreme conditions.

Another improvement introduced later was the development of copper cooling fins instead of steel. These fins were first cast into the walls of the iron cylinders and were later applied by electrical welding. The use of copper, due to its great heat conductivity, resulted in

much more efficient cooling and consequently in greater power for the engine.

The use of the pressure air-cooling system so increased the efficiency of the fan that it delivered more air by two and one-half times, than the previous Franklin air-cooling method.

New Airplane Type Cooling System

The improved performance of the 1930 and 1931 Franklins is brought about by an outstanding development of the air-cooled powerplant. And the first indication of this radical improvement is an important change in the air-cooling system itself.

This is now of the side-draft type, like the cooling systems of all in-line air-cooled aviation engines. Unlike the system employed in previous Franklins, air is forced horizontally across the motor instead of passing vertically from top to bottom. Cylinders are, of course, adapted to this method of cooling by the use of horizontal fins as in aircraft engines, rather than the vertical fins formerly used in Franklin motors.

In spite of the fact that all previous automotive practice, both for automobiles and airplanes, has standardized on cooling the exhaust side of the cylinder first, Franklin engineers, through a series of highly interesting tests, have absolutely reversed that procedure. It was found, by experimenting with a motor whose *intake side* was cooled first, that increased horsepower resulted.

New Fan Saves Power

An entirely new design of cooling fan has resulted in increasing the horsepower of the 1931 Franklin to 100 on the brake—five horsepower more than the Series 14 engine. The new fan is entirely different from that ever used on any automobile. In fan language it is "backward bent"; that is, the blades are curved backward instead of forward with relation to the direction of rotation of the fan. At the same time, there are only 35 blades instead of 55 as used on Series 14. This improvement in efficiency is due to the fact that the backward bent blades, together with the conical arrangement of the blades themselves, enable a fan with fewer blades to

"bite" into and deliver a far greater quantity of air than the former type of fans used.

This new fan absorbs but 4.5 horsepower at 3000 R.P.M. or only 47 per cent. as much as the fan and water pump on a Standard Packard Eight. At 3500 R.P.M. or 70 M.P.H., it absorbs 7.0 H.P., while the Series 14 fan absorbed 14.5 H.P.

The design of the present cylinder *air housing* distributes the cooling air without the use of fins, such as were used in Franklins of the 1929 series.

A still further power increase is made possible by slight changes in the shape of the suction yoke and connections between the yoke and cylinder heads.

Another Important Element in Cooling Efficiency

The *cylinder barrel,* due to the fact its fins have only the barrel itself to cool, utilizes the cooling blast much more efficiently than Franklins built before 1930. The previous Franklin cooling system employed vertical cooling fins; therefore, the heat of the cylinder head was conducted down the entire length of the fins. This meant that the cylinder barrel was an important aid in cooling the cylinder head.

In the present engines, each part of the cylinder cools itself individually by its own horizontal fins. This permits the cylinder barrel to be held at the ideal operating temperature. The aluminum head, thanks to its high heat conductivity and also to the carefully worked out design of its radiating surfaces, needs no help from the barrel to maintain the right cooling conditions.

In the Series 15 engine the maximum cylinder head temperature is now 500° F. or less and this increases valve seat life far beyond the expectations of the engineers who designed this new powerplant. It means that the valve guides and valves operate at cooler temperature, resulting in far slower wear and long freedom from replacement.

An Interesting Trend in Aviation Engine Design

Engineers call pressure circulation of cooling air by a fan "induced air-cooling." Up to now the cooling of

air-cooled airplane motors has been entirely by direct exposure of the motor to the slip-stream of the propeller and of the air through which the airplane travels. This naturally results in a great amount of head resistance, even when, as in the case of the in-line air-cooled aviation motors, the engine is carefully cowled. Some engineers think that the use of the Franklin system of induced air-cooling in airplane engine design might well permit of complete enclosure and perfect streamlining of the power-plant and cooling system.

Franklin engineers developed a new pattern of cooling fin for the cylinder head which permits the intake side to help cool the exhaust port by conduction of heat from one to the other, and which at the same time has the very desirable effect of warming the intake port at slow engine speeds. The exhaustive researches of air flow and engine cooling which led to this conclusion have created great interest throughout the ranks of automotive engineers.

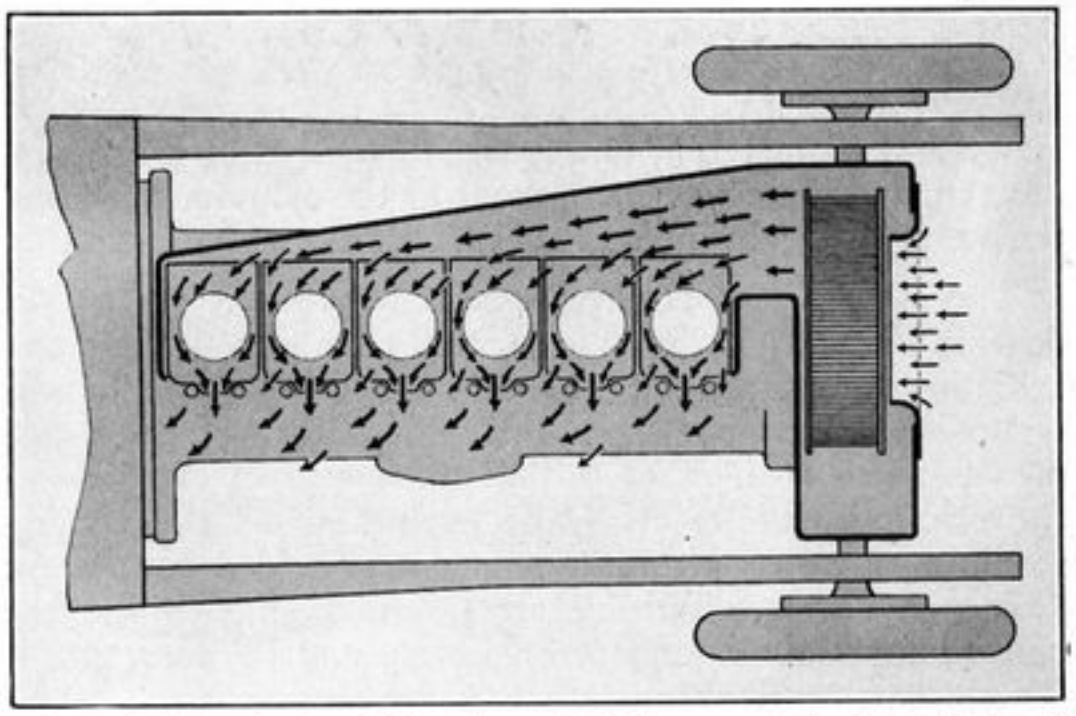
100 Horse Power

The new cooling system is so efficient that it has made possible changes in the design of the engine which have resulted in a marked power increase while retaining the same cylinder dimensions as Series 13 and 14—3½" bore and 4¾" stroke. Maximum power on the testing block has been brought up to 100 brake horse power.

Pressure air-cooling by the Franklin method results in uniform cooling of cylinders whether the car is speeding at 60 miles an hour or faster — or whether it is standing still with the motor idling. With this system, air is supplied under pressure instead of by suction. The air turbine fan handles cold air instead of hot air and, has therefore, a greater capacity because the air is unexpanded.

The torrent of cool, fresh air, forced through the cooling fins of the Franklin motor is regulated to maintain the most efficient operating temperature at all motor speeds.

The great volume of air moved by the relatively small Franklin fan is the result of eliminating obstructions to air flow. More is known in fact about the tricks and tendencies of air in movement by the Franklin engineering division than by any other association of engineers in the world.



The redesigned Franklin fan with its new "backward bent" blades in conical arrangement, forces air through cylinder air housing on the intake side of the motor into the spaces between the cylinders. The shape of the air housing distributes the cooling air evenly to each cylinder. As the air leaves the cylinder fins, it is swept down below the car by the air deflector housing.

Franklin's new airplane-type cylinder is made of cast nickel steel with an aluminum head, following the most advanced aviation practice. The cooling fins are considerably larger than those used in airplane engines. The size of these fins and the great heat conductivity of aluminum enable the new Franklin engine to use high compression without overheating.

In no water-cooling system is there as much known about the operating temperatures of the various cylinders and the various points of each cylinder. That water-cooled designers really do not know what the temperature may be at various points of the cylinders in water-cooled cars is frankly admitted by engineers generally, among them one of the most prominent authorities in the industry, who in the course of a recent gathering of engineers, said:

"Franklin pressure air-cooling system is a challenge to water-cooled designers. The water-cooled engine designer has built a cylinder of convenient shape, put a jacket on it, poured some water in and said it was cooled. The water might disagree with him. Frequently the water doesn't go where the designer intends it to go. Few designers until recently have made any great effort to find out just what the water does in the jacket."

Weaknesses of Water Cooling

There are many possible weaknesses in the water-cooling system. For instance, one is the formation of a lime deposit in the water jacket adjacent to the cylinder head and the valve seats; burnt and warped valves are the result.

The efficiency of the water-cooled motor ceases at 212 degrees Fahrenheit. This is because the water jackets and radiators of water-cooled motors are designed to handle water—not steam. When the temperature of the cylinders becomes so high as to boil the water in the jackets, the steam interferes with the even flow of the cooling medium, since its circulation is not provided for in the design of a water-cooled system. At high altitudes the boiling point of water is even lower, and the situation is thereby made still worse.

The Franklin air-cooled engine has a far greater margin of safety, since the air employed for cooling circulates perfectly, regardless of temperature. In fact, air is effective in cooling until it reaches temperatures around 300 degrees — fully 120 degrees higher than the safe limit for water-cooled operation.

In fundamental knowledge of cooling, the air-cooled engine unquestionably is in a more advanced position than the water-cooled type. No motor has ever been subjected to such detailed study of operating temperatures as has the Franklin. Franklin engineers developed special apparatus to secure this important information.

The Test At Yale

Extreme tests of a practical nature were given the Franklin motor in the developing process — among them being one run under high temperature and hard pulling conditions at Yale University under the supervision of Professor Lockwood of the Sheffield Scientific School. In his report Professor Lockwood said:

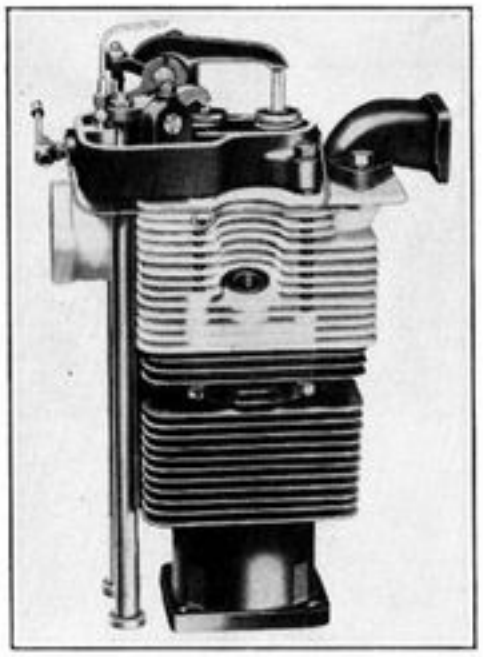
"These tests prove conclusively that the . . . Franklin engine with the pressure air-cooling system cools so efficiently as to maintain its maximum power flow indefinitely under most adverse conditions."

A final point of importance is the fact that the air-cooled motor opens the way to a flexible chassis frame; there is no delicate radiator requiring a firm support; accordingly a rigid frame need not be used. This flexibility

of the Franklin frame is a notable asset among the easy riding qualities of the car.

This air-cooling system is absolutely trouble-proof and attention-proof. The usual bothersome, water-cooled car precautions to avoid expensive and inconvient breakdowns are eliminated.

The Franklin user need never give a moment's time to his cooling system — there is nothing to fill, drain, mix, tighten, lubricate, replace or repair.



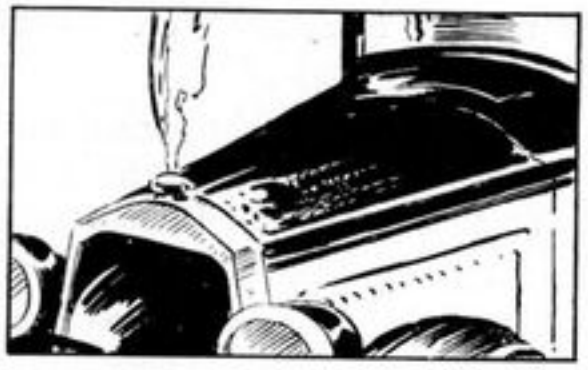
The 1931 Franklin motor, following airplane practice, has cylinders made with aluminum heads and cast nickel-iron barrels. The extremely high conductivity of aluminum and the large horizontal cooling fins cast in the cylinder head keep operating temperatures so low as to enable the motor to operate at the remarkably high compression ratio of 5.3 to 1. An interesting new Franklin invention is the cooling fin which connects the intake and exhaust ports of the cylinder head. This not only helps to cool the exhaust port of the cylinder head, but also prevents the intake port from becoming too cold.

From the time he purchases the car until the end of the period of ownership he gives no more thought to this unit than the average motorist does to a hub cap. Thus from the standpoint of permanent reliability, Franklin designers have gone far toward attaining the goal of perfection in the cooling system.

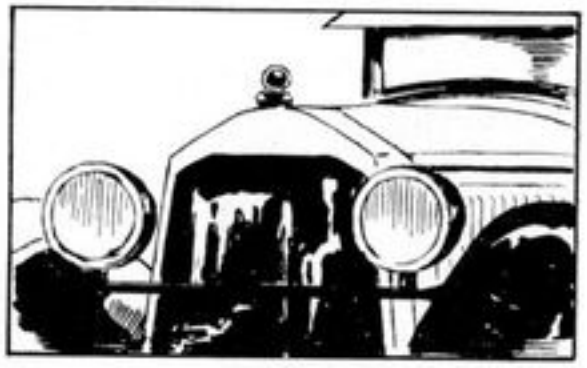
Cools Under Any Conditions

Pressure air-cooling is equal to the most severe tests of hard pulling and high temperature that can be put upon it. It insures a cooling effectiveness and performance ability unduplicated by any other motor. It cools perfectly at five miles per hour, pulling at wide open throttle with temperature 95 degrees in the shade, for as long as you care to drive it up hill at this speed.

Non-stop runs through Imperial Valley, California (next to the Sahara Desert, the hottest region in the

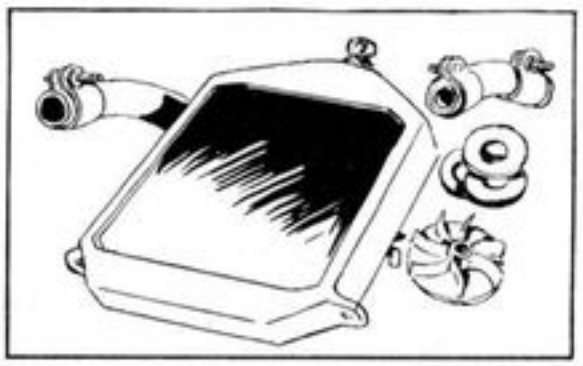


No danger of water boil-over and spoiling lacquer finish



No fear of cracked cylinders or bursting radiators from freezing

No thought of anti-freeze solutions or cold weather precautions



No water hoses or gaskets to tighten—no plumbing

world) failed to develop the slightest irregularity in this Franklin power unit. The temperature was 127 degrees in the shade and the traction consisted of hub deep sand. Similarly, in heavy going through mud and snow, it is impossible to overtax the phenomenal cooling capacity of this system.

It goes without saying that no water-cooled system possibly could perform similar feats.

On the other hand, pressure air-cooling has obvious cold weather advantages. The electric fuemer insures a quick start in cold weather and thanks to the fuel transformer, the warming-up process is completed in a jiffy — far more quickly than any water-cooling system could possibly offer.

This cooling system is without question the most outstanding achievement in the automobile industry in years.

One of the many laboratory tests imposed upon the Franklin engine was operation (including frequent start- and stopping) at a temperature of 20° below zero.

Another test required this powerplant to run at full throttle in a room kept at 175° Fahrenheit for more than four hours.

Doubled Efficiency of Army Tank

In an extraordinary series of tests held by the U. S. Army at Ft. Meade, Md. in June, 1930, a Franklin air-cooled engine installed in a standard U. S. Army 7-ton tank thoroughly out-performed all water-cooled competitors.

Quoting from the official record signed by Capt. Geo. H. Rarey in charge Tank Division, U. S. Army Tank School:

"The speed of the tank has been about doubled with the air-cooled engine. Not only was the fuel consumption of this six cylinder air-cooled engine approximately half that of the water-cooled engines, but the *air-cooled tank out-performed all ten of the water-cooled tanks in speed and hill climbing ability*—the Franklin powered tank reaching and climbing the hill before the best of the water-cooled tanks had covered half of the distance, all tanks having started at the same time on signal."

On June 30, 1930, when the outside temperature was 95° F., a Franklin quipped U. S. Army tank operated eight hours over country like this around Ft. Meade, Md. It made 16 laps over a cross country test course, making a total of 463 miles and averaged 5.8 miles an hour. During all these tests, its speed was twice that of its water-cooled competitors, yet its fuel consumption was about half.

THE FRANKLIN CAR
General Description

The development of the airplane type engine in the Franklin car has raised power and efficiency to an entirely new pitch. It is remarkable to note that Franklin engineering genius has been able in the short space of two years, to effect four distinct increases of horse power in the Franklin engine. The Series 13 engine introduced in January 1929 delivers 20% more horse power than any former Franklin engine. In June 1929 the increase of maximum power of this engine reached 40% by a slight change in the shape of the intake manifold, without adding to cylinder capacity.

The new airplane type engine introduced in 1931 scored another horsepower increase — this time 40 per cent.! And now, the Series 15 adds five horsepower to that! Both of these power plants have the same cylinder capacity as the old Series 12 Franklin.

Only a drive can reveal the utterly new sensation for which the airplane engine of the 1931 Franklin is responsible. You glide quickly to sixty, seventy, eighty with none of the usual experiences that go with great speed — but with complete smoothness, quietness and comfort. You challenge everything on the road with every confidence that you are master of the situation.

This new engine brings to the motor car an endurance and power typical of the airplane — power which remains at the peak through the hardest climbs and long, fast runs.

For in reality this is an airplane engine adapted in such essentials as are required by the conditions under which an automobile motor must operate. To look at it, you exclaim at the similarity with accepted in-line air-cooled aircraft powerplants. Its new side-blast cooling, the aluminum cylinder heads, the cylinder with integral cast fins, the overhead valves, the oiling system, the pistons and connecting rods, its higher compression — these and many other points establish its similarity.

People are apt to say how much it looks like the "Gipsy" engine, or like the "Cirrus," or like any one of a number of new designs that are just coming on the market with reputations as the last word in aircraft engines.

Tests that are absolutely original and of most compre-

hensive character place this motor in the airplane category even more strongly.

For the Franklin engine has actually flown an airplane. To prove its ability to withstand the rigors of airplane service, the Franklin engine was installed in a Waco plane by the Johnson Aircraft and Supply Co., of Dayton, Ohio, and given hours of service in sustained flights.

This motor was also viewed by the eminent aeronautical authority, Mr. William B. Stout, who pronounced it an example not only of the best there is in present plane practice, but as a prophecy of many design features which will quickly find their way into airplane engine manufacture.

As a matter of fact, the development of this new airplane type of motor is the logical outcome of years of experience since the design of the first air-cooled powerplant. The wealth of data available to Franklin engineers means that they are able to make advances in one year which would take other manufacturers many times that long even to get started.

Characteristic Franklin smoothness and quietness of operation are the result of the same factors which gave these qualities to the motors of previous Franklins. Among these factors perhaps the most important are the use of six cylinders — the one inherently balanced design, the *completely* counterbalanced seven bearing crankshaft, pistons and connecting rods carefully balanced in sets of six, vibration absorbers and the double flywheel effect caused by mounting the fan on the forward end of the crankshaft.

The counterbalancing of the Franklin seven bearing crankshaft is individual in principle because the inertia

The Franklin fully counter-balanced crankshaft, new in principle, which—added to other factors in smoothness, such as seven bearings, balanced pistons and connecting rods, vibration absorbers and double flywheel effect—practically reduces vibration to the vanishing point.

forces in the connecting rods are counteracted as well as those in the crankshaft itself. The counterbalances act, especially at high speeds, practically to nullify the forces producing bearing loads. This action, coming in conjunction with the use of heat-treated crankshaft and positive lubrication, leads to greatly prolonged bearing life.

Franklin was the first American automobile manufacturer to employ the valve-in-head principle of motor construction and today's Franklins have developed this principle to a high degree of perfection. It is absolutely standard practice in aircraft engines today. The valve-in-head design makes the combustion chamber the nearest to the ideal shape (the ideal being spherical). It is the shape that produces the maximum power from a given charge of fuel. Combustion of the gas is more complete in the valve-in-head motor because the flame has less distance to travel from the spark plug outward.

In this form of cylinder head there are absolutely no pockets to retain burned gases and thus dilute the charge. Scavenging or clearing of exhaust gases through exhaust port is more rapid and thorough. There is less obstruction to the flow of incoming gases through the intake valve — less surface exposed for the dissipation of *useful* heat.

Another instance of extra quality built into the Franklin motor is the use of wrist pins plated with chromium and machined to one ten-thousandth of an inch. Chromium plating makes them impervious to corrosion from acid or any of the products of combustion.

The extreme limits of fineness to which all Franklin parts are machined, of which the wrist pin is an example, means that parts fit from the very start, without relying on the "breaking in" process to achieve free movement.

Following airplane motor practice, Franklin bearings are steel-backed. This makes them stiffer, less susceptible to cracking or pounding out, and reduces necessity for adjustments to an absolute minimum.

Invar struts in the pistons compensate for expansion caused by the extreme heat of the explosion. Invar is an alloy which has practically no expansion. Its connection with the aluminum piston-skirts therefore retards expansion so that it is at the same rate as cylinder expansion. The original clearance between piston and cylinder is thus maintained throughout all ranges of operation.

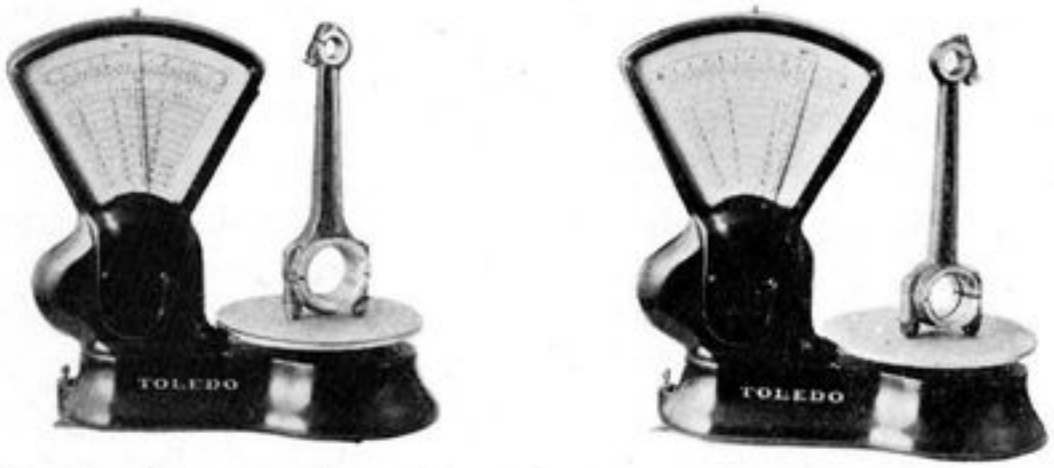
Connecting rods in the Franklin engine are made of duralumin. This is an unusually strong and light alloy of aluminum, which was originally produced for the construction of Zeppelins. Its special advantage among light alloys is that it can be forged.

Each Franklin connecting rod weighs approximately 1 pound less than a comparable connecting rod of steel.

Franklin was the first automobile manufacturer to employ aluminum pistons as far back as 1917 — and it is largely as the result of Franklin's experience that aluminum pistons are a practicability today. With our present day aluminum pistons a close fit can be maintained constantly because the invar strut in the piston permits an expansion of the aluminum which is identical with that of the cast iron cylinder. This means that clearances do not vary.

A big advantage of aluminum pistons is that they are not only light in weight, but are also important adjuncts to perfect cooling, since aluminum is a much better conductor of heat than iron.

Pistons and connecting rods have a reciprocating movement; they work up and down in the cylinders with lightning-like rapidity, starting and stopping very abruptly in their up and down travel. Each time that they start and stop, an inertia or vibrating force is set up. Imagine the force of this vibration when the parts come to a dead stop after travelling at a velocity of 2500 to 3000 feet a minute.



Duralumin connecting rods, weighing one pound less than a comparable connecting rod of steel, produce a livelier motor capable of higher speeds, quicker acceleration and longer life. The change which this equipment will make in a motor is beyond belief. At high speed the Franklin engine is as smooth as at low.

The greater the weight of the pistons and connecting rods, the greater is the vibration. The *only* avenue of escape from this vibration has been light weight in these parts which move up and down.

The Engine

Although developed exclusively for automobile use, the engine of the Series 15 Franklin has so many features in common with the best of the in-line aircraft engines that this new automobile motor is very properly referred to as the airplane-type engine. In the development of the new type Franklin engine, Franklin engineers have developed a truly remarkable powerplant — a powerplant which, because it develops the greatest power for its cylinder capacity of any automobile motor made, establishes an entirely new standard of motor design.

The resemblance of this new engine to aircraft engines is startling; in fact, many of its features bid fair to become incorporated as general procedure in aeronautical design.

Airplane Type Cylinders

Like the cylinders of modern airplane engines, those of the Franklin car are made in two sections. Cylinder barrels are of finest cast nickel iron. Cylinder heads are of aluminum. Cylinder heads and barrels are separated by copper-asbestos gaskets.

Carburetion

The carburetion group of an internal combustion engine functions to secure effective vaporization of the liquid fuel and to keep fuel in a vaporous state until it reaches the point of combustion. A lot can happen between the time the gasoline is first split up into a vapor and the time when it is delivered to the cylinders.

As a matter of fact the "carburetor" of the Franklin engine should be thought of, not simply as a single instrument called the carburetor, but as a combination of all the elements which affect the fuel from the time it leaves the gasoline line to the time it is exploded by the spark plug. Following this line of reasoning, we might say that the carburetor was composed of the following units:

The fuel pump, the gasoline filter, the air filter, the fuemer, the Stromberg carburetor, the fuel transformer and the intake manifold.

Carburetor

When you have said that the carburetor of the Franklin engine is specially designed by Stromberg, you have said

almost all that can be said about a carburetor. It is very generally used in American aircraft engines.

Aviation Type Valves

The overhead valves of the new engine operate in shrunk-in aluminum bronze valve seats. Valves are of large area, as are the valves of aircraft engines. Following airplane engineering practice, valves are ground to an angle of 30°, rather than the usual 45° of most automobile engines. This gives much freer intake and release of gases from the cylinder head and results in more power and snappier acceleration. The contour of the valves is of the tulip shape — carefully studied to allow the freest passage of intake and exhaust gases.

Valves are actuated by rocker arms mounted on a special cage on the top of the cylinder. All rocker-arm mechanism is completely enclosed, keeping it free from dust and dirt.

This valve cage is secured to the cylinder head by three studs. One of these studs serves a double purpose. It not only acts to hold the cage to the cylinder head, but by expanding and contracting with changes in temperature, maintains uniform valve clearance throughout the whole range of motor temperature. Valves are set cold at .007 of an inch and, thanks to this compensating stud, remain within .002 of this setting in spite of the vertical expansion of the cylinder. When it is reflected that the finest aviation engines frequently show a variation of .015 in valve setting, it will be realized how important this new Franklin invention really is.

Crankcase

The crankcase is of aluminum alloy castings divided well below the center line of the crankshaft. It is exceedingly strong and weighs very much less than the steel crankcase of most automobile engines.

Pistons

Like airplane engines, the Franklin uses aluminum pistons. They are fitted with four Perfect Circle piston rings. The lowest of these rings acts as an oil control ring. This arrangement prevents any excess of oil on the cylinder walls from finding its way into the combustion chamber.

Connecting Rods

The Duralumin connecting rods of the new Franklin engine are made from forgings of "H" section. Connecting rods have been strengthened to take the added power of the new engine.

Crankshaft

There is probably no crankshaft made, either for aviation motors or automobile motors, which is so perfectly balanced both statically and dynamically as the crankshaft of the Franklin airplane type of engine.

Fuel Transformer

Exhaust gases are used in the fuel transformer to supply the heat which vaporizes the heavy ends of the mixture as it passes over the corrugated walls. This heat is utilized winter and summer without necessity for adjustments.

The exposure of liquid gasoline to heat until a vaporous state has been reached, is necessary if a motorist is to obtain efficient results from the fuel he buys.

Today gasoline has so little volatility that a carburetor temperature of as much as 400 degrees is required to change ALL of the gasoline into an ignitible, power-giving mixture.

What happens in carburetion devices which do not provide this high carburetion temperature is this:

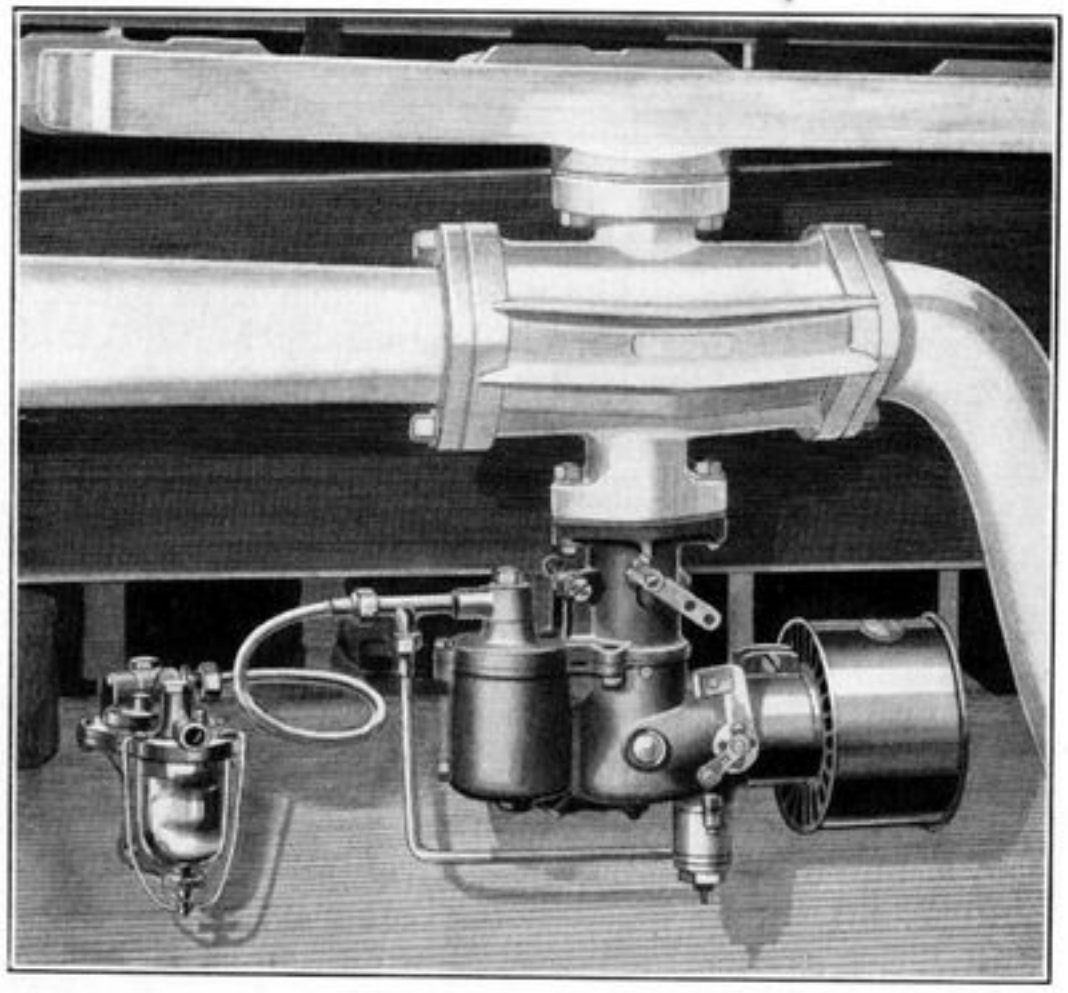
A portion of the fuel remains in the liquid state, and enters the cylinders; it fails to ignite — part of the raw fuel is blown out of the exhaust, pure waste. The other part seeps past the pistons into the crankcase and destroys the lubricating qualities of the oil.

The Franklin development for coping with the present situation took the form of an exhaust-heated vaporizer shown in the illustration.

Even Temperature of Mixture

The secret of success of the fuel transformer is the manner in which it attacks raw liquid fuel; practically all

the heat is applied to the unvaporized fuel; on the other hand, temperature of that part of the mixture which is already vaporized is affected very little.



THE FRANKLIN CARBURETION GROUP

The intake manifold, fuel transformer, carburetor, fuemer and air cleaner shown in the illustration and the gasoline pump and filter shown in motor illustration page 33 make up the complete carburetion group.

Accordingly the mixture is never heated to the point where it has lost power to an appreciable degree. The temperature of the mixture varies from 115 to 135 degrees. Heat in the fuel transformer is applied for the most part to the raw fuel.

How the fuel transformer can devote its whole work to the liquid fuel is more apparent by study of the cross-section illustration of this device. There are two walls to the unit; two separate chambers are formed, one completely surrounding the other. All the exhaust gases pass through the outer of these two compartments and hence make a hot spot of the inner compartment which is a passageway for the carburetor mixture.

The inner wall, being exposed to all this exhaust becomes very hot. As the mixture is drawn upward through the passageway, the liquid particles naturally cling to the hot walls; as soon as any part of this liquid fuel is vaporized, it goes into suspension and away from contact with the hot walls; it is instantly drawn through the opening at the top to the intake manifold and cylinders.

Adds to Car's Performance Qualities

Thermal tests made in the Franklin laboratories show that with an outside temperature of around 90°, the temperature of the vaporized mixture is around 115° and 135°; and the temperature of the corrugated walls showed readings of 350° and 400°.

Among other merits of the fuel transformer is the advantage in distribution of the mixture between the various cylinders; in other words the mixture which passes into the innermost cylinders is of practically the same quality as the mixture that passes into the two end cylinders. The effect is evenness of power flow.

The fuel transformer is the last word in simplicity and reliability; it has no moving parts and it cannot become clogged.

It is the culmination of more than a score of years of experimental and development work by Franklin engineers along the lines of carburetion. The use of a fuel transformer on a car insures a minimum of spark plug fouling, quick warming up in cold weather, pleasing performance of the car at low speeds, quick smooth getaway, and a strong even power-flow under hard pulling conditions. Along with these come greater fuel efficiency, and less crankcase dilution.

A device which is of material assistance in maintaining good carburetion under all conditions, and also in keeping operating temperature constantly within the range of maximum efficiency, is the thermostatically controlled hood-front shutter.

The Fuemer

An electric fuemer insures heated, completely vaporized gasoline for the first few explosions of the motor in starting, and is an important aid to quick starting and to the prevention of crankcase dilution.

It amounts to a miniature electric stove placed in the

bottom of a small well between the air-intake and float chamber of the carburetor and connected in the starting circuit. An electric valve controls the flow of gasoline to the fuemer cup and provides a supply of gasoline to the fuemer as soon as current is furnished resistance coil. This small amount of boiling gasoline generates fumes, which flow through the carburetor in a warm, vaporous state, furnishing perfectly volatilized fuel for the first few explosions of the cold engine and insuring a rapid and positive starting action.

Fuel Supply

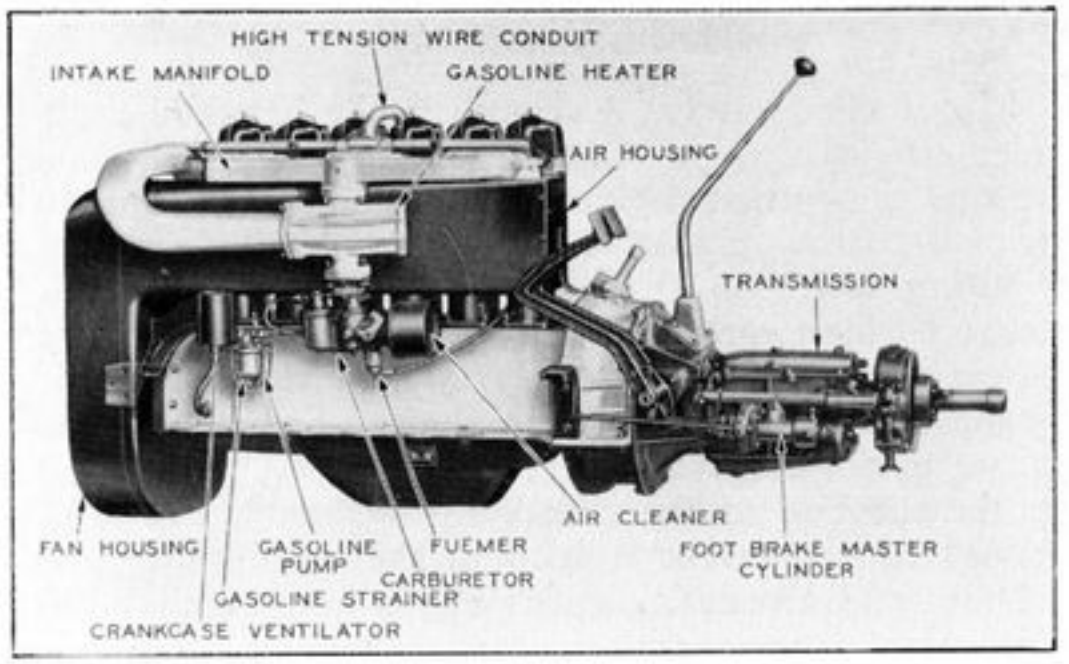
Gasoline flow is maintained by means of an AC fuel pump, which replaces the vacuum tanks used on previous models. It is the last word in fuel supply development because it gives a constant supply of gasoline regardless of intake manifold suction, as it is operated as a pump geared to the camshaft. Because of this positive action, it absolutely eliminates one of the worst characteristics of vacuum feed — which is the running out of fuel on long pulls on steep grades.

The capacity of the Franklin gasoline tank has been increased to 20 gallons — giving an unusually long run without stopping to refill. A gasoline filter in the fuel line, by straining every drop of fuel through chamois, keeps water, dust and grit from the carburetor.

Air Cleaner

An air cleaner is fitted to the air intake of the carburetor assembly. This, in addition to the gasoline and oil filters, keeps to an absolute minimum any possible impurities which do so much harm to internal combustion engines. With this type of air cleaner, air enters and comes into contact with baffle plates, so that it swirls like a miniature tornado, throwing all solid matter out of the sides of the cleaner by centrifugal force. Only pure, dustless air goes into the carburetor. Under some conditions of travel, this device prevents as much as a teaspoonful of grit per hour from entering the motor.

To the owner this means not only a safeguard against destruction to the power plant, but also reduces the carbon accumulation on the piston heads. An analysis of carbon deposit made by the Standard Oil Laboratories shows that



The Franklin motor from the left, showing shipshape assembly of air housings, manifolds, carburetion group and crankcase ventilator

in motors not equipped with air cleaners, from 25% to 30% of the accumulation is really silicon or earthy matter taken in through the carburetor.

It is significant that the equipment has no dirt receptacles to clean, and is compact, light and self-operating.

Electrical System

Delco-Remy electrical system is provided on the 1931 Franklins. The single wire system is used, each lead being individually fused and each being of a distinctive color to make quick identification possible.

Spark control is automatic, with hand control on dash for unusual conditions. As it is automatically regulated, it considers the inability of the average driver to keep the spark where it should properly be under a variety of conditions. The manual adjustment is only for the most extreme conditions, such as very long, steep pulls or in heavy going, like mud or sand.

A new feature of the 1931 ignition system is a metal water guard covering the ignition head. This keeps hot air from the cylinders and any water entering through the fan from getting on the ignition head and allows the head to run cooler than with the old style fabric or leather boot.

Motor Smoothness

Motor smoothness is developed in the Franklin six cylinder air-cooled engine to a degree unprecedented among internal combustion engines. The completely counterbalanced 7-bearing crankshaft is perhaps the greatest contributing factor to this smoothness. While many other cars use counterbalanced crankshafts, it is well to note the use of the word "completely" as applied to the counterbalancing of the Franklin crankshaft. Franklin counterbalancing not only takes care of the inertia forces set up by the rotation of the cranks themselves, but it is also devised to balance the weights of the reciprocating parts (pistons and connecting rods) which bear on the crankshaft.

This crankshaft runs in seven steel-backed bearings, which have such a length of bearing surface that extreme rigidity is secured. They insure against vibration caused by flexing of the crankshaft along its length.

Seven bearings give a bearing on each side of each crank, so that the tendency of the crankshaft to whip is firmly counteracted. Franklin was the first manufacturer to use a seven bearing crankshaft as far back as 1905.

The above factors which tend to destroy vibration would in themselves produce a remarkably smooth running motor — but there are still more features of the Franklin which prevent the occurrence of vibration.

The air turbine mounted on the front end of the crankshaft serves as a counterbalance for the action of the flywheel and thus gives remarkable smoothness, due to this double flywheel effect.

To cap the climax in providing velvet smoothness, both the flywheel and air turbine are provided with vibration absorbers. These are simple devices consisting of flexible fabric discs which deaden vibrations that might otherwise be transmitted through metal connections.

The first impression of refinement which one experiences in operating the Series 15 engine is its ability to idle at unusually low speeds. The engine turns over so slowly that one hardly believes it is running. This improvement results from a new camshaft design.

Experiments showed that the ability of an engine to idle depended primarily on reduction of "overlap". By

overlap is meant the extent to which the inlet and exhaust valves are opened at the same time. If overlap is present, the high vacuum within the cylinder draws in exhaust gas which contaminates the ingoing charge. The result is uneven firing and, of course, poor idling. In the Series 15 camshaft, the contours of the cams were designed so that there is approximately 10 degrees from the time the exhaust valve closes until the intake valve opens.

Why Six Cylinders?

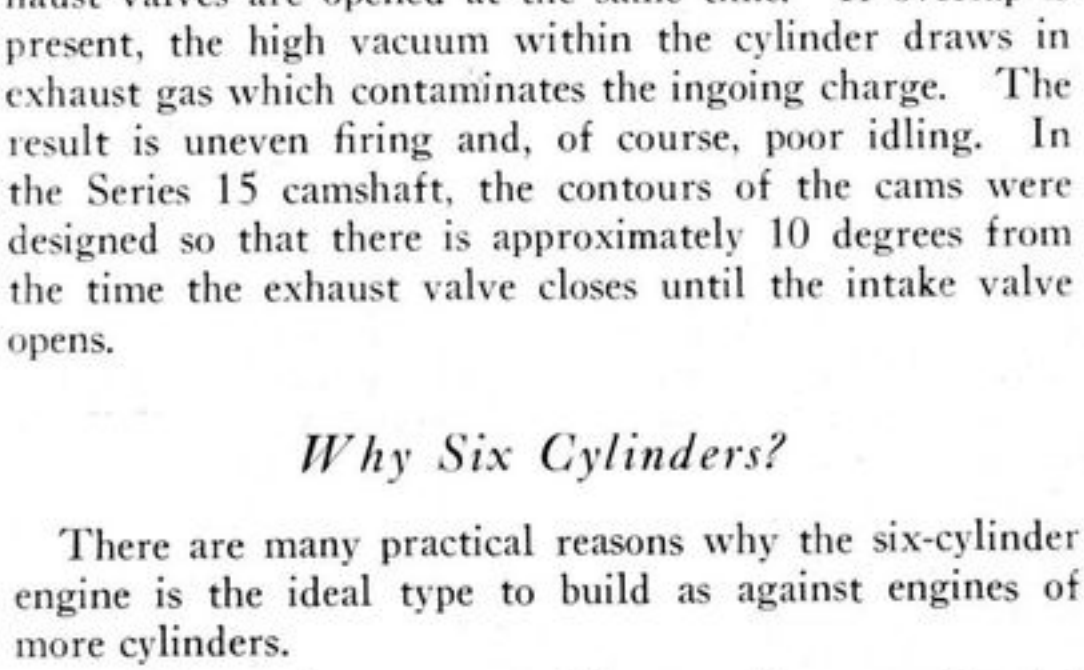
There are many practical reasons why the six-cylinder engine is the ideal type to build as against engines of more cylinders.

1. The six has greater efficiency — lower mechanical losses.

2. It has less weight per horsepower developed.

3. Its shorter crankshaft results in a minimum of torsional vibration or "whipping".

4. For a given power output and for a given length of engine, bearings are of much better proportions in the six.



View of engine from right with air hood removed showing the inertia-pump lubrication system for valves and rocker arms. Note location of oil filter which improves its operation as well as the appearance of the motor.

5. The compactness of the six makes complicated carburetion and ignition systems unnecessary.

6. Smoothness, especially at high speed or in the touring range, is better accomplished in a six, because the effect of intermittent loads—a combination of explosion pressures, compression pressures, and reciprocating weights—is counteracted inherently in accordance to mathematical laws. Therefore, the absence of "high speed roar", as compared with an eight.

7. The six cylinder engine has 25% fewer parts to get out of order, to require service and to cause the owner unnecessary annoyance.

8. Cooling of the rear cylinders is difficult in the eight-in-line engine, due to the distance from the source of cooling. Cooling of Franklin's six cylinders is absolutely uniform.

Lubrication

Motor Oiling System

The Franklin pressure recirculating system of motor lubrication is fundamentally the same as that which is used in aeronautical practice. A powerful geared oil pump delivers a steady flow of oil through separate leads from a manifold to each main bearing; thence to the connecting rods; being finally sprayed against cylinder walls and other working parts through a drilling in the connecting rod.

Oil is supplied to each bearing surface at the astonishing rate of almost a gallon a minute!

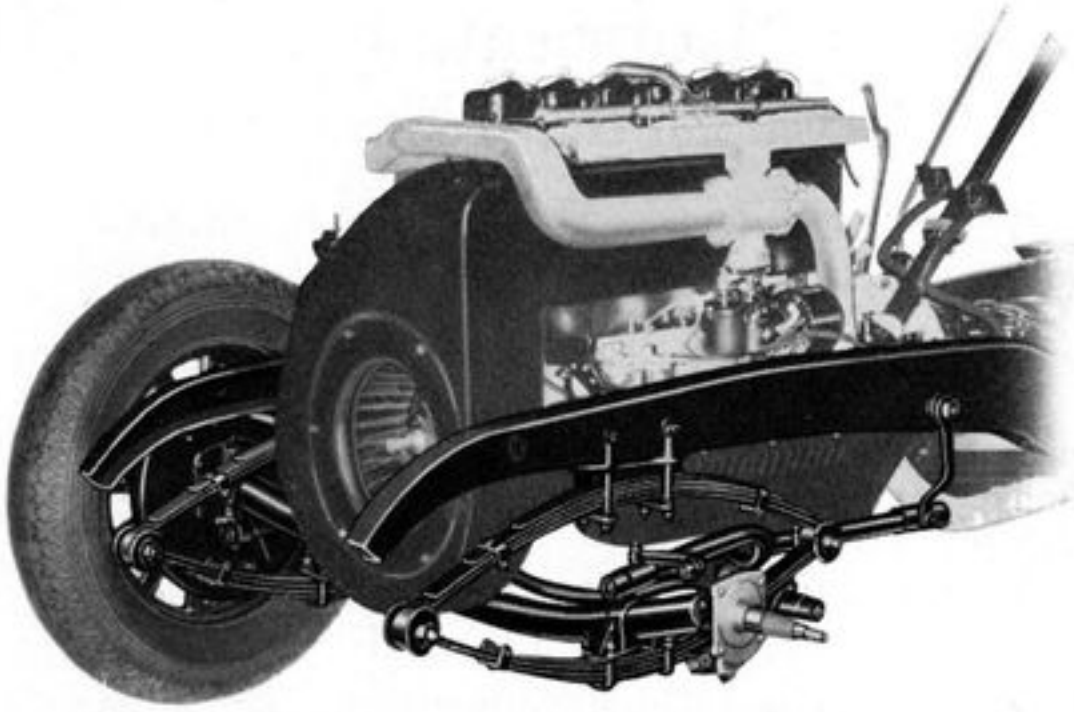
The more severe the requirements, the more oil is supplied by the Franklin oiling system. The amount discharged by the pump is set at a point to provide sufficient lubrication under conditions of heavy pulling and low speed.

A complete and separate lubrication system is provided for the valves and rocker-arms. This is entirely automatic. Oil is taken from the engine under pressure from the valve oil pump and is passed through a filter mounted on the right side of the crankcase at the rear. This filter restricts its flow and purifies it. The clean oil is then led to each of the valve gear cases and flows through another restriction to the felt pads over the valves. The valve gear cases and support tubes are arranged so that the excess valve oil drains back to the crankcase through the support tubes. This new system is an improvement on the Alemite system previously used by Franklin in that it delivers more oil to the valves and requires no special attention since it uses oil from the crankcase. The filter should be replaced every 10,000 to 15,000 miles.

An oil capacity gauge is mounted on the dash.

The danger of corrosion due to moisture in the crankcase is guarded against in the Franklin motor by a forced draft crankcase ventilator.

Air is tapped from an air-duct at the top of the cylinders and is led down to the crankcase, where it starts a current which drives out all gasoline and water vapors. This device is thermostatically controlled — that is, it



Absence of delicate radiator makes rigid cross-members unnecessary at front of frame. This allows Franklin frame to flex and this distinctive feature added to action of full-elliptic springs, double-acting hydraulic shock-absorbers and light unsprung weight, gives Franklin its unusual riding qualities. The tubular front axle equally strong in each direction, weighs 25% less than ordinary I-beam axle.

operates when condensation is most dangerous — namely in cool weather. In warm weather, when vapors do not form, the thermostat makes this device inoperative. This is a safeguard against depletion of the oil supply.

The oil filter, strains the oil through fabric, is mounted where the heated air from the engine keeps it at proper operating temperatures and prevents cold oil congealing on its straining cartridges. The operation of this device and the crankcase ventilator, means that the oil supply of the Franklin can be used over and over again. Actual consumption of oil is practically nil, but a change of oil at the end of 1500 miles is recommended.

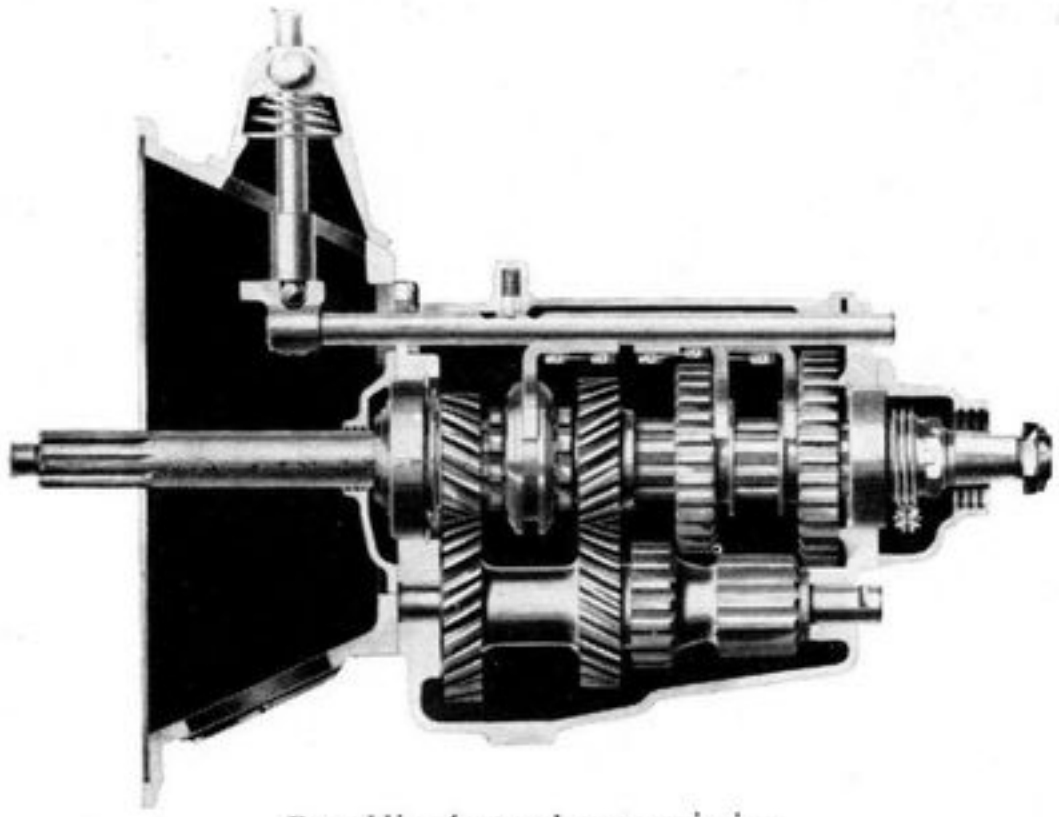
Franklin lubrication is so efficient and perfect that it is possible to get satisfactory service out of any good oil.

Chassis Lubrication

The Franklin chassis bearings are lubricated by the familiar and dependable Zerk pressure system which keeps the case-hardened spring bolts bathed in oil supplied under pressure.

Transmission

The Warner 4-speed transmission used in some of Series 15 models is equipped with constant mesh helical gears for quiet third speed operation. The gear ratio in this speed, 1.49 to 1, furnishes ample power if it is desired to make use of it. A special clutch provided in the transmission makes shifting between third speed and direct drive easier and quieter than with the old method of shifting gears directly into mesh. The 4-speed transmission furnished in other models has internal gear for quiet third speed operation.



Franklin 4-speed transmission

Power is transmitted to the rear axle through a tubular driveshaft — engineered to afford maximum strength with minimum weight. From the differential, tapered rear axle driveshafts carry the power to the rear wheels.

Free-running qualities of all Franklin power-transmitting units result in the delivery of a full 84% of the motor's power to the rear wheels.

The Franklin clutch, located in the flywheel, is of the improved single dry-plate type. The clutch-facing is unusually durable.

Chassis

Frame

The comparative lightness of the Franklin air-cooled motor and the complete absence of delicate water-cooling apparatus makes it possible for the Franklin to use a frame of light and flexible construction. This is constructed of steel in channel section, but is so devised as to give with road shocks to an extent that would be impossible with the frames of water-cooled cars. Water-cooled cars require extreme rigidity of frame construction to protect the delicate radiator from warping, and this rigidity necessitates heavy cross members.

The Franklin frame is tied amidships by two cross members. Forward of the dash, the motor supports, while connecting with the two side members, do not prevent flexing, as they form a very close approximation to three-point suspension, and thereby obviate any strains on the power plant. In the 1931 Series 15 Franklin, the two rear supports are of the Firestone rubber-mounted type and cut down motor vibration to a marked degree. Similarly, the body is protected, because the body sill is not bolted directly to the top of the frame, as is the case in most cars, but overhangs on each side and rests on six bolsters, which are themselves devised to allow a certain amount of motion.

The flexibility of the Franklin frame has much to do with the almost unbelievable riding and road-holding qualities of the car with the "airplane feel".

Springs

Full-elliptic springs have been standard on Franklin for twenty-nine years in spite of their extra cost, because of the many advantages that come with this type.

The full-elliptic springs have twice the cradling length of the same size of semi-elliptic spring. Hence the new Franklins with 36″ full-elliptics front and 42″ full-elliptics rear, have a spring-base of 156″ on *each side*—two feet longer than the wheelbase of Model 15 DeLuxe.

The spring is not only longer, but is softer in its action — reducing to an astonishing minimum the little jolts

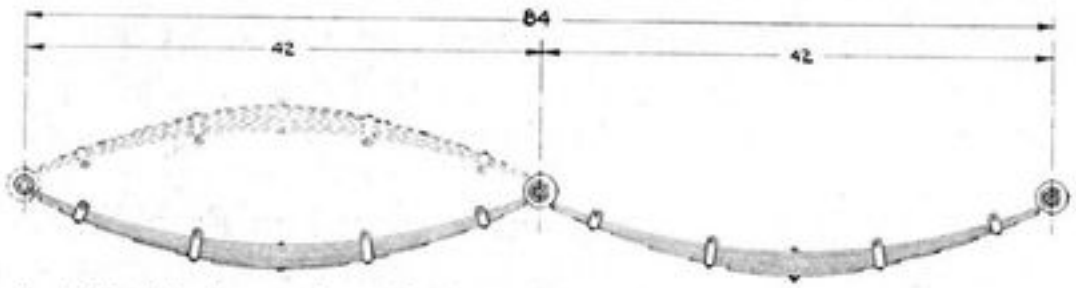
commonly encountered in city driving over bad pavements. Silico-manganese steel is used for all Franklin spring leaves rather than four main leaves only. This is a typical instance of extra Franklin value.

The Franklin full-elliptic spring needs no shackles, since it is attached to the frame at one point only. This fact, and the extremely careful fit of the case-hardened spring bolts in their bronze bushings, makes them virtually noiseless. Even when wear does develop, adjustments can be quickly made without replacement.

In Series 15, springs have been changed from the welded head type to the "Berlin" type. Doing away with welding of the main leaf will make the springs less liable to break.

Franklin full-elliptic springs are supple and soft riding. They are mounted at an angle so as to catch diagonal road shocks. And the great majority of road shocks come from the diagonal direction.

Each full-bowed Franklin spring is attached to the frame at only one point and has a degree of freedom in rocking about this point which would be impossible with semi-elliptic springs, which must be attached to the frame at two points. The new design of spring chair holds springs firmly in place on axle without requiring rivets or welding, thus preserving the maximum strength of the full tubular axle section. *There is a comfort-giving flexibility about the action of full-elliptics that is quite impossible with any other type.*



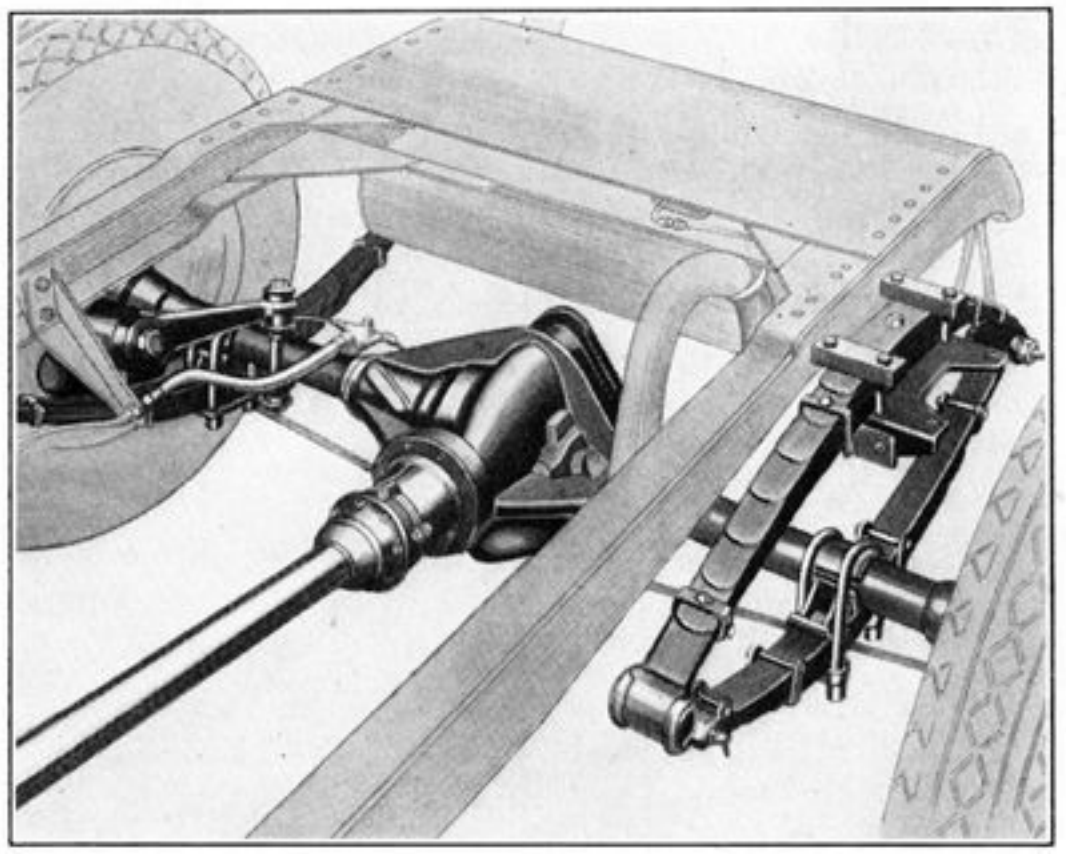
A full elliptic spring 42" long is equivalent in effectiveness to a spring 84" long.

Full-elliptic springs allow the 100% flexible drive and flexible braking action of the Franklin. When the power is applied in starting, the wheels actually move forward a few inches before the body begins to move. This easy action of the Franklin in starting up is an element in easy riding; passengers are spared any jerking action. Similarly, when the brakes are applied, the forward pitching effect is cushioned in the Franklin by the springs.

The car is low hung to prevent side motion and insure a firm grip on the road.

Shock Absorbers

The Series 15 Franklins are equipped with new Delco Products shock absorbers. These are double action, hydraulic shock absorbers with improved shaft packing to prevent any possible leakage of oil. Another leakage-reducing feature of this device is that the cylinders, instead of being opened at both ends as is customary practice, are opened at one end only. Exhaustive tests by our engineers have demonstrated these new shock absorbers hold the car much better than any type used heretofore, thus providing a far softer, steadier ride. They are of ample size to exert necessary control and are so constructed as to retain adjustment over a long period of time.



Power is transmitted through the springs—there are no radius rods or torque tubes to add unnecessary weight to the Franklin undercarriage. Note the new spring chair which prevents any rotation or logitudinal motion of springs on axle. Note U-bolt assembly which holds springs and spring chairs against the axle tube.

Double-acting hydraulic shock absorbers are effective in cushioning the little shocks of traffic driving, such as those caused by the joints in concrete pavement, manhole covers and car-tracks. At high speeds on the open highway, they make the ride easier by controlling spring rebound from the relatively greater shocks. When there is not a great deal of spring motion, the use of these absorbers permits springs being soft enough to absorb the little inequalities, then these same soft springs, compressed more than usually by high-speed driving, are assisted by the action of the shock absorbers, not only on the down stroke, but to an even greater degree on the rebound. In action the Franklin's double-acting shock absorbers are absolutely noiseless.

This combination of easy-riding features makes it an interesting test for a motorist taking his first Franklin ride, to tell when he is travelling over rough cobbles and railroad tracks.

Axles

Front axles are tubular — built up from the highest grade nickel steel. This practice, though vastly more costly than making front axles of I-beam cross-section, as are those used in most automobiles, insures the utmost in strength, combined with scientific light weight. They are stronger than axles of much heavier construction because the metal is so distributed as to give maximum strength in any direction of load or blow — a characteristic of O-sections.

The Series 15 front axle has been increased in diameter from 2 9/32 to 2 5/8 inches. The method of attaching the tube to the end forging has been changed to a stronger construction; the welding being at the outer ends only where it in no way affects the strength of the tube.

The inner wheel bearings are changed so that the bearings rest directly against the flange of the knuckle doing away with the washer. This will reduce the necessity for adjustment of wheel bearings and will increase bearing life.

Rear axles on the Franklin are engineered for lightness and strength. Chrome molybdenum steel, known for its great strength per unit of weight — is used for rear axle tubing; rear axle driveshafts, tapered for both added

strength as well as lightness, are of chrome silico manganese steel, while the rear axle housing is of aluminum. Reference to the various costly alloy steels used in all Franklin models is made to emphasize the point that nothing is allowed to interfere with the very highest quality in the building of this car.

The Series 15 rear axle has been increased in length to afford a 60 inch tread and the gear case has been changed from aluminum to malleable iron to make a stronger and stiffer case. The truss rod has been increased from 3/8 to 1/2 inch diameter for increased strength.

Oil seals on the right side of Series 15 rear axle drive shafts have been changed to leather. The other seals remain of felt but have been made a tighter fit on the shafts. These changes are made to lessen chances for oil leaks in the rear axles.

A slight change in the differential case allows more oil to enter the inside of the differential. Polishing the thrust surfaces of the gears improves lubrication and makes operation quieter.

Steering

Steering gear is of the Gemmer cam and roller type with an 18 to 1 reduction. The friction loss in this type of gear has been reduced to a minimum.

Steering in the Franklin is absolutely free from shocks transmitted from the front wheels through the steering mechanism. You can drive all day with no sense of that pounding or vibration which is so fatiguing in other cars. This is largely due to the full-elliptic springs, each of which is supported at one point only on its upper half and which takes up blows that would be felt in a more rigid construction. Franklin steering is unusually steady. The possibility of shimmy is reduced to a minimum by the action of the full-elliptic springs in front.

Wheelbase and Tread

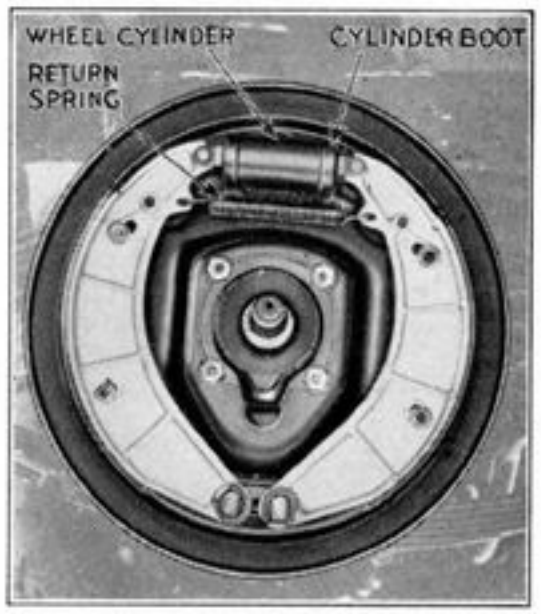
Wheelbase and tread are, in Franklin conception, important largely on account of their influence on body room. As far as wheelbase is concerned, Franklin has always made it a matter of principle to devote a maximum to body space and to conserve every possible inch. The Franklin engine and its cooling apparatus occupy less room fore and aft than in-line water-cooled engines of corresponding size. The dash is recessed in the center to accommodate part of

the motor's length, thus adding an appreciable amount of leg-room in the driving compartment. Franklin wheelbase is always sufficiently long to avoid extraordinary overhang of the body in back, since this overhang contributes nothing whatever to easy riding.

The matter of tread is, by like token, wholly a matter of passenger accommodation and seating room. The full 60" tread of the Series 15 Franklin (from an inch and a half to two inches wider than general practice) gives an unusual opportunity for Franklin body builders to provide wide and comfortable seating accommodations.

Hydraulic Brakes

Synchronized self-equalizing four-wheel hydraulic brakes of the Lockheed type, apply at the same instant and with exactly equal force to each wheel. These are internal expanding brakes completely shielding the brake mechanism from mud, dust and water. Extra large shoes radiate heat to such a degree that tendency toward seizure is eliminated and original adjustment maintained under all conditions. It is possible, due to these large brake shoes, to drive a Franklin down a long, steep hill, using nothing but the foot brakes to keep it at a safe pace.



These brake shoes are scientifically designed to permit expansion when heated by the friction of braking, at exactly the same rate as the expansion of the brake drum, with the result that the retarding pressure between the brake surfaces is maintained without variation.

The easy pressure with which these brakes go into action, makes them a great addition, not only to driving comfort, but also to safety. A self-filling device keeps the master-cylinder continually full of fluid, and this self-compensating feature does away with the inconvenience of "pumping up" the system.

By mounting the master cylinder of the braking system on the clutch housing, an extremely safe assembly of

control elements has been secured. This assures positive brake action with a minimum of pedal movement and pressure.

Franklin employs a recently developed anti-squeak brake lining, which does away with most of the causes of braking noise and trouble. Being molded, it conforms smoothly to brake-drum surface, without "high spots" and their attending noises. It absorbs the heat of braking quickly and passes it on to the metal brake-shoes, with their large radiating surfaces. With Franklin hydraulic brakes, there is of course, no possibility of the rattle and banging so characteristic of mechanical braking systems, with their many brake-rods. They are simpler and have less mechanism than mechanical brakes.

Since the hydraulic system is much lighter in weight than other braking systems, it tends to keep down the unsprung weight of the car, an important aid to easy riding.

Bodies

Dietrich design reaches a high point of perfection in the development of the Series Fifteen DeLuxe bodies. For in these new cars, created in the tempo of flight, we have harmony of line throughout the entire structure—entirely new design which achieves unity from end to end of each body type. Your first glance at one of these Series Fifteen Franklins impresses you with the great skill by which its masses have been molded and lines extended at every point to produce an ensemble suggestive of grace, power and speed.

At no part of the new DeLuxe bodies is there the slightest suggestion of compromise in design, which so often affects a good basic idea of coachwork. There are no abrupt junctions of flat surfaces with curved ones, no sharp angles where the eye expects wide ones. And best of all, perhaps, the effect has been produced by fundamental layout of mass and line, rather than by dimensions of bodies which attain appearance at the expense of convenience and comfort.

Striking New Design Elements

Outstanding among the aspects of the new designs, as the illustrations show, are the following: Hood front, windshield, grille shutters, louvres, top panels, roof extension, fenders and running boards.

The hood is new. It has much to commend it in the satin chrome plating of the shutters which present an area that gives flash and character far more effectively than any accessory might add. The width of the band of the grille shell, in the side view, has been increased one-half inch, to bring it into proper proporton with the increased size of the car. The brilliancy of metal work at the front therefore becomes a noteceable style motif, particularly when viewed in combination with the large headlights and one-piece full bar bumper of individual shape.

The hood is further distinguished by port-type louvres arranged on a raised panel and spaced in a way exclusive to Franklin — one to the front and two to the rear. Easily opened by chrome finished grips, they give a touch of swank which many people are going to like. The

hood ornament itself is a new design, having a larger and higher base surmounted by sharp edged rifle-sight which serves as an artistic termination to the ridge line of the hood made by the flush type hinge finished in chrome. The back edge of the hood is finished with a plated molding extending completely around the cowl.

The effect of length is achieved in DeLuxe bodies in another way, by employing the one-piece side roof panels which extend from the rear quarter forward to the windshield. The radius to which they are formed and the deep crown which they secure causes the roof high lighting to fall in a low line above the drip molding. This accent of horizontals gives length and also lowness. The windows take on rectangular shape that is also favorable to long proportions. The formation of the roof extension over the windshield is a fresh note in design which successfully eliminates a separate visor and also keeps the roof line low at its juncture with the windshield pillars.

The windshield itself, being of the slanting type, serves to carry the hood and cowl lines up to the roof, where they meet the graceful down sweep over the front doors to give the feeling of brisk, easy rush ahead.

Fenders a Style Mark

The DeLuxe fenders are on a fair way to set a new fashion. They look smart not only because they are beautifully rounded, of deep section and in one piece, but also because the line from the front tip back along the running board to the fillip at the extreme rear gives a sweep that has never before been achieved. The way the splashes—front, side and rear—as well as the new-type running boards, envelope the whole chassis gives a finish and neatness that is most complete.

Wider Tread Improves Lines

Both body lines and riding comfort are improved as the result of widening rear tread to 60". The extra width permits the use of rear roof lines and moldings which add to the car's low-hung appearance.

Airplane Lines in Windshield

The design of the windshield has been developed into the slanting, streamlined type commonly used on air-

planes. While an important element in the rakishness of the body, and useful also in reducing wind resistance, the slanting shield has another great advantage over the vertical type in its ability to refract rather than to reflect the headlight glare of cars in the rear. It, therefore, becomes a great contribution to the convenience of driving and the elimination of annoyance which people will be quick to appraise.

To be able to retain the clear-vision front pillar feature in this construction is a credit to Franklin designing skill, particularly when contrasted with the bulky front pillars that go with many of the other body designs attempting the angled front. Franklin eliminates the "blind spot", which in other windshields with not nearly the same degree of slant, is frequently increased.

The manner of mounting the windshield adds to appearance by concealing the hinge within an extension of the metal which covers the front header bar. The hinge itself being stronger and the rubber backing in the windshield frame being thicker, the chances of breakage of glass are minimized. The enclosure of the hinge and also the extension of weather stripping up past the ends of the hinge makes leakage at the top of the windshield practically impossible.

Luxurious Riding Like Gliding

When we say that riding is like gliding, we expressed both the quiet, smooth, effortless action of the power plant and the soft, floating progress of the car over the road.

To this extraordinary performance the DeLuxe bodies make a great contribution through their luxurious roominess and seat construction.

Luxurious Interiors

Interiors of the DeLuxe line are finished with the fine craftsmanship and in the high quality of materials which have always characterized Franklin coachwork. In this line, however, a plusage of custom refinements is noticeable. One gets the impression that the finish of each car of the DeLuxe line has been especially created for that particular job—just as if it had been individually groomed for display in a Custom Salon.

With all body types mounted on the 132 inch wheelbase, there is a placement of passengers with relation to the amidship position of the chassis that has an effect of steadiness and lack of pitching which can be readily demonstrated. The longer wheelbase also gives more effective floor space which in the Sedan, for instance, gives 1½ inches additional, mostly in the rear compartment.

A complete new design of *front seat* has resulted in a much more relaxed position for the occupants. Change of seating angles applying both to the cushion and to the back gives better support. By making the depth of the cushion and back springs greater and by increasing the height of the seat back itself, a much more luxurious ride results, which we venture will not be duplicated. Even from appearance standpoint, luxuriousness is evident particularly because the front facing of the seat cushion now extends within a very close margin of the floor carpet, thereby giving the impression of depth associated with the finest upholstery.

The same betterments in seat design are worked out also in the *rear seat,* which has the further advantage of approximately one and a half inches greater width, thanks to the wider chassis tread. Three persons of more than normal size can be accommodated without undue crowding.

Library Upholstery

There is the air of the restful library chair about the seating accommodations, not alone because of ampleness of dimension and correctness of posture but also because the style of upholstery corresponds so faithfully to that of exclusive furniture design. The smooth, unplaited, untuffed covering with piped seams and welts is a suggestion of this best practice, and the same may be said for the overstuffed roll on the upper front edge of each cushion which protects the occupant from the cushion framework itself. The effect is that of the one piece pillow type upholstery that is currently very popular.

Upholstery Material

Upholstery material, as it is shown in the very latest motor car offerings this year and particularly in the made-to-order and higher priced bodies, has given fresh

endorsement to Franklin specification of broadcloth which this year is being used in quality that is more than ever a mark of its correctness.

Depending on the body type, the cloth comes in plain weave or in fine striped pattern—in all cases of a shade harmonious with the exterior painting scheme.

As a variation and as an option, in five-passenger Sedan bodies Bedford Cord upholstery is introduced for cushions and backs, with broadcloth to match on the sides and headlining. There has been a marked preference for this material in some quarters, and especially with the smooth type trimming a certain newness results from its use.

Color Opportunities

Franklin has never produced a car which has afforded such limitless opportunities for color. From the new French roof side panels through the new reveal panels and oblique windshield to the lower body moldings and new ultra-modern fenders and running boards, the colorist finds design that needs no revamping.

The number of combinations which can be worked up by color placement is destined to produce variety that will be generally appealing. The roof itself may carry color or may be in black with equally pleasing effect. The body moldings may harmonize with the roof or they may be in complementary or contrasting color. The reveals themselves become color accents that are most flexible in their application. The larger reveal at the bottom will often be usable as a needed belt widener or as a special note in itself. The inside reveal extending as a narrow unbroken band around the window, now affords the place for color high-lighting which will prove very interesting.

A new appearance by clever use of sweeps instead of straight lines is brought about through molding and also through roof design. For example, the way color can be carried forward of the windshield on the roof extension emphasizes both length and lowness.

The new Franklin major panels (body and hood) are successfully developed so as to require no moldings to

extend the belt to the front. By this design the effect is much improved, as the feeling of length and the impression of speed holds no matter what colors are used. To this effect, roof highlights and hood and fender highlights make no small contribution.

Color and design are inseparable. One cannot be correctly applied if the other is not correctly developed. Now Franklin history can write, "Perfect balance of color and design completely fulfilled".

Concealed Windshield Wipers

Attention to details comes out in the attachment of the windshield wipers to the framework so that none of the mechanism shows except the small motor operating valve. By this neat construction interior appearance is considerably smoothed out and the corner construction of the body simplified. Yet the mounting is so designed that servicing of the windshield wiper motors can be made very readily. Double wipers with the blades finished in chrome are standard equipment on the DeLuxe line.

Inside Visor

More effective as sun shades than any other kind of device, the two inside visors will be appreciated by front seat occupants. Both are fastened to the roof construction in such a manner as to avoid any possibility of accident should the passengers for any reason lurch forward in their seats. The way the hinges operate permits the visors to fold forward against the roof without obstruction, yet they are within easy reach to draw backward at the desired angle for comfortable vision. Each is covered with headlining material with a tab of leather for protection against finger marks.

Airplane-Type Instrument Board

The assembly of dials and gauges on the instrument board follows aviation practice very closely and by so doing takes on an up-to-date touch as well as very noticeable convenience. Each instrument is mounted separately in its own opening and each has its own butler nickel finished bezel which matches pleasingly with others of similar size and shape. The board is lighted indirectly

from a circuit controlled by the main lighting switch. Visibility in both day and night driving is one of the features of the airplane-type arrangement, as the aviator wants to be able to spy out at a glance this or that reading without any confusion. Especially in fast driving and in traffic the motor car driver appreciates this same feature which is both a convenience and safety element.

All the instruments are the same as previously used except that the oil pressure gauge has been replaced with an oil quantity gauge, which shows the driver the amount of oil in the crankcase. In addition there are two large glove compartments, one in each end of the panel, which are sure to prove interesting. Each is about 5″ high, 8″ wide and 12″ deep and lined with soft upholstery material. The openings are enclosed by doors having overlapping molded edges which conceal the hinges and catches.

Good Detail at Cowl

Finish of the instrument board is in walnut of uniform shade except for the embossed panel imposed on the cowl arch which is of darker shade.

The cowl arch is now made in one piece with the instrument panel, the latter part being given a 23° tilt so as to put each dial in the best line of vision. The lower edge is also given an upward sweep to provide ample clearance for passengers' legs and in the center has a drop to provide a place for instrument mounting. The construction is good as to detail where the board fits against the pillars. There are no screws exposed when the door is open and the finish is given trim appearance by the windlace which extends from the floor to the belt line.

Grab-Handles An Added Touch

The quality of interior fitments is borne out in the hardware of new design, simple and dignified. The finish is Butler nickel throughout; this finish has been extended in the DeLuxe model to include the foot rest brackets and windshield quadrants. A change in keeping with present trends is the provision of assist handles on each side of the rear seat which replace the assist

cords or arm slings previously used. These give stronger support, are less apt to show wear and lend another point of bright highlighting to top off the body trimming.

Gold-Plated Mirror

The value of the non-glare feature of the gold-plated rear view mirrors is already established. In the DeLuxe bodies the finish of this attachment has been changed to match the clamp in all cases. The bracket itself is better concealed and the entire installation is noticeably more compact and neat.

Non-Shatter Glass, of Course

In keeping with its many safety factors, Franklin was one of the first motor cars to standardize on non-shatter glass. It is used throughout the windshield, door windows and rear windows. This year the DeLuxe bodies permit the glass in the rear doors to drop flush with the bottom of the window opening, which of course gives a freer passage of air. Better ventilation also results from the glass in the front doors which when lowered not only drops from the top but draws away a bit from the windshield pillars. The result is an efficient circulation without the window being actually dropped so far as to cause a disagreeable draft. Moreover, by the circulation being outward through the vertical aperture, there is no tendency for rain drops to enter behind the windshield pillars, while the door windows are open. On the Convertible Coupe, as customary, the window glass is mounted in a chrome plated frame having rounded corners at the top to conform with the corners at the belt.

Wide Doors a Feature

Width of doors contribute their share to luxuriousness. Improvement is especially noticed in the front compartment where easy access is always of first importance. The doors also have a style influence which in the DeLuxe bodies helps to accentuate length and lowness.

Every Detail Studied

Those things which add interest, sparkle and fineness to the body interiors are done with outstanding taste in

the DeLuxe models. You see it in the way the doors are trimmed—with neat, raised paneling to relieve an otherwise uninteresting surface, with the further addition on the rear doors of large shirred pockets with a rounded flap that gives a well-tailored appearance.

Garnish moldings have all been increased in width, to bring them into fine proportion with other surfaces and by so doing considerably more brilliance is achieved. A very neat and decidedly new touch is the wainscoting consisting of a narrow metal bead running under all windows, finished in Butler nickel to match the interior hardware. This detail is in pleasing contrast with the walnut finish on garnish rails, which in the DeLuxe models is somewhat lighter than previously.

The finish on the front door presents a noticeably cleaner appearance against the front pillar, since the windlace is concealed above the pillar and a garnish molding is added to the forward edge.

High Quality Carpet

Floor covering, both front and rear, makes use of high quality carpet of a new weave developed particularly for automobile requirements. It gives better appearance as no binding is necessary, has longer life and due to its rubber backing has better insulating qualities and is resistant to moisture.

The *dash-board* is concealed behind a heavy, hair felt pad having molded covering. This serves as an effective insulator against engine heat and moreover prevents most of the engine noise being audible in the front compartment.

Arm Rests and Foot Rests Comfortable

An important item in the luxuriousness of the bodies is the extremely ample *foot rest* which is now a broad oval-shaped bar, softly padded and covered with carpet, giving a very comfortable support. At each end the foot rest is hinged to the floor by a large Butler finished bracket which obviates any necessity for notching the floor covering where attached. By a simple reversal of the bracket hinge socket, the foot rest can be brought about one inch nearer the rear seat if desired.

The shape of the *side arm rests* incorporates the latest provisions for comfortable relaxation and because of their placement gives most natural support. The *center arm rest has* proved to be a feature of great appeal and in the DeLuxe models folds down or out of the way with the same convenience as previously. Its upholstery has been made softer by deeper springs and heavier padding.

Protects Finish

Scuff plates over the thresholds add a quality mark by having an all-over etched design of pleasing appearance incorporating the Franklin name in script. By having the outside edge rolled downward, protection is given to the painted edge of the body.

Window regulators contain the mechanism which has been so popular with owners in recent models, providing a one turn regulator on the left front door and the conventional four turn regulator on all other door windows.

The corner lamps wherever used now have 15 candle power bulbs that give ample light for reading.

In keeping with the new note of interior trim, a smoker set of individual design is mounted on the right side of the body, with corresponding vanity case, holding notebook, ash trap and pincushion on the left side.

A feeling of tasteful completeness is gained from the interior ensemble. Careful thought has been given to make the bodies inviting, convenient, luxurious, by providing sales-helping, satisfying refinements as characteristics of these new cars.

When you look at the new Series Fifteen DeLuxe models you will be impressed with the wealth of interesting and attractive refinements that work themselves into every detail of the exterior design. And you will notice, if you study the subject closely, that every one of them blends into the ensemble—none makes a clashing note—each has been carefully thought out in advance to provide just the right accent on the part of the car on which it appears.

Fenders Add an Airplane Touch

The graceful, curved *airfoil fenders* are surely worthy of first mention in connection with exterior unity. They

dispel once and for all any thought of fenders as individual elements in assembly—give the impression of being an integral part of the body.

The new *bumpers* are an important note in the all-over design of the car. Made of one piece, crowned so as to catch the light, running full across the car both front and rear on all models, they express the up-to-dateness and verve which characterize the Series Fifteen DeLuxe body lines.

Custom Touch on Running Boards

The *running boards* are studied with far more than usual care and have been executed in design and craftsmanship in a way nothing short of the customized manner. The moldings on their outer edges are chromium plated and shaped to continue the contour of the fenders. The surface of the board is covered with plain black rubber, and on the top of this are five lengthwise strips held to the board by metal sockets, completing not only a distinctive looking assembly, but one which will give exceptional service.

The *headlights* are characterized—as in the case of most fine cars—by a dignified simplicity of design. Their mounting has been effected by the ball and socket method, which makes adjustments of the lights easy and positive. The two headlights are carried on a crossbar which ties the front fenders together. Wiring for the lamps is concealed in a tube beneath each light.

So that nothing shall conflict with the sweeping lines of the airwing fenders, the *parking lights* are now mounted on the cowl at a point which blends nicely with the juncture of the body moldings and windshield, giving another point of brilliance where it is most effective.

The *tail light* on all DeLuxe models has the three-unit assembly, which combines tail, stop, and back-up lights.

In making *demountable wood wheels* standard equipment for the entire Series Fifteen DeLuxe line except the Speedster, an advanced trend has been struck which has been much in evidence at recent custom salons and the exhibitions at both Paris and London. These new Franklin wheels present an extremely smart appearance due largely to the extra large chromium plated hub cap

covers with which the wheels are equipped. These covers conceal not only the hub, but also the six wheel retaining bolts. When carried as spares the wood wheels mount this same type of hub cover. The Speedster is furnished with five wire wheels as standard equipment.

The *trunk rack* of interesting new design becomes another style feature as well as a utility. It is mounted at a cocky angle, has a husky looking appearance, and is set off with a quality touch by rubber strips running along the four crosswise bars.

Rear End Streamlining

In carrying out the general streamlining of the Series Fifteen DeLuxe designs, the *gas tank cover skirt* plays an important part. This element is curved to be in harmony with the rear fenders and to blend with the back panel of the bodies. In its broad sweep it emphasizes the low-swung appearance of the car.

Battery in New Compartment

A refinement in keeping with custom procedure is the installation of the *storage battery* in a compartment reached through a door in the right running board shield. The running board on the left incorporates a *tool compartment* with a door of identical shape, fitted with a lock, as is the battery compartment.

Chromium plating of all outside *hardware* is continued. The equipment in this model, however, is distinguished by having cylinder locks separate from the door handles, operated by the switch key. By avoiding in this manner all possibility of unintentional locking of the doors, owners will be relieved of another possibility of annoyance. Locks are located on the right front doors for all models except the Limousine, in which the rear compartment door is also fitted with a cylinder lock.

The Transcontinent Model—Franklin Quality at a New Price Level

To make the new Franklin available to a steadily growing class of buyers graduating to fine car ownership from middle-price cars, the Series 15 Transcontinent line is an

ideal sales builder. It includes ten body types and is available in the Roadster, Pursuit, Victoria Brougham, Convertible Coupe, Town Sedan, Sport Salon, Limousine, both 5-passenger and 7-passenger Sedans and 5-passenger Sedan on 132 inch wheelbase, which means that sport cars, personal cars and family cars are all offered to a greatly widened circle of buyers.

The Transcontinent line differs from the DeLuxe in that its standard wheelbase is 125 inches. Certain body types, however, (the Roadster, 7-passenger Sedan, Limousine and Sport Salon) are mounted on the 132 inch wheelbase.

From a performance standpoint, the Series Fifteen Transcontinent line will be on a par with the DeLuxe. Powered with the same engine, it will have the same zooming acceleration, the same effortless top speeds and the same sure, silent, sleepy idling of the DeLuxe jobs.

All the traditional provisions for riding comfort that have contributed so much to Franklin's reputation are displayed in the Transcontinent line, both in chassis features and body provisions.

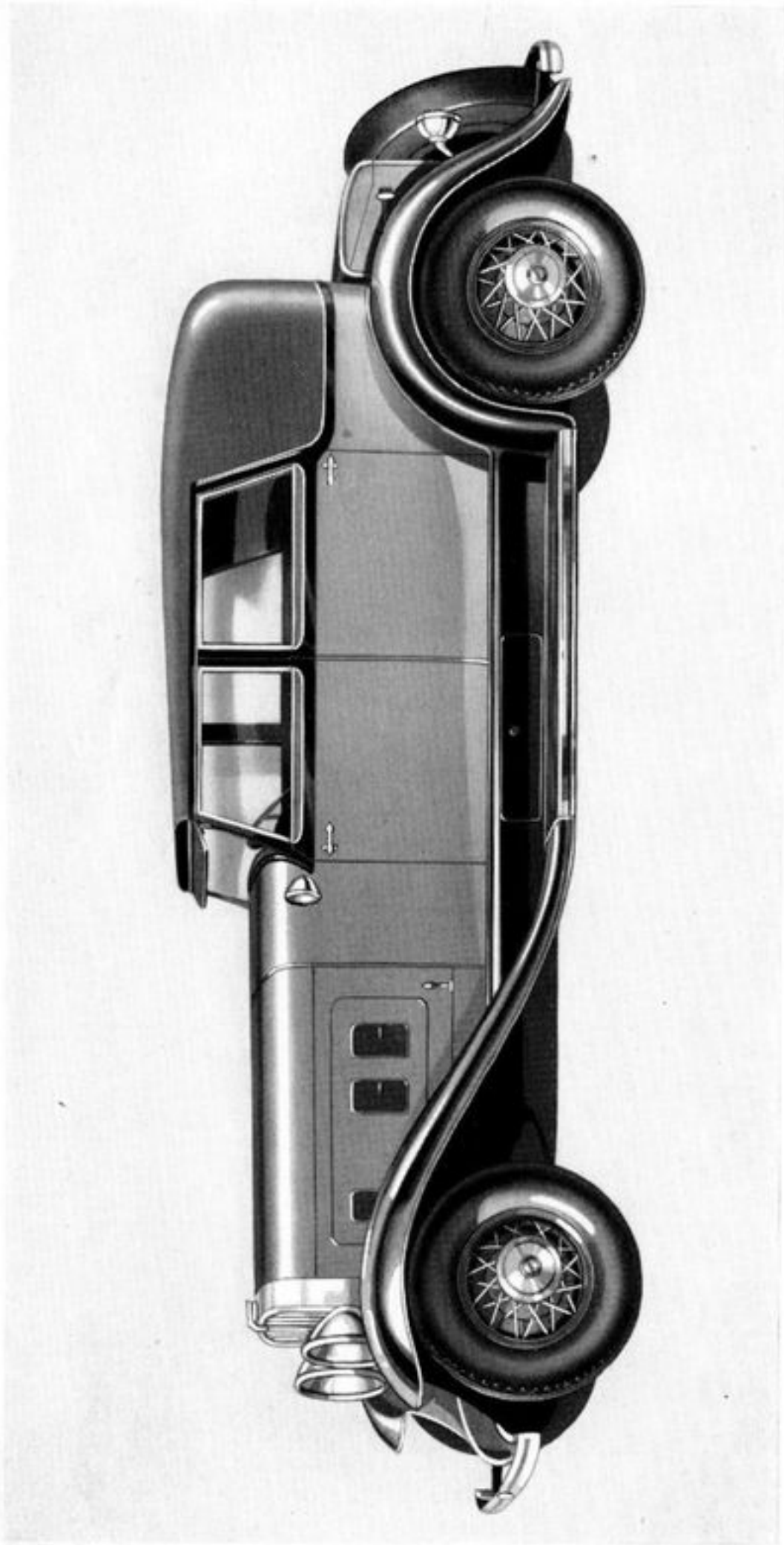
That these bodies fit the quality standards of fine car buyers, is already acknowledged in the fine service they have rendered. In style they fit admirably with the Series Fifteen hood design and are set off in complete ensemble by fenders, shields, and running boards made exclusively for the Transcontinent cars.

Several of the Transcontinent types are unduplicated in the DeLuxe line. One of these, the Sport Salon, is bound to have a lot of admirers. It attaches a swank to a closed body which is more and more having the call. It looks like a close-coupled job, yet it has all the ampleness usually associated with the Sedan.

The Roadster and the Pursuit, two open types, also give the youthful air to the Transcontinent line and will be the means of interesting a very special group in the Franklin car because they now represent, at their low price, a purchase that more than favorably compares with any fine car offering. It is rare in automobile selling to have in these two types such an advantage as Franklin provides—snappier, more powerful and greatly improved

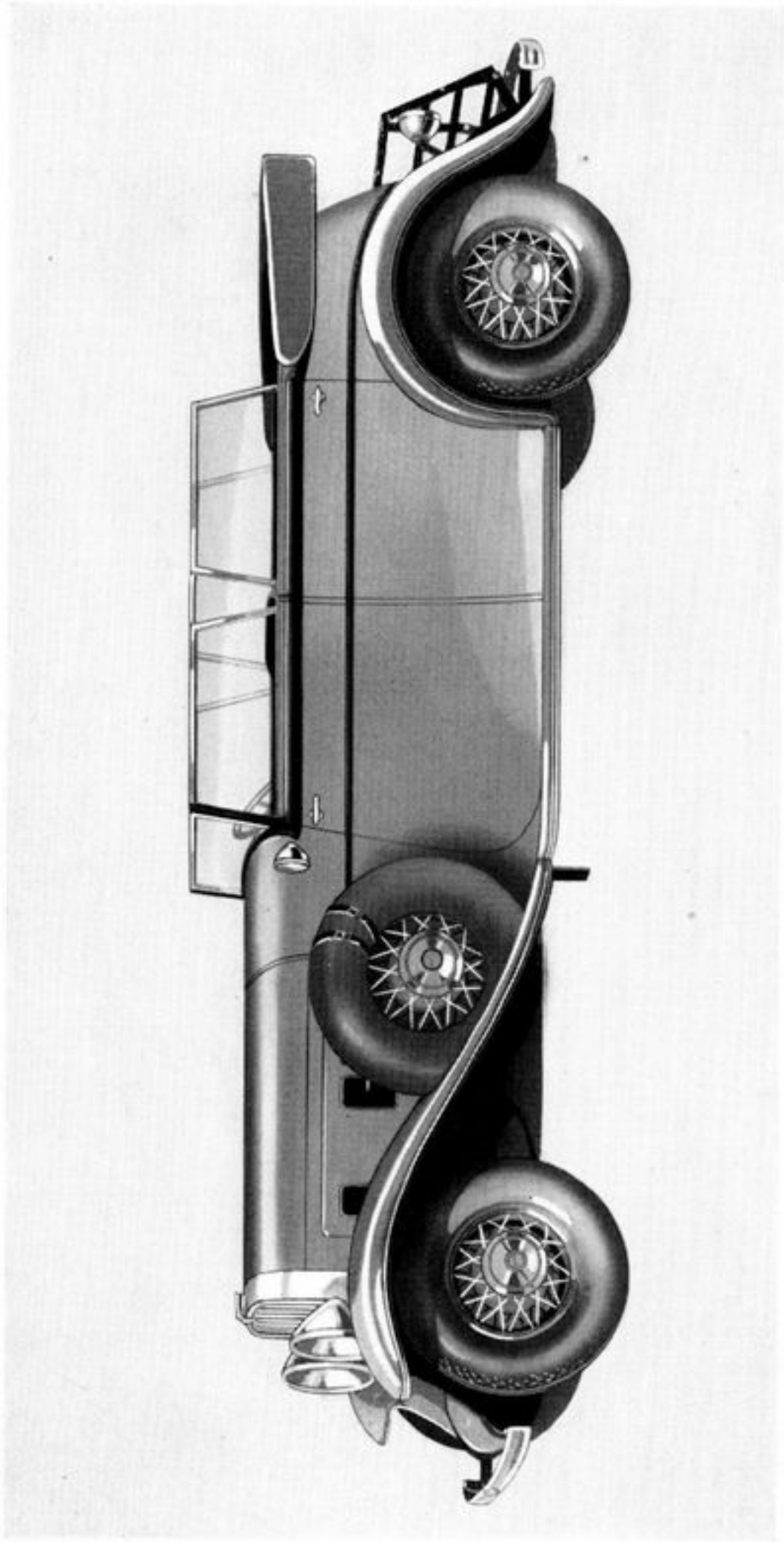
cars at several hundred dollars under the price of previous models.

Matching a power plant that displays the sweet running quality of a well built piece of machinery, the three-speed internal gear silent-type transmission is mounted in 125 inch wheelbase types, except the Pursuit which takes the four-speed silent-type along with the 132 inch wheelbase cars.



Series 15 DeLuxe Speedster

For four passengers. A smart enclosed sports car designed in the spirit of youth. Soft leather trim. Five wire wheels, spare on rear.



Page 67 Missing,

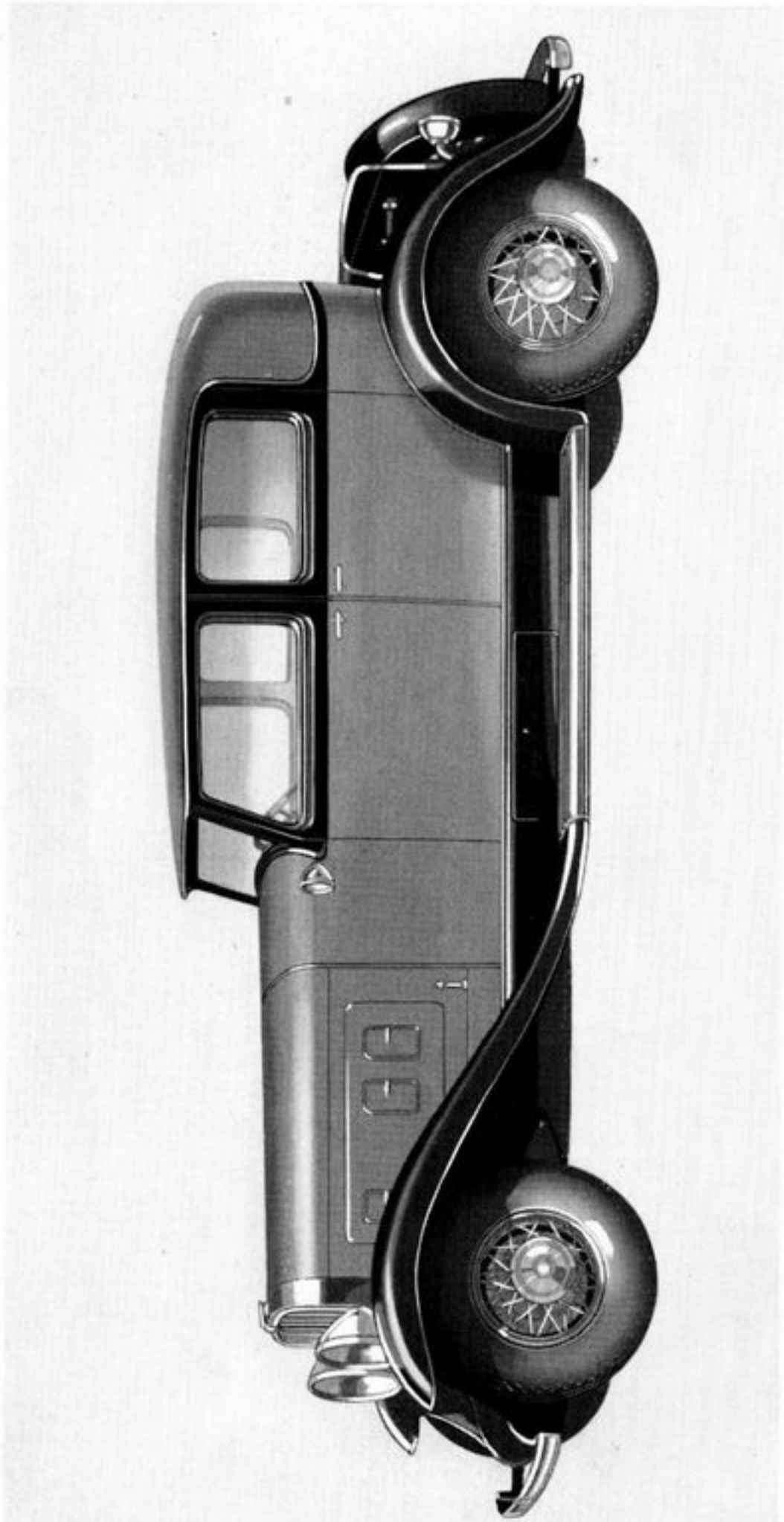
Describes Series 15 Delux Pirate Phaton

Page 68 Missing.

Shows Series 15 Delux Sedan

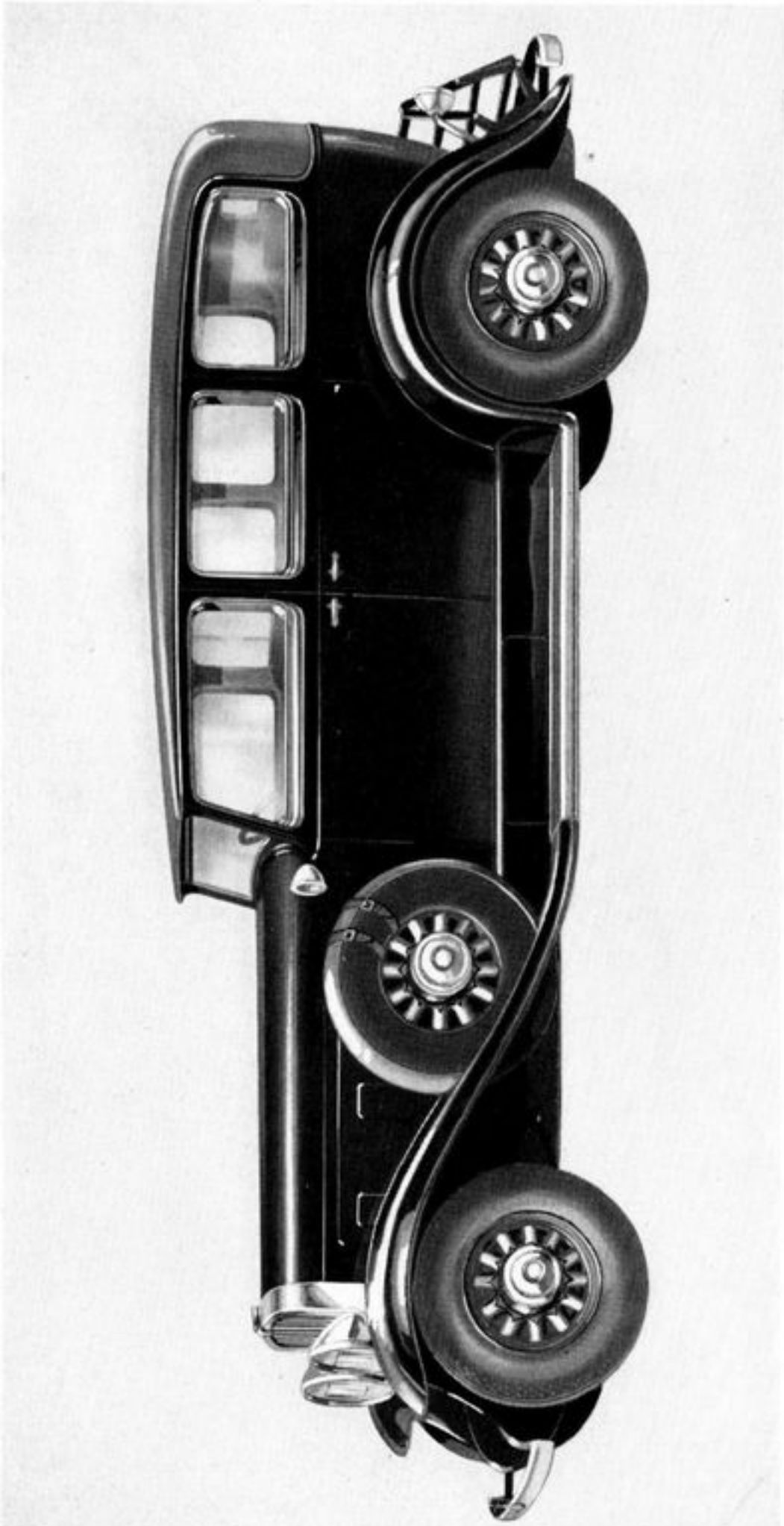
Series 15 DeLuxe Sedan

For five passengers. Unusually roomy. Upholstered in two-tone broadcloth or whipcord. Oxford models in soft leather at extra charge. Spare demountable wood wheel on rear.



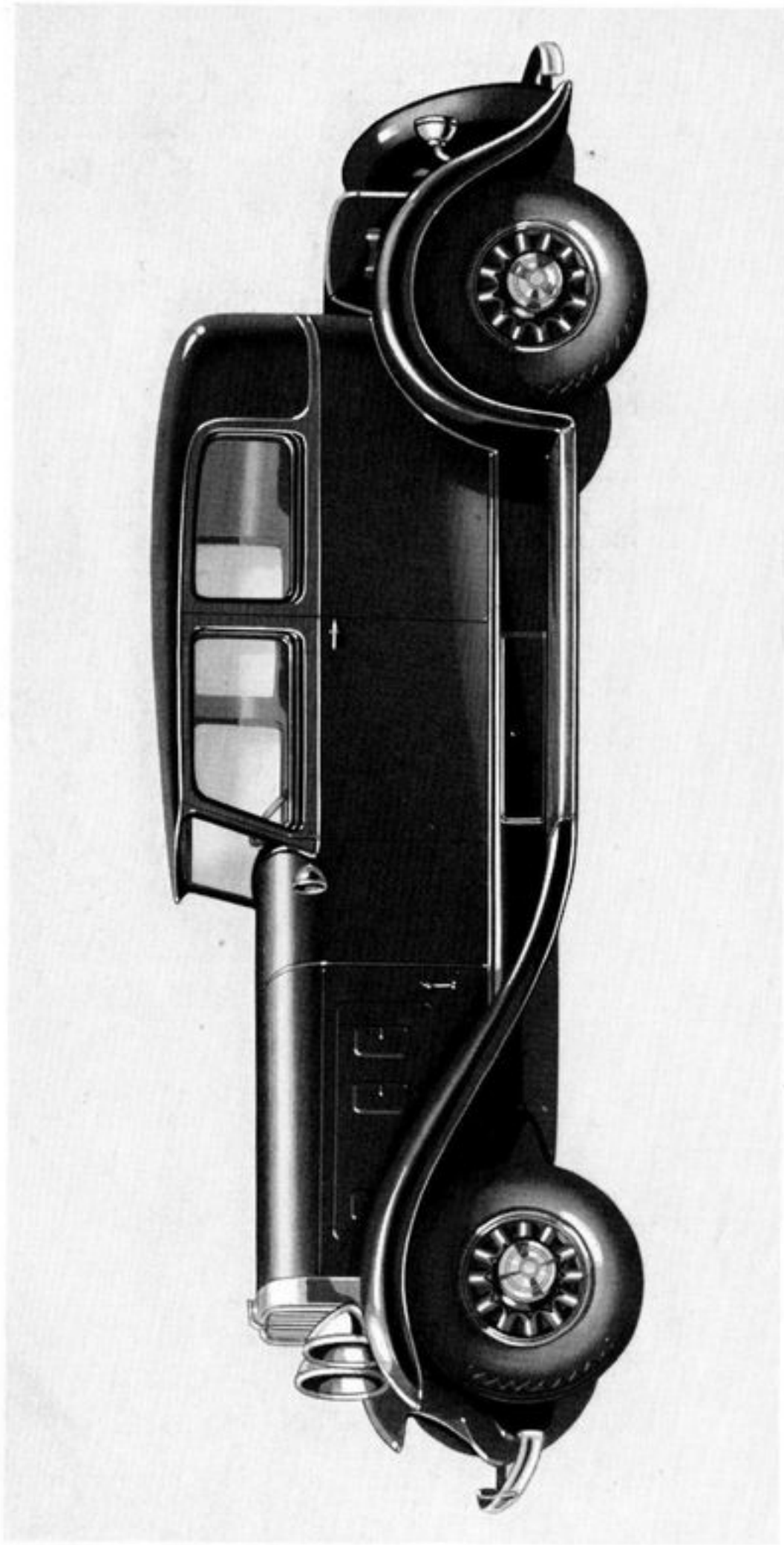
Series 15 DeLuxe
Club Sedan

For five passengers. A smart four-door close-coupled body. Adjustable straight seat in front and full-width seat in rear. Spare demountable wood wheel on rear. Wire wheels (illustrated) extra.



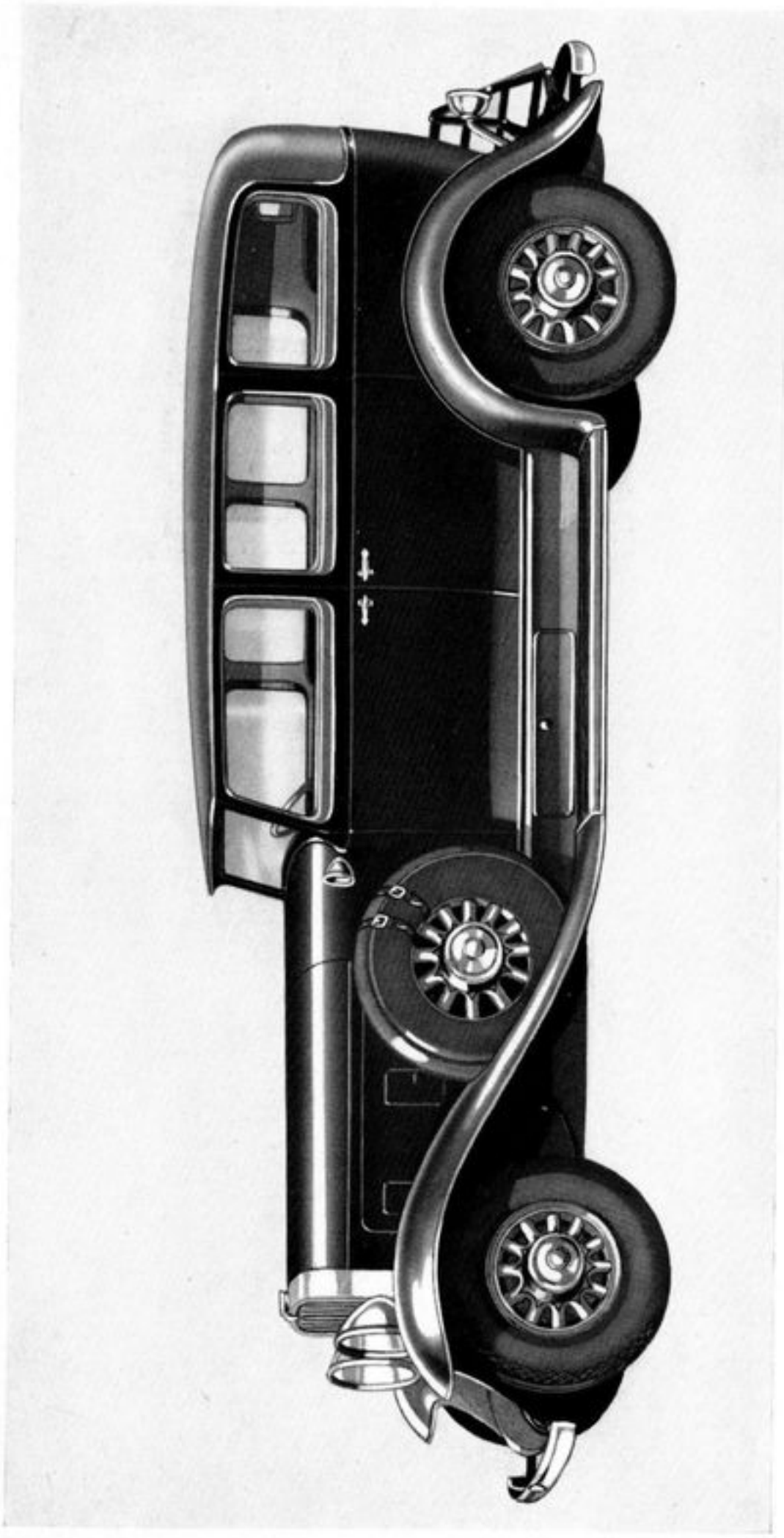
Series 15 DeLuxe Limousine

For seven passengers. Sliding glass partition separates passenger compartment upholstered in broadcloth from chauffeur compartment done in leather. Pillow, foot cushions, telephone and complete appointments. Trunk rack. 5 demountable wood wheels. Spare on left front fender.



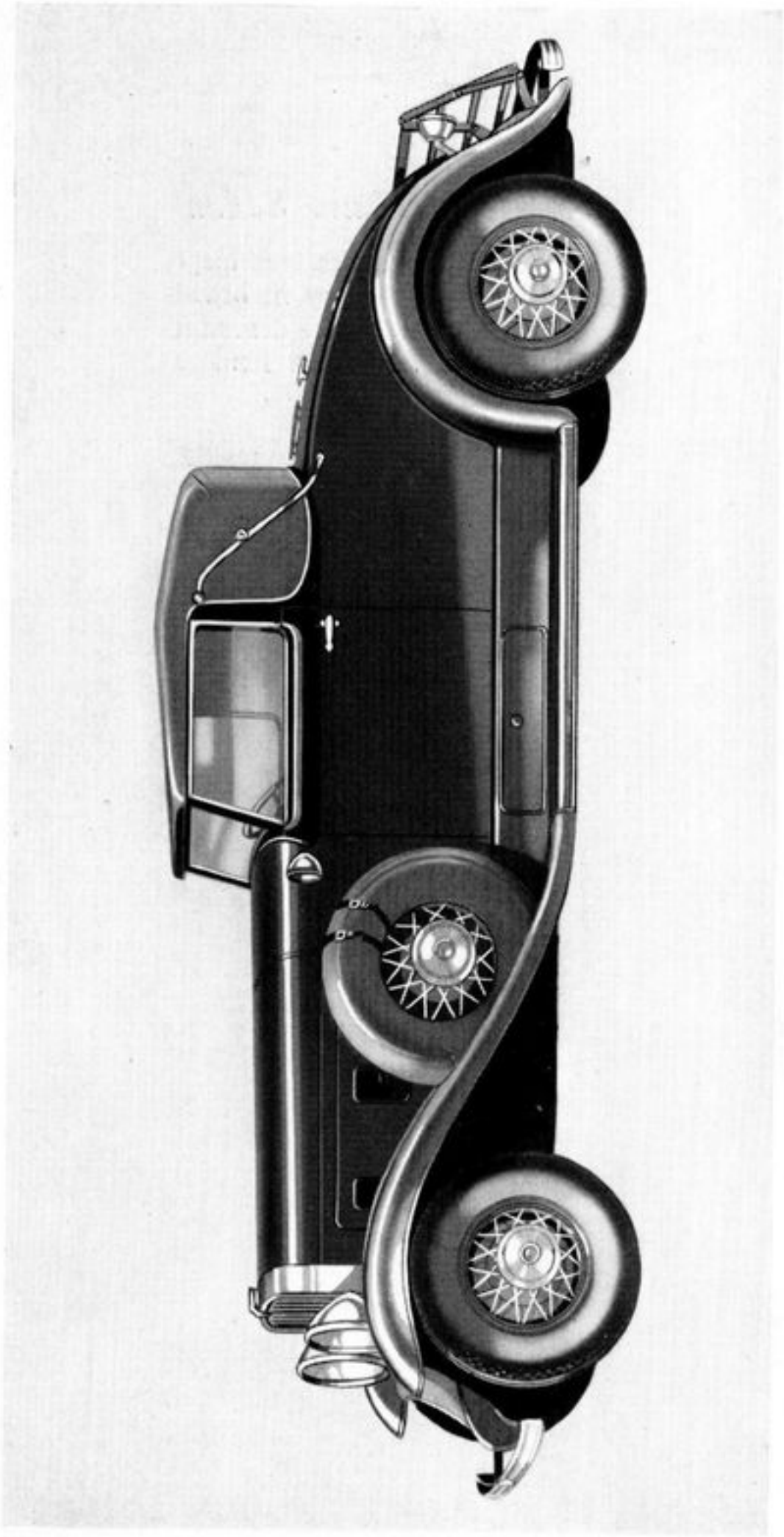
Series 15 DeLuxe
Victoria Brougham

For four passengers. Full width rear seat and Pullman front seats give unusually comfortable accommodation of passengers. Driver's seat adjustable, fore and aft. Metal-bound trunk covered with grained moleskin. Five demountable wood wheels. Spare on rear.



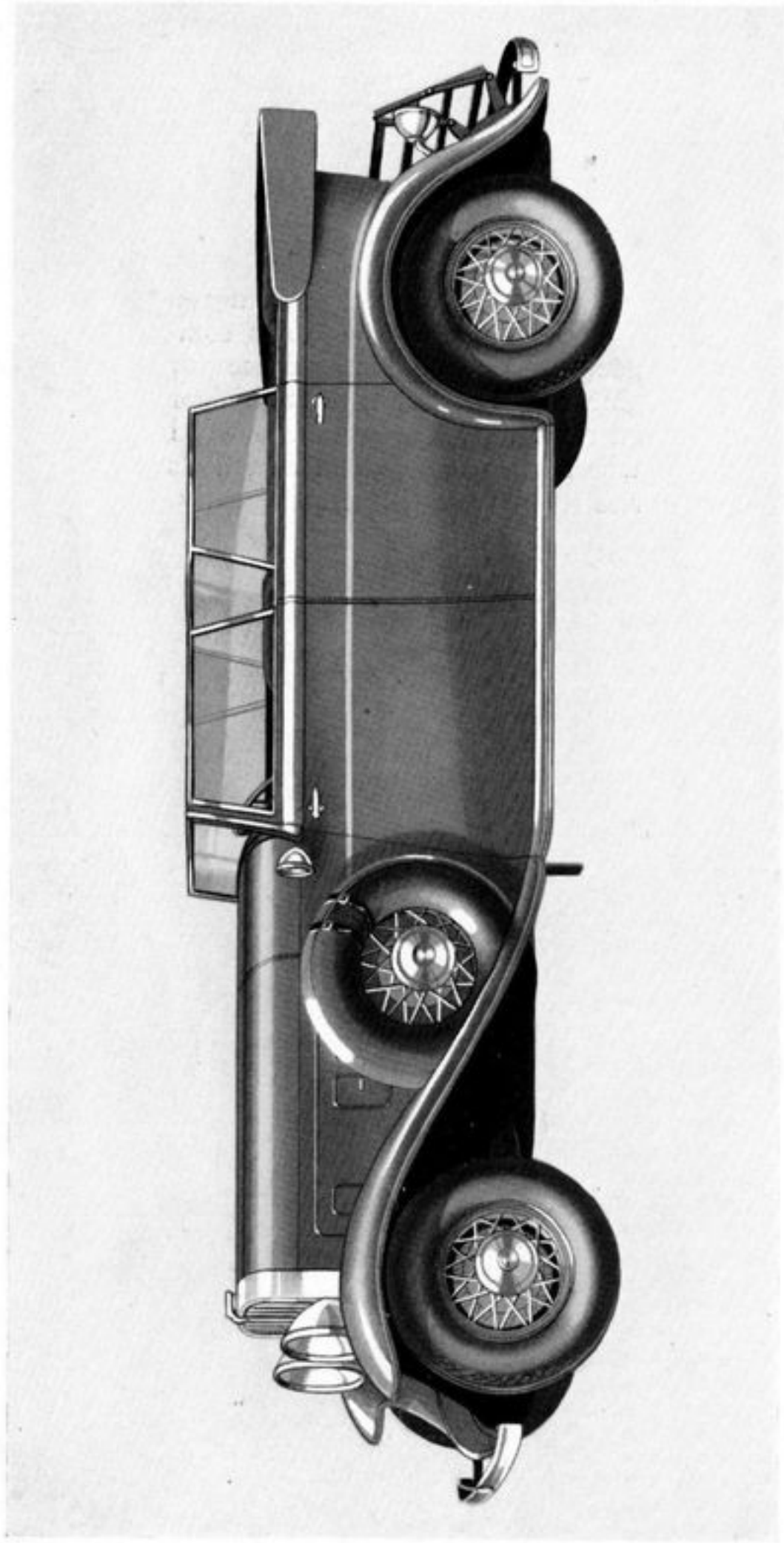
Series 15 DeLuxe Sedan

For seven passengers. A large, roomy car. Upholstery in broadcloth or whipcord. Spare demountable wheel on left front fender.



Series 15 DeLuxe
Convertible Coupe

For three or five passengers. Top with inside bows folds compactly. Rumble seat. Space for golf clubs accessible through door on right. Spare demountable wood wheel on rear. Six wire wheels and trunk rack (illustrated) extra.

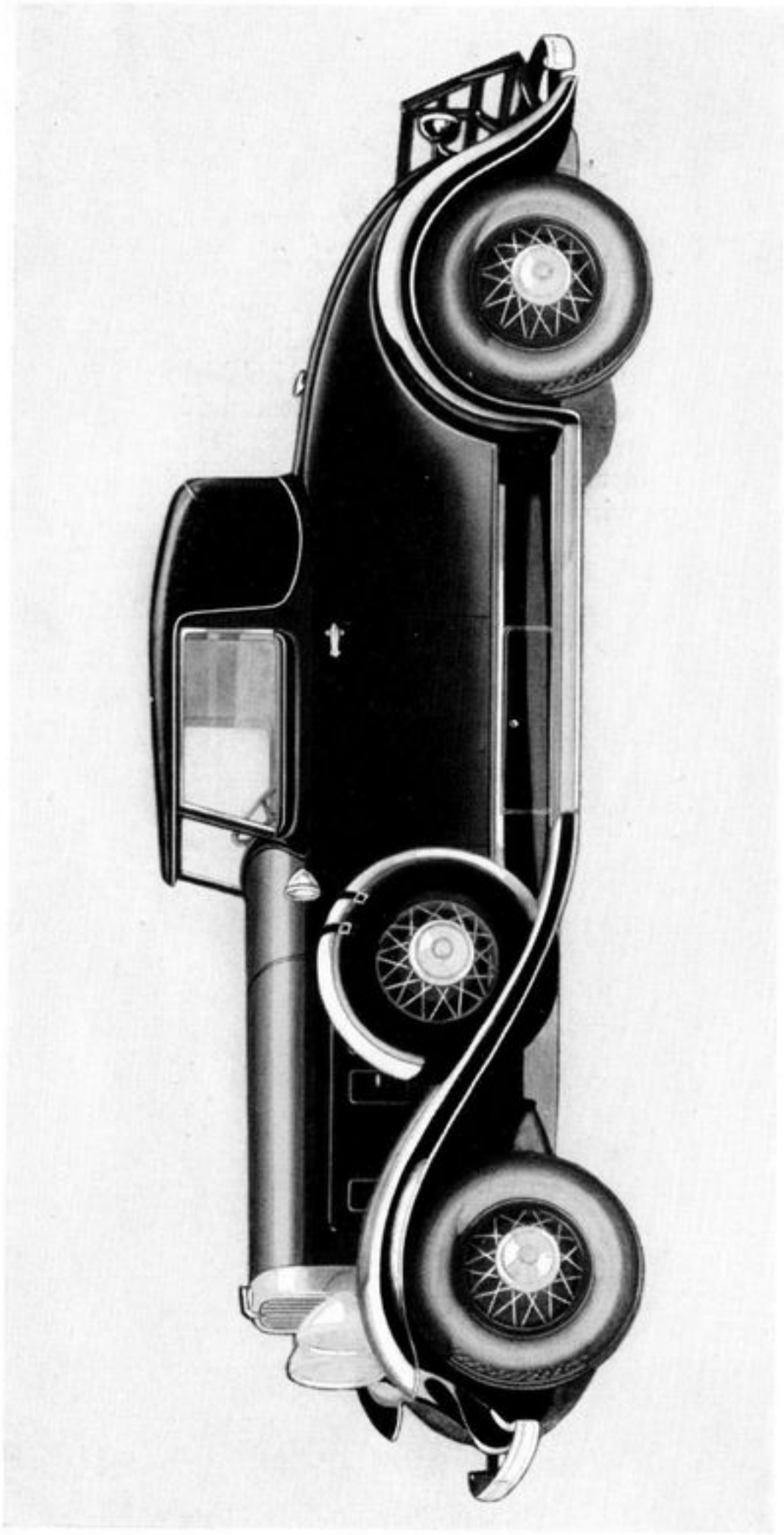


Revision 2

Series 15 DeLuxe
Pirate Phaeton

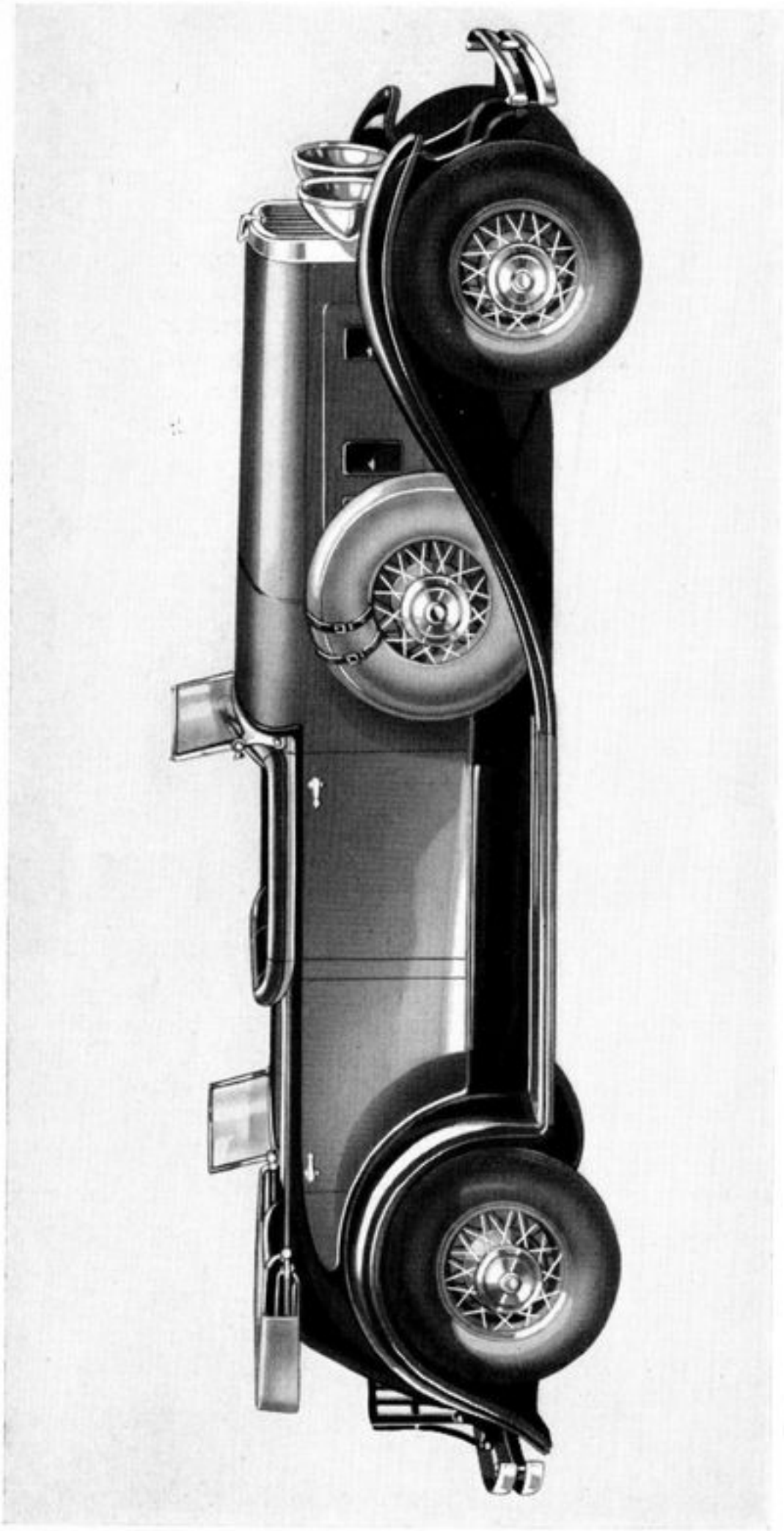
For seven passengers. Concealed running boards. Adjustable front door windows. Rear windshield with side wings. Six demountable wood wheels. Trunk rack. Two spare wheels on front fenders. Six wire wheels (illustrated) extra.

Revision 2



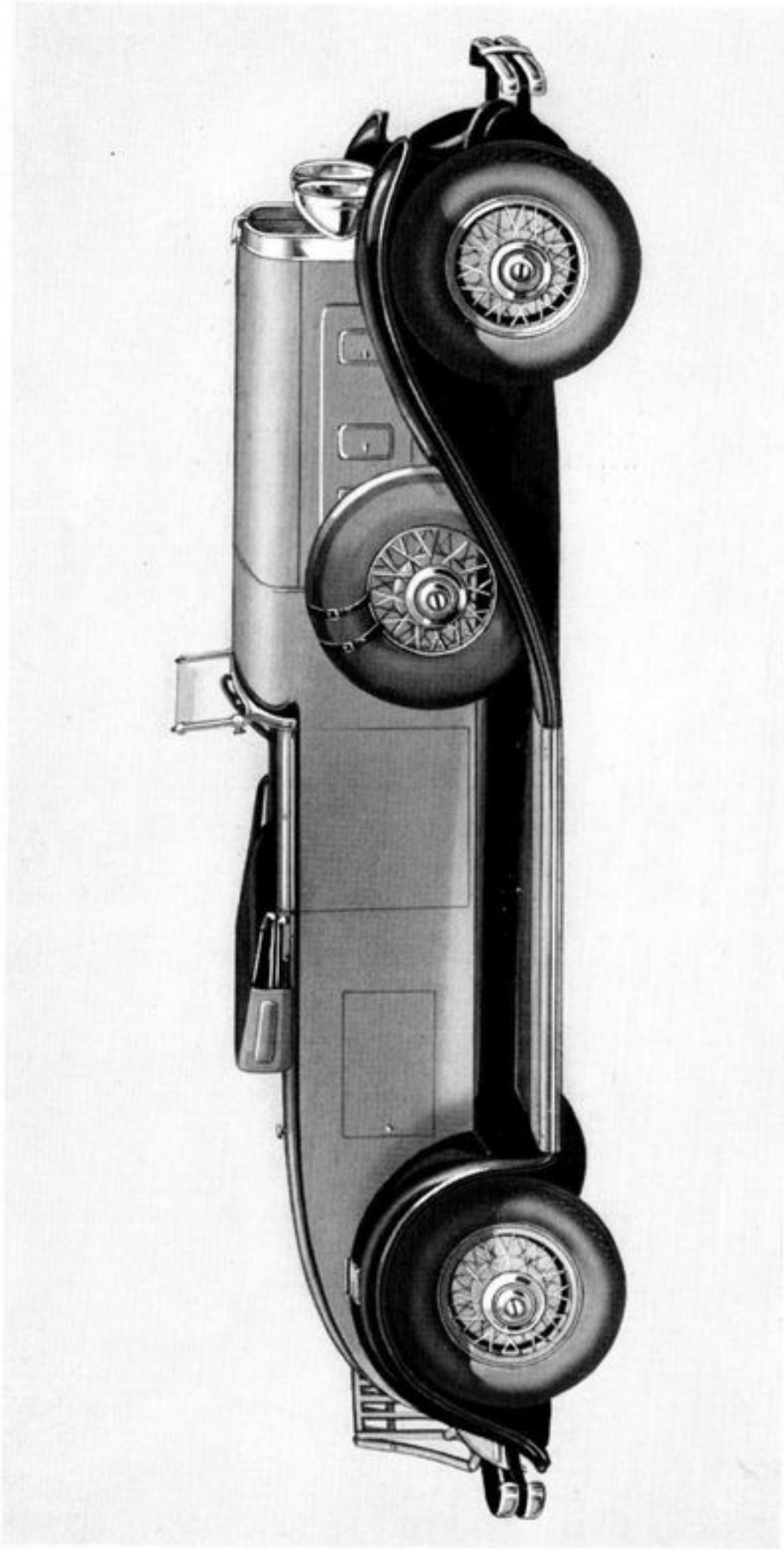
Series 15 DeLuxe Coupe

For three or five passengers. Stylish and convenient personal car. Soft leather trim. Rumble seat and golf bag compartment. Spare demountable wood wheel on rear. Wire wheels, trunk rack (illustrated) extra.



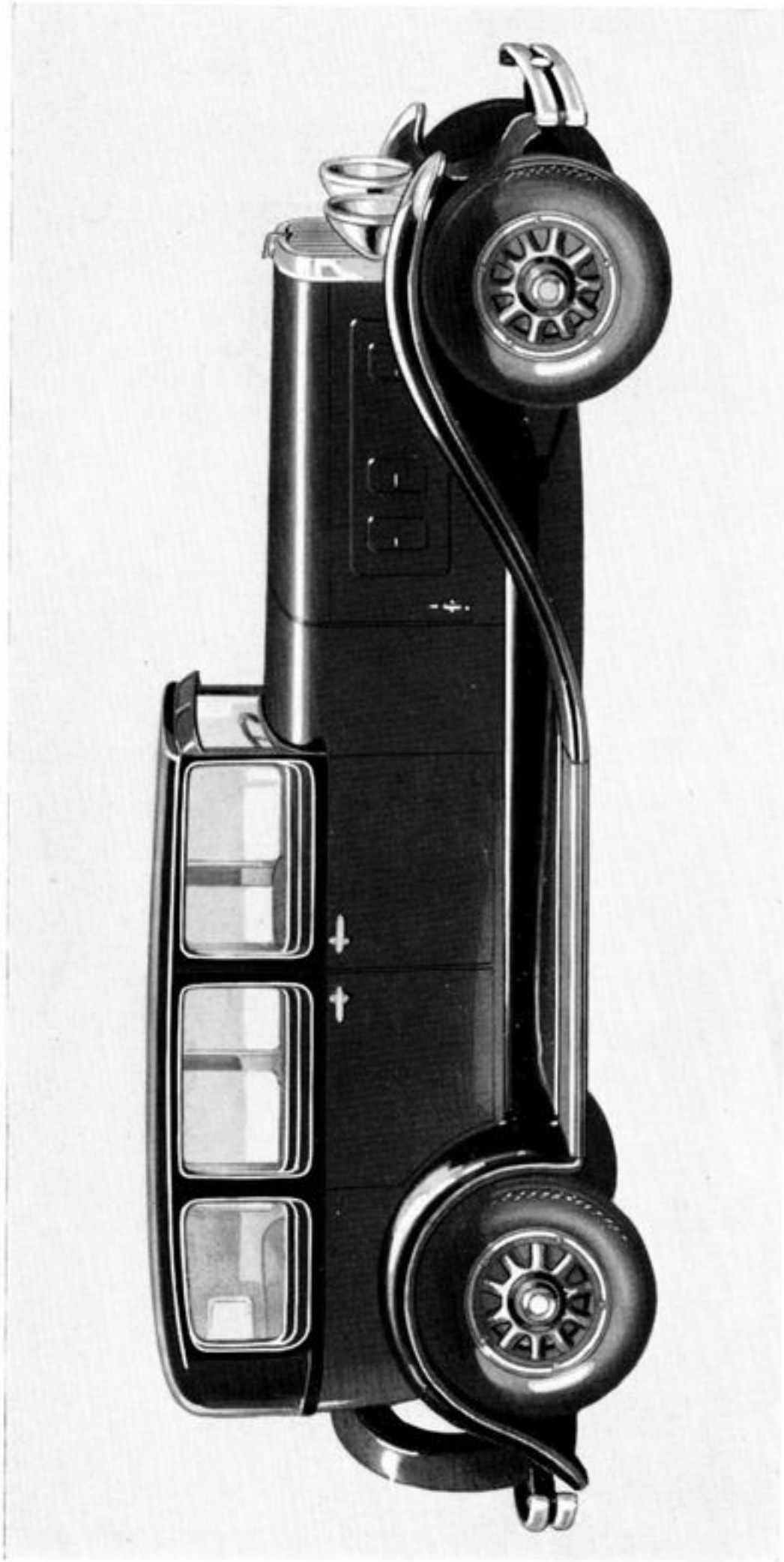
Transcontinent Pursuit

For five passengers. Low, rakish, with embossed body paneling. Airplane cockpit seats with two adjustable windshields and tonneau cowl. Leather upholstery. Spare rim on rear. Six wire wheels and trunk rack (illustrated) extra.



Series 15 Transcontinent Roadster

For two or four passengers. In the spirit of Franklin's road supremacy. Rumble seat. Golf bag compartment. Trunk rack. Six wire wheels.

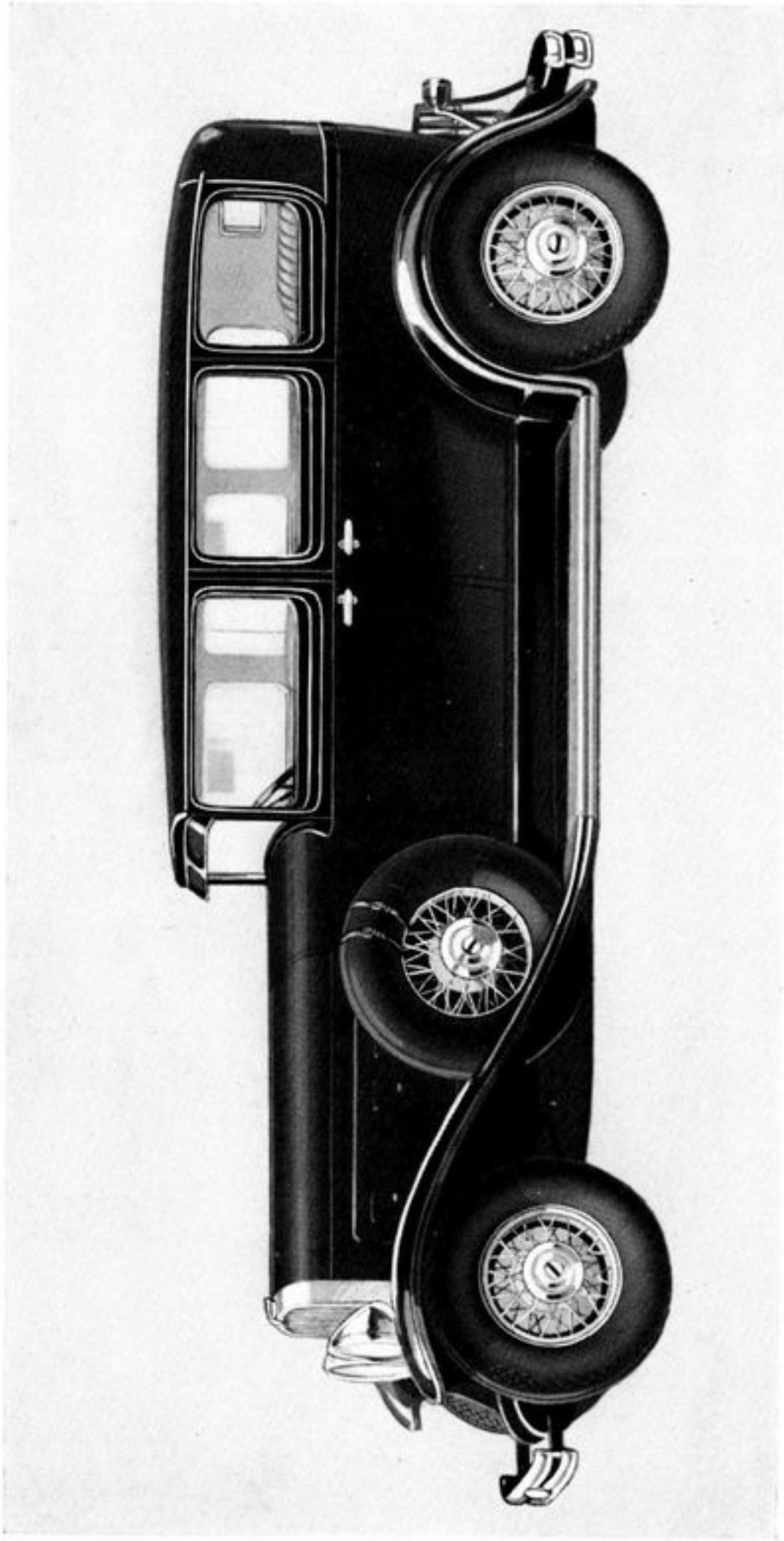


Revision 2

Series 15 Transcontinent Sedan

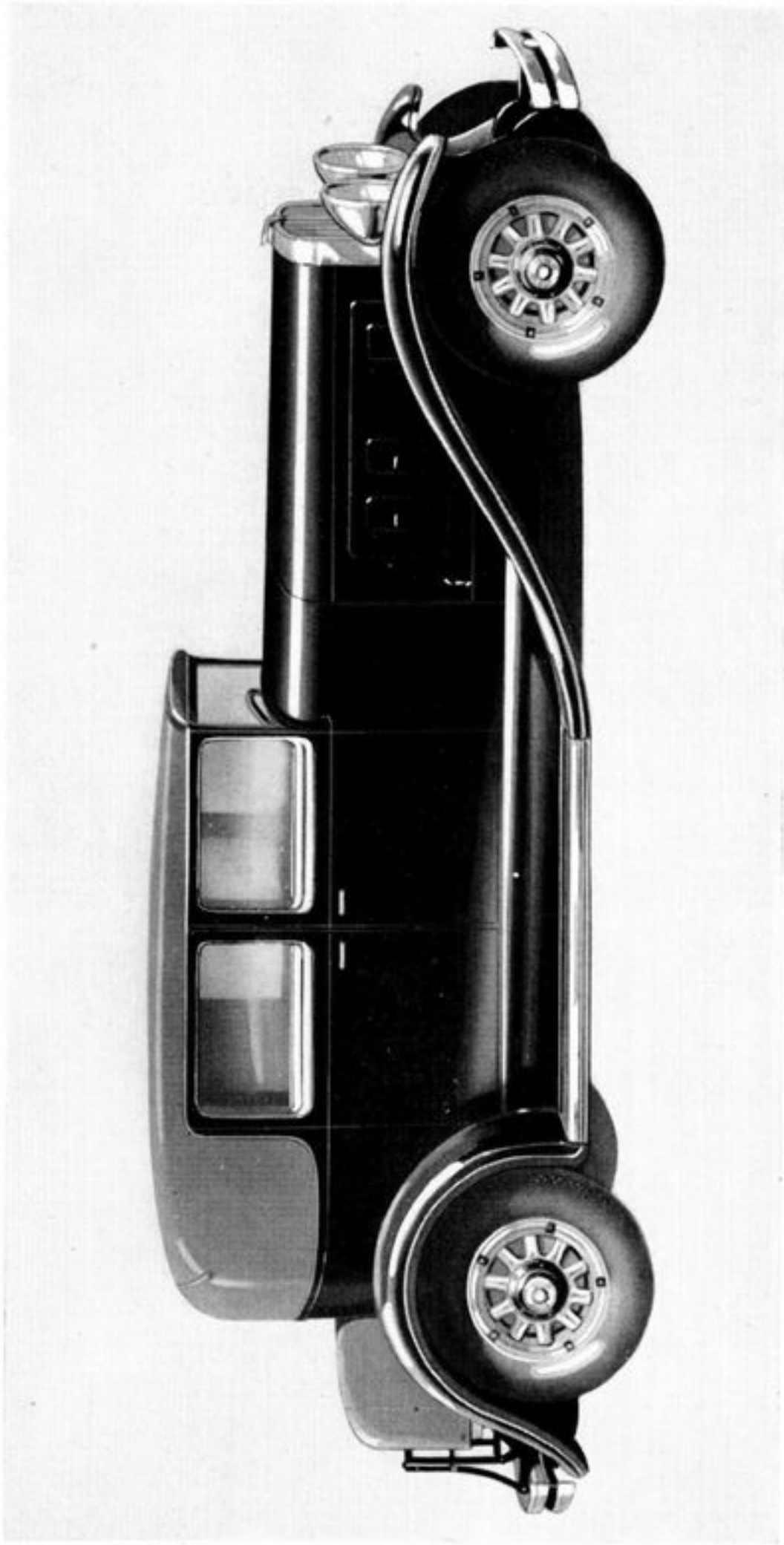
For five passengers. Adjustable front seat, pleated upholstery in broadcloth. Carpet in rear, rubber mat in front.

Revision 2



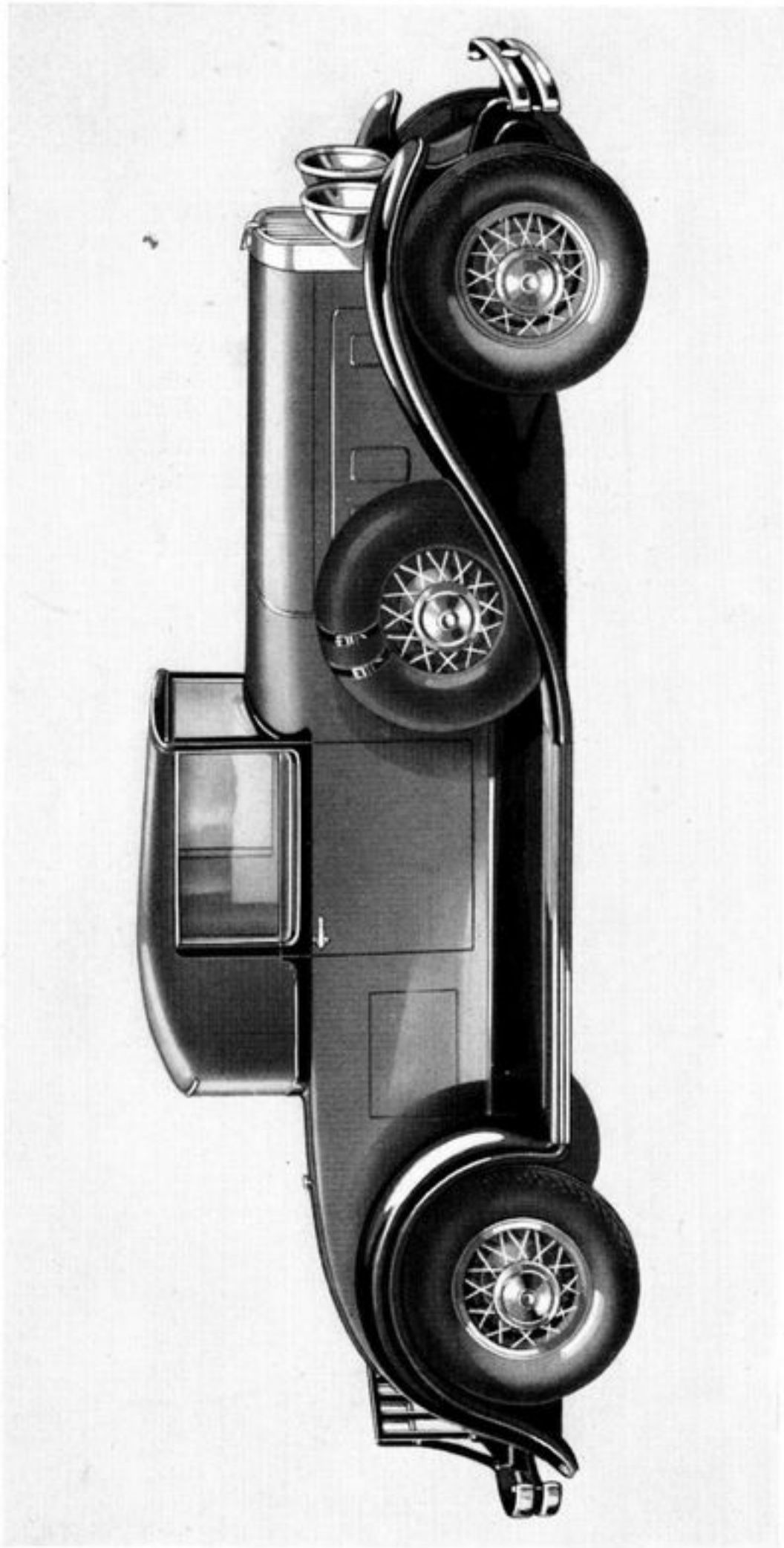
Series 15 Transcontinent Limousine

For seven passengers. Glass separating front and rear compartments slides sidewise. Auxiliary seats fold forward against front seat. Pillow, foot cushions, telephone and complete appointments. Trunk rack. Spare rim on left fender. Wire wheels (illustrated) extra.



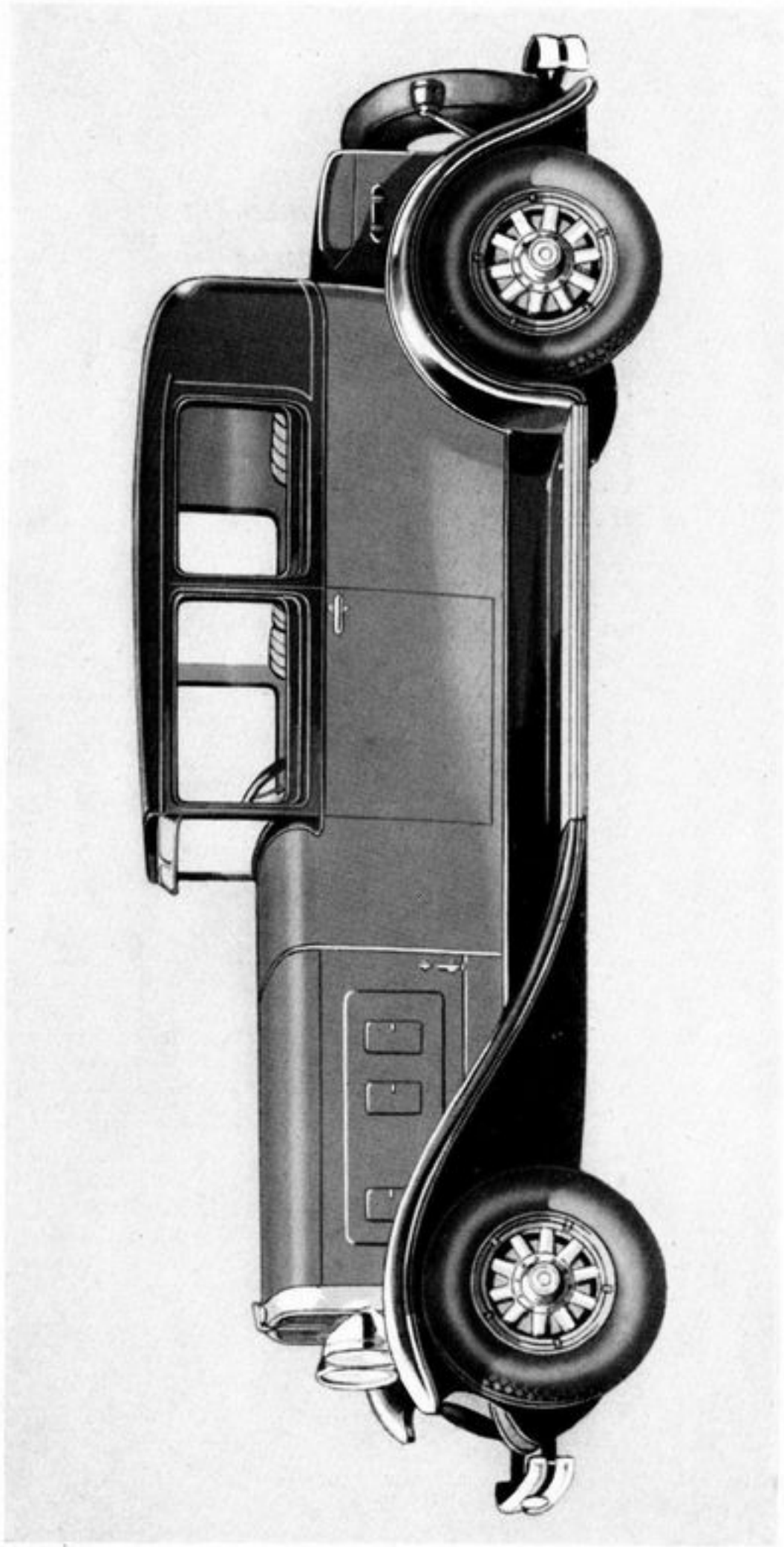
Series 15 Transcontinent Sport Salon

For five passengers. A smart sports car. Close-coupled body—yet with ample room for all passengers. The front seat is fully adjustable. Center arm rest and hassocks in rear. Large trunk having waterproof cover with Talon fasteners. Spare rim on left fender.



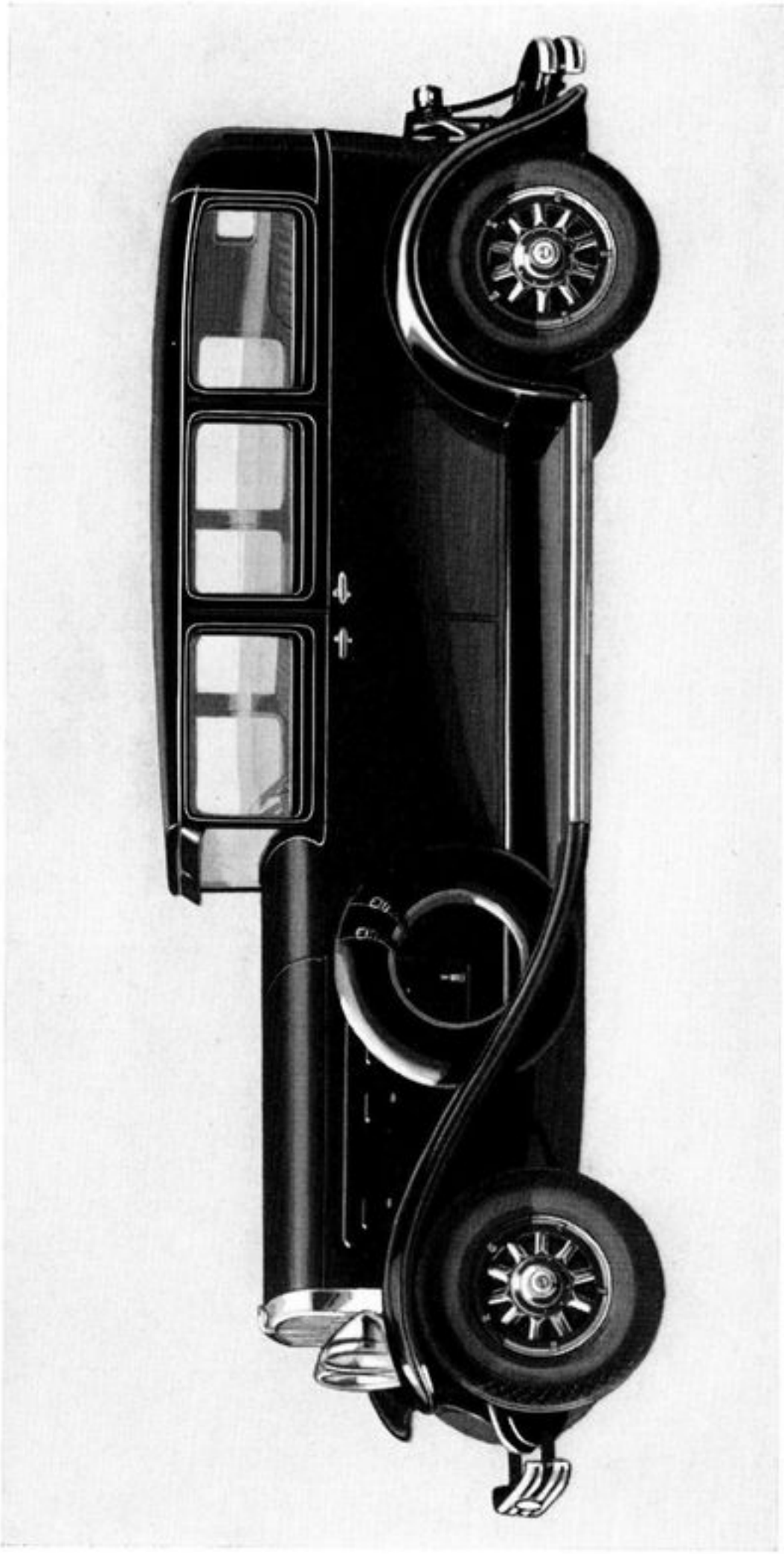
Series 15 Transcontinent Convertible Coupe

For three or five passengers. Top with inside bows folds compactly. Rumble seat. Space for golf clubs accessible through door on right. Spare rim on rear. Six wire wheels and trunk rack (illustrated) extra.



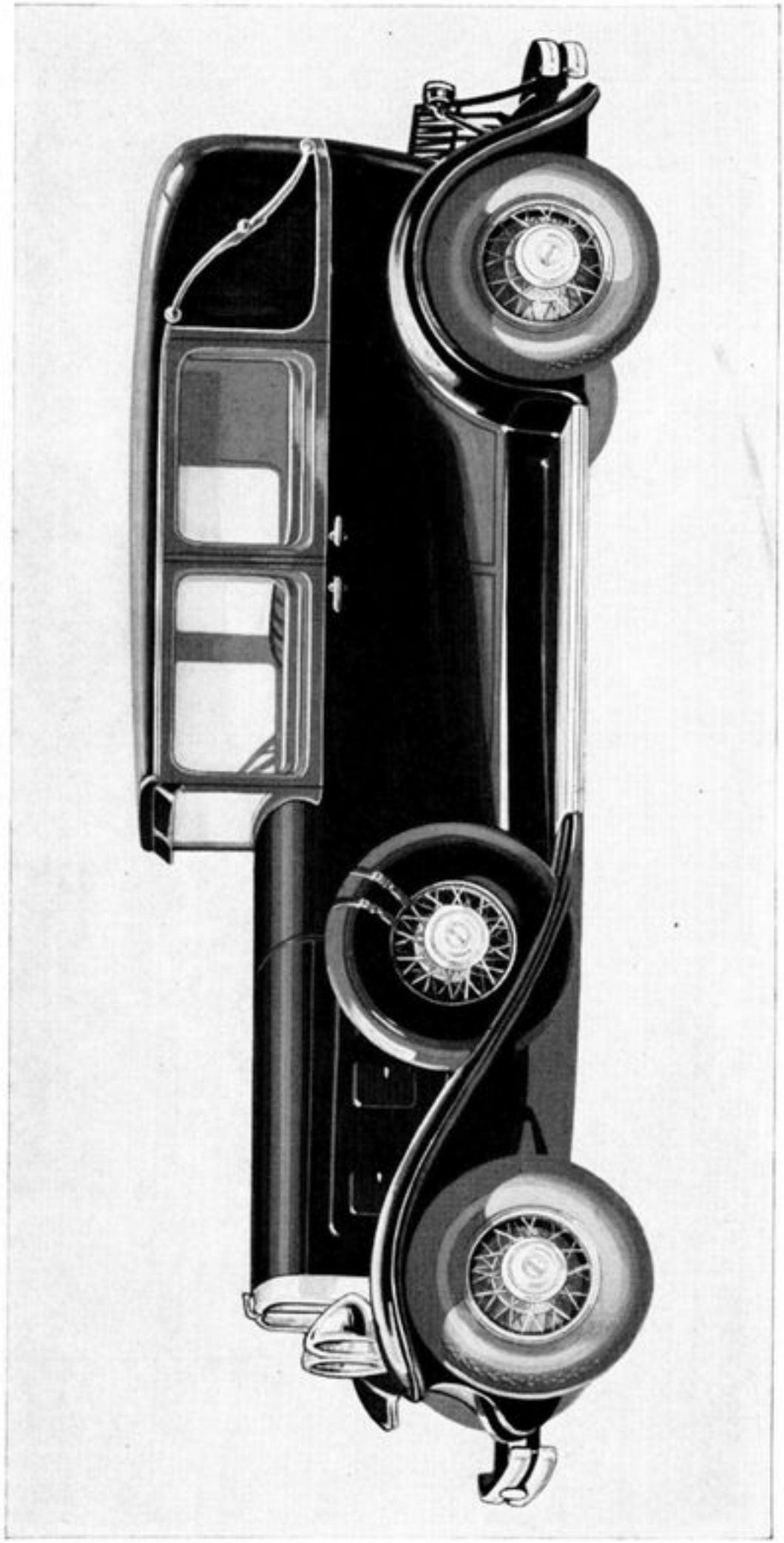
Series 15 Transcontinent Victoria Brougham

A two door model for four passengers. Comfortable, intimate accommodation of passengers on full width rear seat and Pullman front seats. Metal-bound trunk covered with grained moleskin. Spare tire on rear.



Series 15 Transcontinent Sedan

For seven passengers. A body with ample accommodation for occupants of both fixed and folding seats. Upholstery of fine broadcloth. Trunk rack. Spare tire on left front fender.



Series 15 Transcontinent Town Sedan

For five passengers. For social or family purposes. Trunk rack convenient for touring. Spare rim on left front fender. Six wire wheels (illustrated) extra.

Bodies—
Construction and Material

Basic Factors That Produce Tightness and Quietness Briefly Outlined

The fundamental points about Franklin body construction to remember are:

(1) Use of second growth ash body structure.
(2) Joints tenoned, glued and screwed.
(3) Body bracing.

These three factors form the basis for a mighty stout body. An additional safeguard to all Franklin bodies is the shock-counteracting influence of scientific light weight and flexibility *in the chassis.*

Ash is Tough, Strong, Does Not Warp and Holds Screws

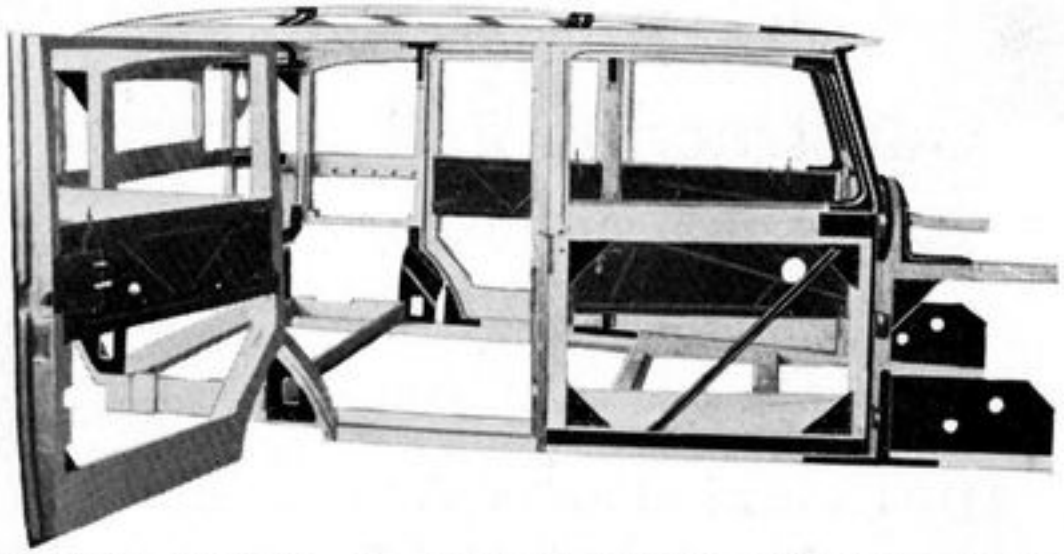
Franklin specifies ash because it is a long fibre wood and the toughest of all woods, weight considered. Being close grained, it holds screws well, and this helps to keep joints tight. Franklin ash is selected from trees that have reached their maturity, hence, are neither too old and brittle nor too young and soft.

One Franklin requirement is that the grain of the manufactured wood parts runs lengthwise.

The ash is first air-dried, then kiln dried and then returned to the equalizing shed where the wood adjusts itself to atmospheric conditions. This process assures that there will be a definite and permanent relation between the moisture content of the wood and the moisture content in the air. The danger of warping is thus minimized.

Tenoned Joints—Also Steel Templates Assure That Each Member Will Conform to Drawing

Steel templates assure the accuracy of cutting of the Franklin structural parts.



Franklin produces the strongest braced automobile bodies made. Metal brackets form the principal bracings; although stout wood body lining and extra wood members in the body skeleton also function as braces. Obviously, it is impossible to have all the metal bracings appear in an illustration and hence do justice to the subject.

Joints in the Franklin enclosed car fit within very fine limits. All important Franklin joints are of the tenoned type; this construction gives a fit to four dimensions instead of to two dimensions and adds strength and rigidity to the frame. In addition to the use of *ash* with joints *tenoned, glued* and *screwed,* Franklin goes in strongly for *body bracing.*

Stout Wood Body Lining—Steel Bracing of Joints

Franklin produces the strongest braced automobile bodies made as is revealed by the illustration. 50 metal braces are used in the sedan body. The lining of Franklin bodies and doors is given special attention and is far superior to that commonly used where mass production is the policy. Incidentally, it is a known fact that the composite type of body, with wood frame work and metal panels is much more comfortable to ride in than the all-steel body.

Quietness of Doors and Windows

Franklin doors are closely fitted, and they stay that way because as already stated, the ash in doors and body uprights is well seasoned and does not warp. Other factors

in Franklin door tightness are the special Franklin hinge instead of the common steel-stamped type, plus care in fit of Franklin hinge pins and the quality of the pin, and finally the stay-put character of Franklin dove-tails; also the non-rusting bronze striker plates for door locks aid in preserving the original door fit. Freedom from window rattles also may be attributed to accuracy of fitting. All Franklin windows are cut to dimensions; all glass is cut and fitted individually in each channel so there is no perceptible shake in any direction. Incidentally, the non-shatterable glass used is of finest quality. The rollers which hold the front windows and prevent vibration are just another little refinement that promotes Franklin satisfaction.

Exactness as to Body Details as Well as the Fundamentals

As evidence of quality in the details in addition to quality of the fundamental structure, we suggest noting such items as these:

Weather strips made of rubber tubing covered with windlace instead of paper cord, fabric covered; weather strips extend all the way around each door.

At door bottoms, rubber strips keep out the weather and wind.

Steering post tied directly to the body frame by means of a heavy steel brace.

Garnish rails made from steel, which holds finish better than wood.

Door parts of dovetail cast out of white bronze instead of the common yellow bronze, nickel plated. The advantage is the continued new-like appearance.

Floor boards are of 3 ply laminated wood with grain of center ply at right angle to outside plies. The floor board proper is closely fitted into a groove of the body frame and insulated with felt to prevent noises. The construction is stout and, being creosoted, the floor boards do not warp or deteriorate.

Cord welt which serves to make a tight joint between the fender and body and also guards against squeaks.

Appointments that are noteworthy are velvet rugs of

a construction especially developed for the hard service required, the disappearing door check, and the quality of window regulators, lever type door locks, door handles and the instrument board.

A peep under the Franklin cowl shows an unusual wood member which functions as a brace. It gives strength at a vital point. The metal cowl and dash bracing are also worthy of special notice. The details of other frame bracings are furnished in the illustration.

Closed car windshield frames set into the body front with sponge rubber section between the frame and the body, making a water-tight joint.

The standard of workmanship and materials is alike in the details, the fundamentals, the hidden parts and surface materials. Quality was the keynote of the first Franklin Sedan made (which incidentally was America's first production closed car) and the same quality has been the foundation of all other Franklin body successes.

Specifications

Series 15 DeLuxe

WHEELBASE: 132".

TURNING RADIUS: 21½ ft.

CHASSIS LUBRICATION: Zerk pressure system.

FRONT AXLE: Tubular with roller wheel bearings.

REAR AXLE: Semi-floating with roller bearings at wheels, differential and pinion.

WHEELS: Demountable wood on all except Speedster, which takes wire wheels.

DIFFERENTIAL: Bevel type with spiral bevel ring gear and pinion.

GEAR REDUCTION: 11 to 50 (4.54 to 1) for Convertible Coupe, Coupe and Pirate Touring. 11 to 52 (4.73 to 1) for 7-passenger Sedan, Limousine, 5-passenger Sedan, Club Sedan and Victoria Brougham. 12 to 51 (4.25 to 1) for Speedster.

SPRINGS: Full-elliptic 36" front and 42" rear.

BRAKES: Service—4-wheel hydraulic with two internal expanding shoes on drum, 14" diameter by 1¾" face.

Hand—double-acting contracting band on transmission drum.

ENGINE: 6-cylinder, 3½" bore by 4¾" stroke.

HORSEPOWER: 100.

COOLING: By direct application of air currents to each cylinder from powerful air turbine fan.

OILING: Recirculating system with positive force-feed to main and connecting rod bearings and timing gear from a double gear pump. Crankshaft drilled to connecting rod bearings. Connecting rods drilled to supply cylinder walls and pistons. Six-quart oil reservoir. Oil filter.

CRANKCASE: Aluminum with steel oil pan.

CRANKSHAFT: Seven main bearings fully counterbalanced.

CONNECTING RODS: Duralumin, I-beam type.

WRIST PINS: Case hardened and chromium plated; clamped in connecting rod.

PISTONS: Aluminum Invar-strut with four piston rings with oil control feature.

CYLINDERS: Cast individually of nickel-iron. Cooling flanges cast integral with cylinder walls.

CYLINDER HEADS: Cast individually of special aluminum alloy with cooling flanges cast integral with head. Cylinder heads attached to cylinder by six bolts.

VALVES: In head, enclosed, automatically lubricated.

TIMING CHAIN: Silent type; also drives generator.

FAN: Air-turbine direct-connected to crankshaft.

CARBURETOR: Special Stromberg with Franklin attachments; electric Fuemer automatically operated; air cleaner and fuel transformer.

IGNITION, GENERATOR, AND STARTER: Delco Remy.

CLUTCH: Improved dry-plate; located in flywheel

TRANSMISSION: Four speeds forward and one reverse. Silent third speed.

DRIVESHAFT: Tubular with two enclosed universal joints.

FRAME: Steel channel section, flexibly built.

LIGHTING: Single contact 6-volt system.

GASOLINE SYSTEM: 20-gallon tank at rear. Gasoline pump and filter.

BATTERY: 6-volt, extra large capacity.

TRUNK: With the Club Sedan, Victoria Brougham and Speedster.

TRUNK RACK: With the 7-Passenger Sedan, Limousine, Pirate Touring.

GENERAL EQUIPMENT: Windshield and all windows non-shatter glass; double automatic windshield wiper; crankcase ventilator; large hydraulic double-acting spring controls; ignition lock on dash; stop light; back-up light; cigar lighter in instrument board; two package compartments in instrument board; front and rear full across bumpers; interior gold-backed rear-view mirror; robe rail or strap, complete set of tools; oil quantity gauge on instrument board; gasoline gauge on instrument board; head lamps with double filament bulbs; cowl lamps; thermostatically controlled hood front shutter; North East speedometer; Waltham clock; spare wheel and carrier. Spare tire lock. At extra charge, spare tires, tubes and covers.

OPEN CAR APPOINTMENTS: Genuine hand buffed hand crushed leather upholstery of new soft texture. Top boot and side curtains of mackintosh bound to match upholstery; walnut finished top bows chromium mounted; velvet carpet, door and cowl pockets, permanent windshield front and rear.

CLOSED CAR APPOINTMENTS: Two inside sun visors, genuine broadcloth or Bedford Cord upholstery; Butler silver finish mountings; fine quality window shades; soft upholstered side arm rests; folding center arm rests in rear seats; velvet carpet in front and rear of all models; polished walnut grain dual tone finish instrument board and cowl arch cover; window regulators on all side windows; double latch doors with push lock on inside; dome lights in Limousine; corner lights in 7-passenger Sedan, 5-passenger Sedan, Club Sedan, Victoria Brougham, Convertible Coupe, Limousine and Speedster; step light on 7-passenger Sedan, Limousine and Speedster; vanity and smoker sets with ash trays and lighter in rear compartments; foot cushions in 7-passenger Sedan and Limousine. Carpet covered foot rail in 5-passenger Sedan, Coupe (rumble), Convertible Coupe (rumble). For Limousine only: rear compartment clock, telephone and pillow.

COLOR: Lustrous Pyroxylin finish, changed in scheme from time to time to afford variety.

Franklin Automobile Company reserves the right to make any changes or improvements at any time without incurring any responsibility with regard to cars previously sold.

Series 15 Transcontinent

WHEELBASE: 125″ for 5-passenger Sedan, Town Sedan, Coupe, Victoria Brougham, Convertible Coupe and Pursuit; 132″ for 5-passenger Sedan, 7-passenger Sedan, Sport Salon, Limousine and Roadster.

TURNING RADIUS: 20¼ ft. for 125″ wheelbase; 21½ ft. for 132″ wheelbase.

CHASSIS LUBRICATION: Zerk pressure system.

FRONT AXLE: Tubular with roller wheel bearings.

REAR AXLE: Semi-floating with roller wheel, differential and pinion bearings.

DIFFERENTIAL: Bevel type with spiral bevel ring gear and pinion.

GEAR REDUCTION: 11 to 50 (4.54 to 1) for 5-passenger Sedan, Town Sedan, Coupe, Victoria Brougham, Convertible Coupe, Sport Salon; 11 to 52 (4.73 to 1) for 7-passenger Sedan, Limousine; 12 to 51 (4.25 to 1) for Roadster, Pursuit.

SPRINGS: Full-elliptic 36″ front and 42″ rear.

BRAKES: Service—4-wheel hydraulic with two internal expanding shoes on drum. 14″ diameter by 1¾″ face.

Hand—double-acting contracting band on transmission drum.

ENGINE: 6-cylinder, 3½″ bore by 4¾″ stroke. Horsepower 100.

COOLING: By direct application of air currents to each cylinder from powerful air turbine fan.

OILING: Recirculating system with positive force-feed to main and connecting rod bearings and timing gear case from a double gear pump Crankshaft drilled to connecting rod bearings. Connecting rods drilled to supply cylinder walls and pistons. Six-quart oil reservoir. Oil filter.

CRANKCASE: Aluminum with steel oil pan.

CRANKSHAFT: Seven main bearings fully counterbalanced.

CONNECTING RODS: Duralumin, I-beam type.

WRIST PINS: Case hardened and chromium plated; clamped in connecting rod.

PISTONS: Aluminum Invar-strut with four piston rings with oil control feature.

CYLINDERS: Cast individually of nickel-iron. Cooling flanges cast integral with cylinder walls.

VALVES: In head, enclosed, automatically lubricated.

TIMING CHAIN: Silent type; also drives generator.

CLUTCH: Improved dry-plate; located in flywheel.

FAN: Air-turbine direct-connected to crankshaft.

CARBURETOR: Special Stromberg with Franklin attachments; electric Fuemer automatically operated; air cleaner and fuel transformer.

IGNITION, GENERATOR, STARTER: Delco Remy.

TRANSMISSION: 3-speed internal gear for 5-passenger Sedan, Town Sedan, Coupe, Victoria Brougham, Convertible Coupe; 4-speed silent gear for 7-passenger Sedan, Sport Salon, Special Limousine, Pursuit and Roadster.

DRIVESHAFT: Tubular with two enclosed universal joints.

FRAME: Steel, channel section flexibly built.

LIGHTING: Single contact 6-volt system.

GASOLINE SYSTEM: 20-gallon tank at rear, gasoline pump and filter.

BATTERY: 6-volt, extra large capacity.

GENERAL EQUIPMENT: Windshield and all windows non-shatter glass; automatic windshield wiper; crankcase ventilator; large hydraulic double-acting spring controls; coil lock on dash; stop light, back-up light on 7-passenger Sedan, Sport Salon and Limousine; cigar lighter; front bumper; rear bumper or bumperettes; interior gold-backed rear view mirror; robe rail; complete set of tools; quantity oil gauge on dash; gasoline gauge on dash; lamps; thermostatically controlled hood front shutter; North East speedometer; 8-day clock; tire carrier; spare tire lock on Town Sedan, 7-passenger Sedan, Sport Salon, Limousine, Pursuit; at extra charge, spare tire, tubes and covers.

OPEN CAR APPOINTMENTS: Genuine hand-buffed, crushed-grain leather upholstery of new soft texture top boot and side curtains of mackintosh, bound to match upholstery; walnut finished top bows, chromium mounted; velvet carpet front and rear; door and cowl pockets; folding windshield; for Pursuit only, folding arm rest in rear seat; rear folding windshield; foot cushions.

CLOSED CAR APPOINTMENTS: Sun visor; genuine broadcloth upholstery and lining; Butler silver finished mountings; fine quality window shades; soft upholstered arm rests; folding arm rests in rear seats on Sport Salon and Limousine; velvet carpet in rear on all models and in front on Town Sedan, Victoria Brougham, Convertible Coupe, 7-passenger Sedan, Sport Salon, Limousine; rubber mat in front on other models; polished walnut grain garnish moldings; walnut grain finish instrument board and cowl arch; window regulators on all side windows; double latch doors; dome light in Town Sedan, Coupe, Victoria Brougham, Convertible Coupe, 7-passenger Sedan, Sport Salon and Limousine; corner lights in 5-passenger Sedan, Town Sedan, 7-passenger Sedan, Sport Salon, Limousine; step light in 7-passenger Sedan, Sport Salon, Limousine; vanity and smoking sets with lighter in rear compartments; pillow in Limousine; carpeted foot rail in 5-passenger Sedan, Town Sedan, Coupe and Convertible Coupe; foot cushions in 7-passenger Sedan, Sport Salon and Limousine. For Limousine only: rear compartment clock, telephone and package rack.

STANDARD AND SPECIAL COLOR: Standard colors in lustrous Pyroxylin are changed from time to time to afford variety.

The Franklin Automobile Company reserves the right to make any changes or improvements at any time without incurring any responsibility with regard to cars previously sold.

Quality

The First Test of Quality Is a Road Run — The Second Test Is Evidence of Long Life — Note the Constructions That Produce Roadability and Reliability.

Quality is reflected in performance—first of all in roadability. It is generally accepted that the real fine cars ride better and hold the road better than the commonly constructed automobiles.

Durability, too, is an evidence of quality. Registration statistics are an index to useful life of the car. From recently compiled figures giving the number of Franklin cars licensed and running in the United States, and the factory production for the 10 years previous, after deducting several hundred cars which were exported and a few hundred more which were eliminated by fire or collision, the conclusion is readily drawn that the life of the average Franklin exceeds 10 years.

This advantage in long life is attributable to quality as it enters into the achievement of weight efficiency, flexibility and waterless-cooling. The close relation between costly constructions and Franklin's road-defying, wear-defying design principles is apparent in the full-elliptic springs, flexible drive application, and flexibly built steel channel section frame—factors in flexibility and scientific light weight.

The successful air-cooled motor, adaptable to service that would be abuse to any water-cooled engine ever made, is necessarily made from the most select materials that metallurgical experts can specify — fitted together with painstaking exactness — and furnished with features that go quite beyond the best fine motor practice. Such items typify the standard employed throughout the car!

Advantages of Case-hardened Metals

The spring bolt is a common example of the contrast in life between case-hardened metals and soft metals. Franklin spring bolts are made from steel with high wear-resisting properties. They are case-hardened, closely fitted into steel backed bronze bushings and, as a final safeguard, these wearing surfaces are lubricated by oil under pressure, and constantly kept swathed in oil.

King bolts, one of the most vital of automobile parts, are made in Franklin's case from steel, case-hardened, fitted into bronze bushings, lubricated under pressure; the original fit of these parts is held to within one to three thousandths of an inch.

Looseness is the symbol of old age. Franklin has eliminated looseness as is the case with no other car regardless of price—through flexibility and scientific balance—plus quality of which case-hardening is one safeguard.

Quality reflected in the Expensive Burnishing Lapping and Grinding Operations

The effect of a smooth polished wearing surface upon automobile life naturally is better appreciated by engineers and mechanicians, than by automobile users.

If one were to examine under a powerful microscope a bearing surface which had not been ground or burnished, he would find that, what to the naked eye is a seemingly glossy and brightly polished smoothness, is in reality millions of fine saw teeth projections.

The burnishing and grinding operation removes these projections. Where this roughness is not removed at the factory, as in moderately priced automobiles, this saw-tooth effect is worn down as the car goes into service, and the original fit of the part is consequently disturbed before the car has gone 2,000 miles. *Permanently accurate fit is essential to quietness; sometimes an extra one-thousandth clearance in mated parts causes noise.*

Practical Tests of Quality—A smooth Motor, Quiet Gears and Frictionless Running

Motor smoothness is an outstanding mark of quality in an automobile engine; Franklin's smoothness is due to such quality constructions and manufacturing practice as a seven bearing crankshaft, Duralumin connecting rod, aluminum pistons, double flywheel, two dynamic balance tests and vibration absorber.

Another practical index to quality is the quietness of gears. The barely audible action of the Franklin transmission gears is attributed to the shape of the gear teeth—to the smoothness of the gear teeth—and to the wear-resisting character of the steel used. Franklin gears are not released by the inspectors until they are as quiet as

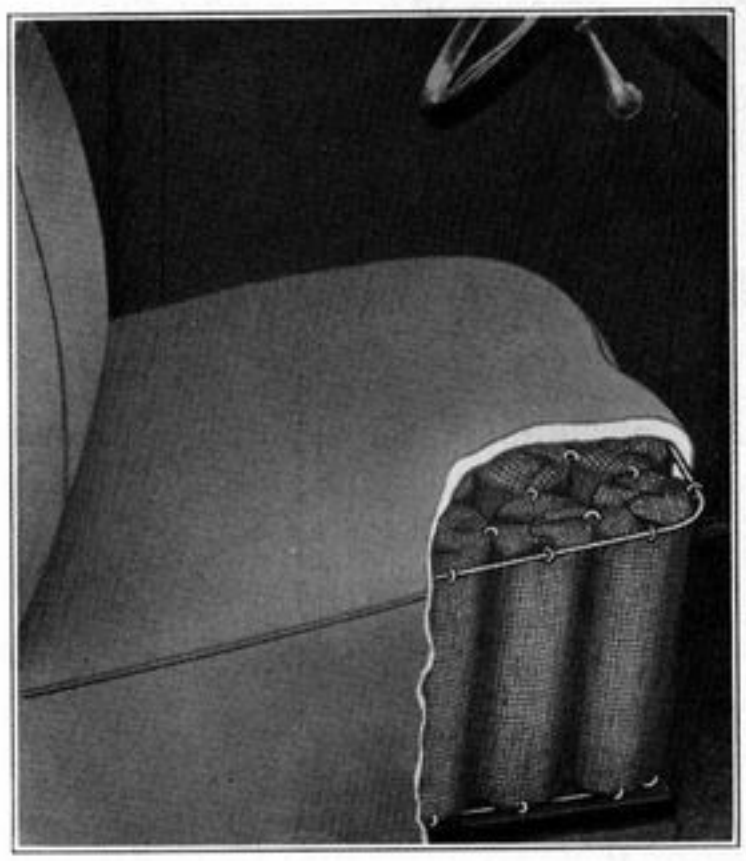
two balls rolling together—*and they stay that way*—they do not wear because: Franklin transmission gears are 3½% nickel steel and case-hardened.

Frictionless running, the result of weight efficiency, accurate fitting of parts, the use of ball bearings in important places and due finally to pressure lubrication, is indicated in easy rolling ability, in fuel efficiency and in technical tests showing that 84.4% of Franklin's engine power effectively reaches the rear wheels in driving force.

Another Distinguishing Point Between High Grade and Ordinary

To the technical man, specifications as regards metal are a sure test of quality.

To the authority on steel, chrome silico manganese and certain other brands, have a ringing assurance of



The Series 15 front seat results in a much more relaxed position for occupants. The illustration shows the individually cased "shock absorbing" springs. An extra layer of padding on the springs gives a "down stuffed" effect. Depth of cushion and back springs is much greater than previous models. By changing the seating angle of both cushion and back and the height of the seat back give a very luxurious ride. Note how the seat cushion upholstery extends close to the floor carpet, giving an impression of great depth.

quality in the same way that cordovan leather is accepted as an indication of fineness to shoe buyers. Ordinary carbon steel on the other hand indicates and reveals a down-to-a-price manufacturing policy.

Chrome silico manganese steel is used for Franklin rear axle drive shafts, steering gear shafts, spring leaves and other points that must withstand great stress.

Chilled cast iron with its high resistence to wear is specified for valve lifters.

High chrome steel, with its high heat-resisting properties, is specified for exhaust valves.

Tubular built-up front axle is made from nickel steel as contrasted with the I-beam forging of various parts.

Chrome Molybdenum steel—known for its great strength per unit of weight—is used for rear axle tubing.

Incidentally, Franklin buys steel from those steel mills which make a practice of catering to the quality field; it is noteworthy that even steel mills where the raw products are converted into material used by the automobile manufacturers, cannot cater alike to the quality buyer and the buyer who makes price the whole consideration.

The Influence of Aluminum Upon Performance and Long Life

The effect of aluminum on performance is well known in connection with Duralumin connecting rods, aluminum pistons, non-rust aluminum body panels in the closed cars. The use of light weight materials in certain places; e.g., reciprocating parts and unsprung parts changes the whole character of a car's performance—sets it apart from the ordinary.

The immunity of aluminum from corrosion is valuable and is noticeable in the permanently new appearance of parts made of this metal. These items illustrate hidden Franklin quality.

Earmarks of Quality which Buyers Usually See

Along with all these concealed parts are the more conspicuous examples of the high-grade materials and assemblies which the buyer would be likely to notice on the sales floor.

Some of the high-spots are: Extreme attention to the smallest details of finish, instrument boards, one-piece non-shatter glass windshields, chromium finish on all exposed metal work; larger and more expensive lamps; ship-shape mounting of spare tires; running board of deep section and generous proportions with nickel-silver trim — put on with concealed screws and with matting of heavy channel rubber; the perfect door fit; genuine crush-grain leather upholstery and lining; Butler silver finish mountings; vanities of unusual completeness; non-shatter glass throughout; two-way hydraulic shock absorbers; pressure re-circulating motor oiling with individual leads to each main bearing, and all the factors of flexibility and of the high-grade construction essential in air-cooling and scientific balance.

100% Inspection Insures Franklin Quality

The purpose of 100 per cent. inspection is to control those factors which determine long life and roadability. In manufacturing circles, the term 100 per cent. inspection or 50 per cent. inspection or whatever per cent. happens to be enforced, is an exact indication of the manufacturing standard — a sure measure of the quality of the product. 100 per cent. inspection is obviously the last word in manufacturing exactness and quality. Inspection thoroughness in Franklin's case concerns itself with accurate fitting of thousands of parts.

It means innumerable machine inspections and watching the quality of aluminum alloys, steel alloys and all the special Franklin materials by taking samples periodically to laboratories for scientific examination.

100 per cent. inspection means checking up on workmanship in delicate machine operations such as grinding, burnishing, lapping, gear cutting, hardening and special workmanship on each individual piece.

It means care in selecting wood, leather, fabrics, glass, chassis springs, seat springs and valve springs.

The influence of this inspection policy is felt *in every purchasing, manufacturing and assembling activity*. It includes the extensive final inspection, invaluable to the purchaser of the car.

On the other hand, the common practice of inspecting for size in the vital places only, followed by tests of the finished units and car, to make sure they will function, does not affect every manufacturing operation, and hence does not interfere with mass production.

To the automobile buyer, the inspection condition under which an automobile is produced is of fundamental importance.

Accurate measurements are particularly essential. The effect of close fitting upon length of life is so direct as to be almost beyond the layman's belief.

The indicator gauge, which determines the acceptance of Franklin pistons, checks for all dimensions.

If the original fit is loose, the free play between the parts expedites depreciation. An oversize so slight as to be imperceptible to the naked eye is enough to cause a noticeable irregularity in motor or chassis performance and lead directly to further development of wear.

But allow only *minimum clearance in file hard metals, then supply adequate lubrication,* and one has the difference between a four or five year car—and a ten year car. Franklin's long life advantage may be visualized by taking specific cases: A regularly inspected Franklin will go from 40,000 to 60,000 miles and farther before enough spring bushing wear has taken place to warrant replacement. Franklin's crankshaft, gears, steering connection ball and steering knuckle pins afford equally striking superiorities.

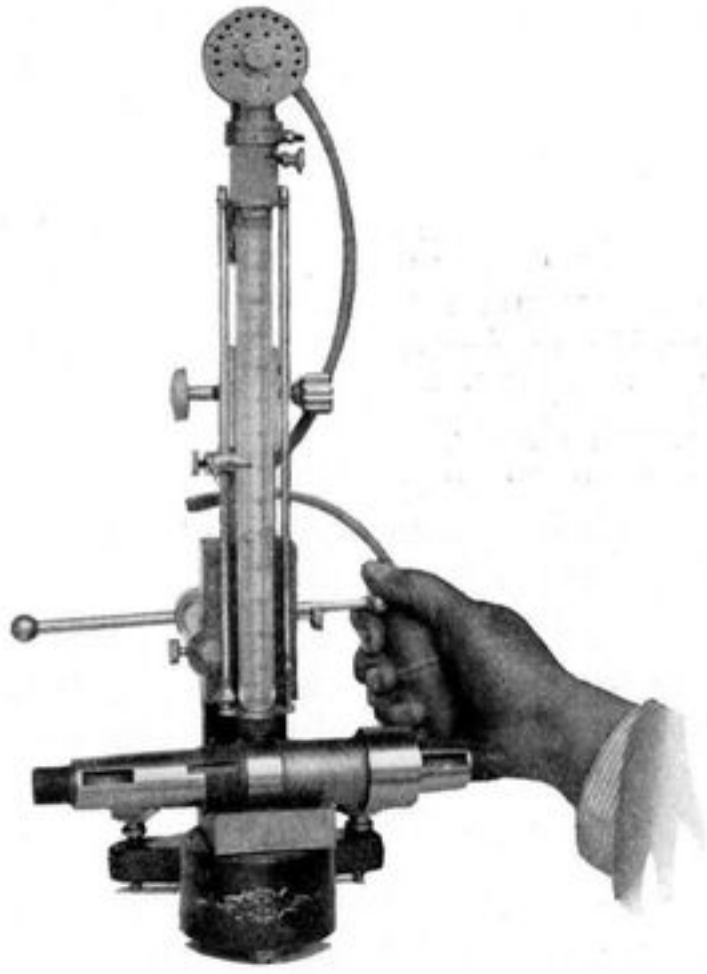
Extraordinary Materials and Workmanship Require Constant Critical Over-Seeing

95% of Franklin parts are inspected 100%, in other words checked individually for every requirement.

Each individual item is tested in gauges for size, hardness, strength or whatever property is required. Some of these gauges are kept in glass cases under constant temerature conditions so there will be no vibration due to heat or cold.

Some of the limits are as small as 2/10 of .001 of an inch — about 2/10 of the thickness of a fine cigarette paper. The limits in other Franklin cases are 1/2 of .001 of an inch—in still other places, .001 inch and .002 inches.

How Franklin succeeds in holding closely to drawings is largely a story of machine inspections and this takes one to every department of the Franklin plant; so interwoven are the checkups for size with the machining operations that ofttimes it amounts to just one painstaking process.



In the olden days, tests for hardness were made with a file. Now, even more accurate results are obtained with the scleroscope which shows the state of hardness at every point on a piece of metal and causes no bruises or damage to the part. The scleroscope is used extensively in Franklin manufacturing because of the abnormal number of case-hardened parts.

The rigid adherence to Franklin specifications, both in the early manufacturing stages as well as in final assembly, is indicated by the willingness of the Franklin plant to remove an irregularity from a completed car, regardless of how slight the irregularity may be, where it is, or how much labor is involved. Obviously, it is most economical to ferret out and scrap whatever is unacceptable at the earliest manufacturing stage possibly. This Franklin manufacturing standard can be maintained uniformly because Franklin does its own manufacturing.

To contract with the vendor for parts on a price basis would be to remove this factor of close supervision. Hence the Franklin car is made practically in its entirety in the Franklin plant.

Vital parts besides the motor, such as steering device and axles, are made in the Franklin factory and checked as minutely as the items above described.

In body construction, there are hundreds of short cuts

which can be taken if loose fits are tolerated, just as there are hundreds of short cuts in the making and assembling of chassis parts. In the construction of Franklin bodies, mortise fits are snug, accurate in fact within fine limits (a chisel fit as contrasted with a saw fit). Franklin doors are individually fitted. Hinge pins are selected with hair-splitting exactness—an important precaution against door looseness.

Despite the fact that the Franklin body is protected by flexibility against jolts, jars and strains as is the body of no other car, still few, if any, automobile body structures are braced as is the Franklin; this is a point which Franklin inspectors watch closely.

* * * *

The scope of Franklin's inspection activities already is indicated as taking in the entire manufacturing range:

Inspections begin with scientific tests of the raw materials; all shipments are held in quarantine until chemists, metallurgists and engineers have assured themselves that the special Franklin requirements are present:

Metals are chemically analyzed.

Samples of the alloy steels and also the aluminum alloys are tested in powerful machines for strength, elasticity or whatever property is desired.

The tubular main drive line, for instance, must withstand 13,000 inch pounds of twisting strain.

Seasoning of metals is equally important. Those experienced with metal know that green stock in the course of use takes on a condition known as "permanent set."

The action which takes place within metal may mean more to the reader when "permanent set" is discussed in connection with valve springs. Franklin inspectors have invented devices for giving to the valve spring this final and desirable condition, even before springs are assembled to the engine.

Franklin chassis springs represent wonderful quality. They not only are made from select spring steel, but there is a high degree of accuracy connected with the fitting of spring bolts which are bathed in oil for hours prior to assembly. Front springs and rear are not alike, for the reason that the load carried front and rear is dissimilar; the uniform comfort of Franklin cars hence

results from a carefully determined degree of softness, a proportioning of spring's suppleness to the load supported.

* * * *

Franklin case-hardened parts are tested 100%; which means at various places on the wearing surface of every part.

In the olden days, tests for hardness were made with a file; now there are highly developed instruments that reveal the degree of hardness at every point and without injuring the surface.

Equally as remarkable as the instruments for testing hardness are the finely gauged devices for ascertaining measurements, and strength, also smoothness of metal surfaces, and out-of-roundness.

Franklin cylinders must be ground to a dead smooth finish, and there can be no out-of-roundness; this guards against friction and makes possible an effective ring seal. The usefulness of these instruments and the value to the automobile buyer can be estimated also in connection with pistons, crankshaft, wrist pin, steering connections, spring pins, camshaft, service brake drum and 95% of the parts.

Included in the Franklin inspection room equipment is the device for testing camshafts. The opening and closing points of cams cannot vary more than three degrees from the drawing. This point has much to do with the uniformly good performance inasmuch as accurate timing of the valve mechanism is assured.

After each of the units is assembled, and after the complete car is assembled, the inspector still continues to be active. Transmissions furnish a good illustration of what happens to finished units.

Despite the close measurements observed in the making of transmission parts, (as for instance, ½ of .001" tolerance where the sliding gear shaft is fitted to the ball bearings,) and despite the safeguards against eccentricity of gears or roughness on gear teeth, Franklin inspectors still continue to look for possible sources of noise; transmissions are taken to sound-proof rooms to be given running tests; irregularities that would be imperceptible to the average motorists, caused probably by a pin point

roughness on a gear tooth, result in a search for, and removal of the pin point irregularity. The fact that the Franklin gears are thoroughly hardened means that the transmission continues to remain remarkably quiet throughout the life of the car.

As the cars pass through the factory on their way to the stage of completion, they are, figuratively speaking, under the inspector's microscope constantly and are receiving specialized attention all the while.

The wrist pin is the most closely fitted part in the Franklin car. Variations from specified size cannot be greater than one-tenth of .001 of an inch—about one-tenth the thickness of a cigarette paper. The wrist pin must have a highly polished finish. The fluid gauge unerringly shows up wrist pins which do not meet the specified standard. These parts are inspected 100%.

Franklin's motor smoothness is attributable to exacting inspection supervision. Every Franklin crankshaft is run on two different dynamic balancing machines; the second test is made with all rotating parts. In addition, inspectors make sure that each of the six light-weight pistons and connecting rods which go into each motor weighs alike.

One does not comprehend all that happens in the various inspection rooms until he visualizes the thousands of seemingly trivial items getting individualized examination with these unerring critics, the instruments and gauges.

Even punch press parts and castings, such as manifolds, are inspected, one by one; this is literally 100% inspection. Only 5% of Franklin parts are given 5% and 10% inspection—which means that in some cases five, and in other cases, ten from each lot of 100 are examined and the

lot passed on that basis. Visitors to the Franklin plant who are familiar with the best manufacturing methods are amazed to observe certain Franklin gears checked for all measurements instead of only one as is common practice.

Before a single item of raw material has started on its travel through the Franklin plant, *the chief engineer and his staff have furnished the foundation for essential and coveted road advantages that the rigid water-cooled car can never deliver, regardless of the amount of money that may be spent in its construction.*

Full realization of these Franklin performance superiorities requires observance of only one thing—strict insistence upon manufacturing integrity.

The human element, sometimes spoken of as the personal factor, must be fully controlled—and 100% inspection exerts that necessary control.

The instruments which reveal with astonishing accuracy variations in size, soft spots in case-hardened metals, rough spots on gear teeth, imperceptible chatter marks on bearing surfaces and all conceivable imperfections, are used 100% in Franklin's inspection room. By this is meant every item is subjected to test instead of the common practice of thoroughly inspecting five or ten parts from each 100 parts, which is known as 5% inspection or 10% inspection.

An interesting extra inspection exclusive to Franklin, is the Squeak Test. After all final inspections have been made, each car is driven over a special roadway in which bumps and holes have been built. This subjects the car to every conceivable kind of rough riding condition and would bring out squeaks and rattles if there were any to be brought out. If the tester hears any vestige of a squeak during this test, the car is sent back to the line.

Flexibility

It is Impossible to Incorporate Too Much Springiness in a Motor Car — Designer of Air-Cooled Car Has Better Opportunity

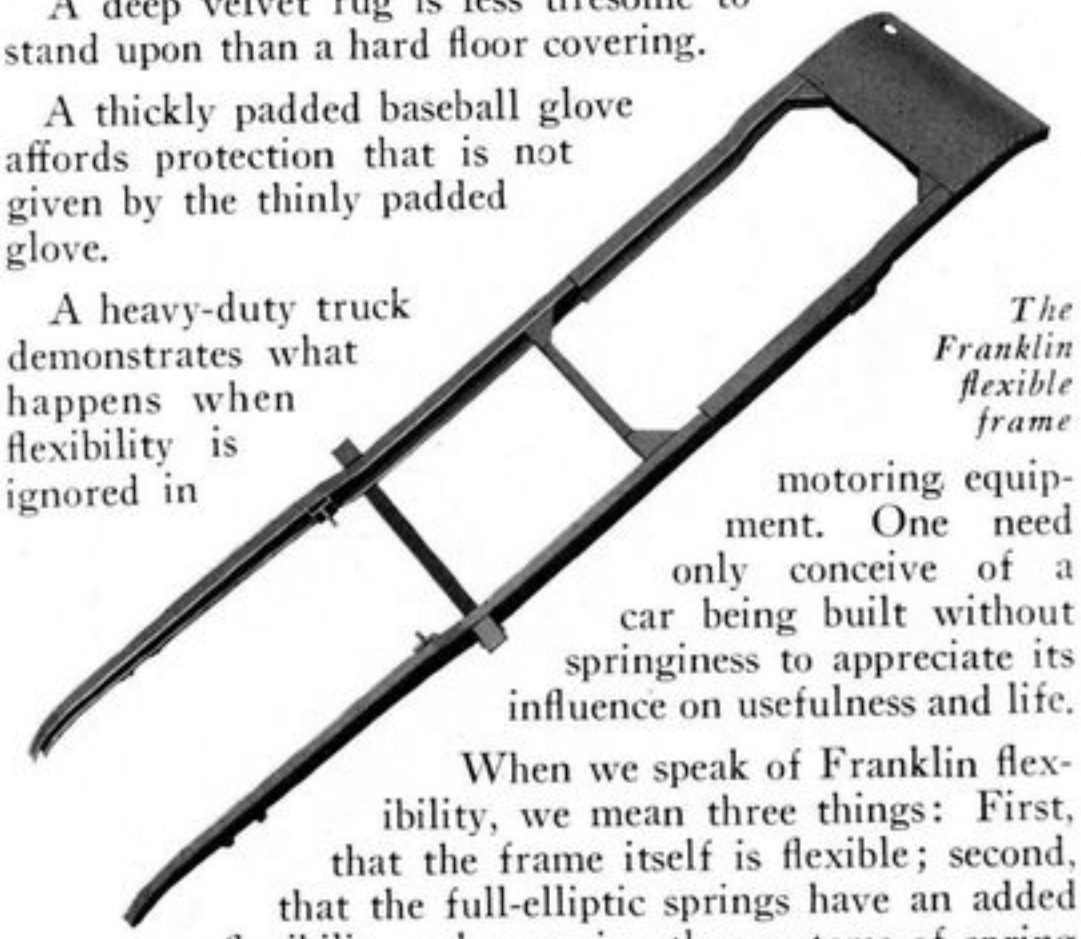
The comfort-giving properties of flexibility are demonstrated to everyone in many ways.

Rubber heels make for easier walking than leather heels.

A deep velvet rug is less tiresome to stand upon than a hard floor covering.

A thickly padded baseball glove affords protection that is not given by the thinly padded glove.

A heavy-duty truck demonstrates what happens when flexibility is ignored in motoring equipment. One need only conceive of a car being built without springiness to appreciate its influence on usefulness and life.



The Franklin flexible frame

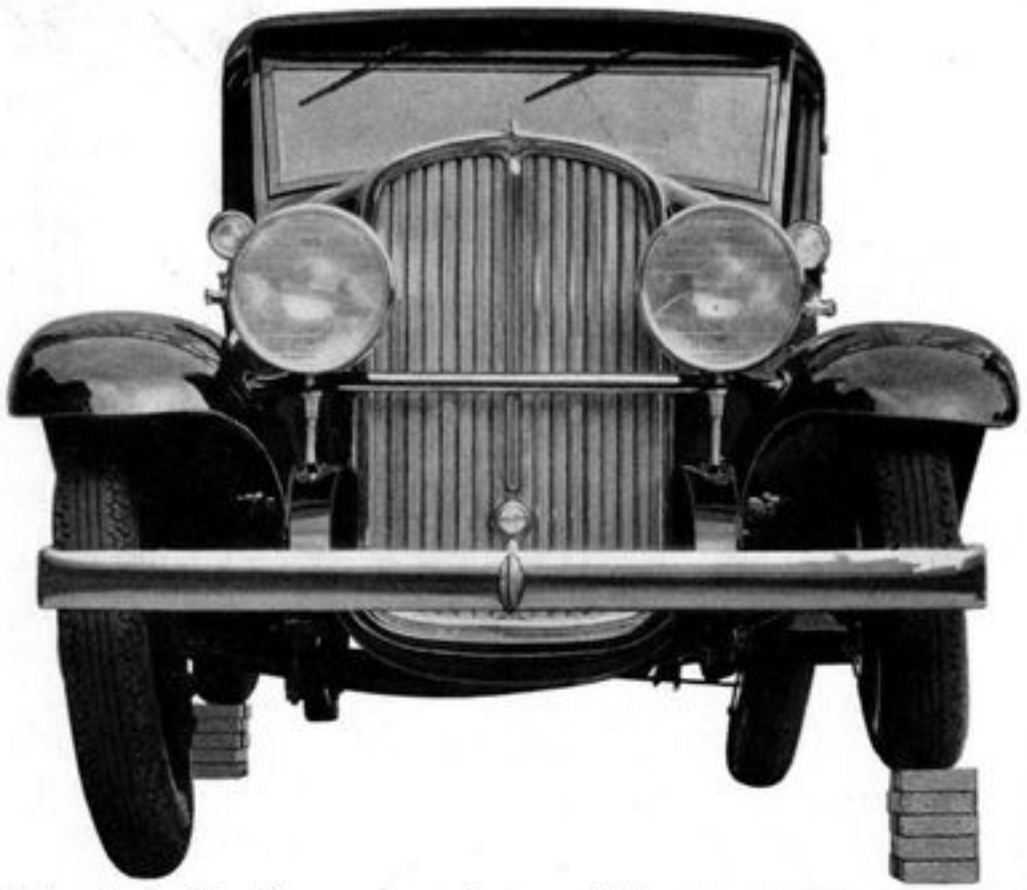
When we speak of Franklin flexibility, we mean three things: First, that the frame itself is flexible; second, that the full-elliptic springs have an added flexibility unknown in other systems of spring suspension; and third, that the drive of the Franklin — *through the springs* rather than through torque tubes and radius rods — is completely flexible.

The Franklin frame needs no heavy, rigid front cross members to support a delicate radiator from distortion and leaks. Therefore, the Franklin frame may be flexibly assembled. The body is suspended at six points and carried rocker style and the engine is rubber mounted. This method of suspension keeps from the motor any strains which the flexing of the frame might otherwise impose. Thus, diagonally opposite wheels of the car can drop into deep road depressions at the same time without

twisting the body or creating any strain on the chassis. The flexibility of the Franklin frame permits the wheels more readily to adapt themselves to any road surface. This means—

1. Easier riding.
2. Better road holding properties.
3. Greater safety of operation.
4. Greater economy of operation.
5. Less strain and consequently less depreciation of mechanical parts.

Flexible drive through the Franklin springs reduces wheel slippage and thus adds to tire life. You notice the effect of the flexible drive, particularly in starting and stopping the Franklin — there is no abrupt shock — starting and braking are eased by the full-elliptic springs.



Without doubt, the owner of any rigid car would strenuously object if asked to duplicate this test. It would twist the body somewhat, and leave unpleasant noises in the joints. Yet, while the water-cooler calls this test abusive, he will admit that many drivers expose a car to similar variations of the road surface. Rigidity is the origin of squeaks and deterioration of water-cooled cars. Flexibility is the origin of Franklin long life, freedom from rattles, squeaks and signs denoting wear. In the above test, opposite wheels were elevated by piles of planks 8 inches high, yet all four wheels rested equally firm and the body set plumb level. It was impossible to find a trace of binding of doors.

Light Weight

Modern engineering practice tends more and more toward the lightening of weight wherever possible. Take the fine watch as an example. Years ago a watch was a big, cumbersome thing—heavy, bulky and inconvenient. Today, the finer a watch is, the lighter it is.

The pocket timepiece went through the same process of weight reduction as the automobile

It is the same way with fine automobiles. Following the lead of Franklin, who has pioneered scientific light weight since the first Franklin car made in 1902, the desirability of lightness in proportion to size is now a universally recognized quality in automobiles.

In scientific light weight originate:

Easy handling
Easy riding
Safety
Road-holding ability and economy.

Light total weight results, of course, in faster acceleration, and greater speed ability per horsepower, to say nothing of fuel and oil economy.

Light weight is, however, most marked in its effect when it is built into the unsprung parts — that is to say, the parts of a car which are under the springs. When the unsprung parts of a car are very light in proportion to the parts above the springs, they are naturally unable to transmit the same force of road shocks as would be produced by heavy unsprung parts moving at the same speed. That is why most cars ride a lot better when they are heavily loaded — since the unsprung weight then becomes relatively lighter than it was when the car was lightly loaded.

The Franklin has the lightest unsprung weight of any car of similar wheelbase. Elimination of radius rods and torque tubes contributes towards this, as does also skillful design of axles and driveshaft.

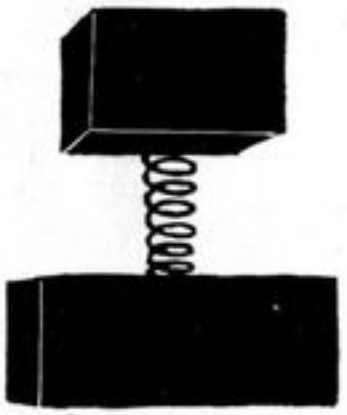
Assembled of alloy steel units, the Franklin tubular front axle is a great deal more costly than an I-beam-section

axle of corresponding strength. But our tubular axle weighs only 31 pounds and the I-beam type would weigh 25% more.

Similarly, the Franklin rear axle, by the use of such expensive elements as an aluminum differential housing, which weighs one-third the ordinary housing, and alloy steel for arms weighs very much less than axles of conventional design.

Even the Lockheed hydraulic braking system of the Franklin is measurably lighter than any adequate system of mechanical brakes would be.

Aluminum or alloys of aluminum, are used in the crankcase, transmission cover, valve-cages, fuel transformer, pistons and connecting rods, foot pedals and many small parts of the car totalling nearly one hundred.



On rough roads, heavy weight below the springs leaps upward, overcoming the poise of the body.

Light unsprung weight cannot affect body poise in a disturbing degree.

Comfort

The automotive industry is fast discovering that motor comfort cannot be added to a car — it must actually be *built into it.*

If there is any possible method of achieving comfort, Franklin uses it. Franklin engineers — far in advance of prevalent automotive practice — have studied and solved the problems of car construction which result in easy riding. These have not been taken up in a haphazard fashion — an item here and an item there — but have been considered for every part of the car between the road to the passenger.

The present balloon tire — now standard equipment on every passenger car made — is an outgrowth of typical Franklin engineering research. In their attempts to improve performance and riding comfort, Franklin engineers have influenced the design of almost every component part of this motor car. Years before any other car had thought of giving up the hard, high pressure fabric tire then in use, Franklins were cushioning out the first little road shocks by the use of the large cord tire which required a pressure of only 30 or 40 pounds.

The success of the low pressure cord tire as used on Franklins, influenced various tire companies to bring out the balloon tire — one of the greatest contributions to comfortable motoring ever made.

The next link in the comfort-giving properties of an automobile is the springs. Those shocks transmitted by the road to the wheels which are too great for absorption by the tires are passed on in the Franklin to a set of unusually supple full-elliptic springs. The use of full-elliptic springs, which has been standard Franklin practice since 1902, gives this car almost twice as much total spring length on each side of the chassis as is found in any other automobile.

The Franklin's full-elliptic springs serve to iron out not only the shock forces transmitted vertically through the axles, but also take care of a great many forward and back, as well as sidewise, shocks. This is due to the fact that the full-elliptic spring, unlike other types of springs used in automobile construction, is fastened to the frame

at one point only, so that it can give more or less in all directions.

Another feature of these springs, and one which adds to the almost unbelievable easy riding qualities of the Franklin, is that they are set at an angle to the frame, thus taking up diagonal shocks, which are the usual sort transmitted to the wheels — particularly the front wheels.

Franklin is able to use an exceedingly supple full-elliptic spring because of the cushioning and rebound-checking effects of the new double-acting hydraulic shock absorbers, with which these cars are equipped.

Light Weight in Unsprung Parts

The relation that exists between light unsprung weight and riding ease is, speaking generally, a new development in automobile engineering.

For while the advantage of light wheels and axles was demonstrated by Franklin a number of years ago and has been steadily practiced by Franklin engineers ever since, yet it is only in the past few years that designers of other automobiles have proved for themselves that better riding and road-holding ability accompanies a reduction of weight in these parts. There was a time when many manufacturers cherished the idea that even transmissions mounted on the rear axle helped to keep the wheels on the ground by reason of the added weight on the rear wheels.

It is stated by a ranking engineer in a recently published paper, "We have learned that it is possible to build a light weight car that will ride more easily than a heavy one".

Another designer of a fine water-cooled car tells how he was able to add 13 miles per hour to the maximum speed of his car by reducing the weight of the rear axle.

With a heavy axle on his car, there was so much bouncing on rough spots and so much wheel slippage that speed, comfort and road-holding ability were not all that they should be. After installing the light rear axle, the tires retained their grip on the road and the higher speed was made possible with greater comfort, greater safety and with the engine running at an even lower r.p.m.

Because the light weight phase of automobile design has been practiced by Franklin engineers for many years,

light unsprung weight finds its highest development in the Franklin. No other maker comes within 25% of the Franklin standard in this respect.

A Fact Known to All

The importance of light unsprung weight becomes apparent when one recalls that the ordinary car rides best when it has fullest passenger load. Riding alone in such a car, one may be uncomfortable; but add more passengers and the riding is steadier.

It is not the fact that the car has been made heavier but rather because the weight of the running gear is *lighter* in proportion to the weight of the loaded body, which enables the car to ride better and hold the road.

In other words the relation of the weight of the parts below the springs to the weight above the springs has been improved by the change in passenger load.

Franklin designers arrange a proper relation of weight above and below the springs so that the improved riding is realized *regardless of passenger load.*

The flexible frame made possible in Franklin construction because air-cooling dispenses with the necessity for rigid cross bars which water-cooled cars must use to support a delicate radiator and plumbing system, is perhaps the greatest factor in Franklin construction toward giving the Franklin its "floating" riding sensation. The flexing action of this frame keeps the Franklin on an even keel, even when road inequalities are such as to play tricks with the under carriage, which would result in dangerous strain to most cars.

Franklin bodies are mounted in a different way from the bodies of other cars. Most automobile bodies are bolted to their frames in four or six places on each side. This results in making the body virtually a part of the frame. In Franklin, the body is attached to the frame at six points only, and at these points it is bolted to bolsters, each of which has a certain amount of give. We know of no automobile body work as strong or as firmly braced as that of the Franklin. The fact that the body is to some extent independent of frame motion adds another comfort giving link to the chain of carefully engineered easy riding features in the Franklin. Comfort is contributed to in a marked degree by the roominess of Franklin interiors.

Due to the economy of chassis space utilized for the motor and also due to the extraordinarily wide tread of the car, there is more room in a Franklin than in any car of its corresponding wheelbase length.

Franklin cushions are engineered to give maximum comfort while riding. We have made the spring action in the cushions such as to be soft and comfortable while the car is in motion. We have built up each cushion of individual coil springs — each encased in a burlap bag. These bags slow down the rebound of the cushion springs and take out every vestige of the "jumpy" spring action, so common in most cars. A great many automobile manufacturers make their cushion springs far too soft in order to give them a "sinky" sensation on the salesroom floor for the purpose of impressing buyers before the demonstration. This results in shaking and wobbling once the car is in motion over the roads.

Scientific design of seating angle in both front and rear seats and careful control of seat cushion and seat back spring tension add greatly to the comfort of the Franklin ride. By insuring comfort and proper posture while seated in the car, our body engineers have contributed greatly towards the almost complete absence of fatigue experience while riding in a Franklin.

Another feature of the car which contributes greatly to comfort in riding is the extra width of the Franklin rear seat, afforded by the new 60 inch tread of the Series 15 DeLuxe Franklin.

Comfort in driving is assured by the carefully planned convenience and responsiveness of all controls. A long, lever-type accelerator pedal, right-hand placement of hand-brake lever and single turn opening of left front window are examples of this.

Safety

In the four major safety factors: visibility, deceleration, acceleration and road-holding ability, Franklin maintains its traditional leadership.

Skillful design and construction have made Franklin front corner posts so narrow that they offer minimum obstruction to vision. This is an invention developed in Franklin shops. Built of steel, skillfully fashioned, they approximate in width the distance between the lines of sight of each eye at the distance from the driver to corner posts.

Every driver of a closed car is familiar with the "blind spots" caused by the usual bulky corner posts. Only too often they make the driver lose sight of a pedestrian until he is practically in front of the car. Corner posts are frequently so large as to blank off the view of an approaching car—often preventing the driver from seeing signals in time. Altogether, the great increase in driving visibility of the Franklin is perhaps the greatest single safety factor to be found on any car.

The front cornerposts—skillfully made of narrow steel members—approximate in width the distance between the driver's pupils and so are "seen around" and do not obstruct vision.

Four powerful Lockheed hydraulic brakes give the Franklin positive and easily controlled deceleration. These brakes are of the internal expanding type and are thus protected from sand, mud, oil and water. This insures

against brakes slipping from becoming moistened. An added factor of safety, as well as convenience, is the automatic compensation device of the Franklin system, which does away with the necessity of "pumping up" these hydraulic brakes.

The shoes of Franklin brakes are unusually large and radiate heat so fast that the car may be driven down the longest hill, decelerated by the foot brakes alone without fear of their burning out.

As a factor in safety, acceleration is just as important as effective braking. The ability to shoot quickly out of a dangerous situation requires the kind of rocket-like acceleration given by the powerful Franklin air-cooled engine in conjunction with scientific light weight.

Safety in automobiles is associated with ability to hold the road. And ability to hold the road depends more than anything else upon the distribution of weight in a car — particularly the relation of weight above and below the springs.

A heavy running gear (which is weight below the springs) transmits a heavy upward blow to the springs, and causes the entire car to bounce on rough spots.

The danger lies in the fact that with wheels bouncing, the tires lose their grip on the road surface and there is nothing to compel the car to follow the driver's guidance.

When the wheels are bouncing, one is in danger in rounding a curve at high speed, or in turning out on a sharply crowned road.

To the driver, HEAVY unsprung weight in a car eliminates any sense of sure-footedness, any feeling of perfect control at the higher speeds.

The feeling of confidence which a Franklin inspires when traveling at high speeds on all roads — wet, rough, crooked, high crowned or narrow — is by the same token the result of LIGHT unsprung weight.

Flexibility assures control in mud, ruts or snow. The Franklin goes where the driver guides it. The flexible springs prevent momentum of the body from pulling the wheels away from the road. In following ruts or in rounding curves at high speeds, the soft-acting springs allow just enough "give" to prevent side-sliding — the wheels and chassis tend to follow the road, the full-elliptic

springs absorbing the inertia force which tends to cause skidding.

When emergency demands an instant check of the car's speed — whether on grades or wet, slippery or snowy roads, the Franklin owner quickly learns to rely on his brakes. The non-skid four-wheel hydraulic brakes insure quick, safe, positive control. With the hydraulic principle, the braking force is equally distributed to each of the four wheels, since pressure is always equally distributed through a liquid medium. Brakes are therefore always equally adjusted — there is none of the sudden application of brakes on one side of the car—an inevitable source of danger on all cars with mechanical systems.

Franklin windshields, windows and glass partitions are of non-shatter glass in every model. No driver needs to be told what a tremendous element in safety this constitutes.

The slanting windshield of the Series 15 DeLuxe Franklin is of value from a safety standpoint because its angle kills the glare of headlights by refraction and reflection. Another detail—the gold-plated rear view mirror—reduces glare and hence constitutes another safety factor.

Driving Ease

There is a driving "feel" to the Franklin which is so responsive, so effortless, so free from any sense of strain that it has been likened by aviators to the driving feel of an airplane.

You can't buy easy-driving qualities and add them to a car the way you can install an electric cigar lighter or a set of slip-covers. Easy driving must be *built into* the car. In fact, it must be *drawn and figured* into the original plans — so dependent is it on any number of different features.

A steering gear — so delicate as to respond to the pressure of one finger — would not result in the Franklin type of easy driving if it were not for other qualities of Franklin construction — qualities made possible by the use of an air-cooled motor.

The Franklin steering gear's extreme ease of operation is due largely to the rolling cam action. This combination of sliding and rolling action, together with the curved shape of the worm gear results in uniformly easy steering, whether the wheels are pointed straight ahead, or turned to their maximum angle.

The caster mounting of Franklin wheels, assisted by the easy leverage of the steering gear, require a mere finger touch to right the car after turning a corner.

The uncanny way in which this car holds the road is probably the greatest factor in its remarkable driving ease. And what makes a Franklin hold the road? What makes it hug the curves, stay put on a high-crowned stretch, or keep a perfectly steady course if an emergency calls for going half off the pavement at high speed?

The answer to these questions is the inherent flexibility of the Franklin frame, the unusual radius of action of full-elliptic springs. Road-shocks and sudden centrifugal forces which would result in swerving or skidding with a rigidly braced water-cooled car are absorbed by the flexible construction of the Franklin.

Light unsprung weight helps Franklin to hold the road. It keeps the wheels from leaping high when they get a hard blow — lets the body, springs and shock-absorbers hold them down.

These amazing road-holding qualities give driving comfort by insuring that the car will go where you want it to — easily, without strain.

Easy riding prevents fatigue after a whole day's run.

Then the smoothness of the motor adds to driving comfort — and the Franklin motor is smooth almost beyond belief — thanks to its *completely* balanced 7-bearing crankshaft, its double flywheel effect and its cleverly placed vibration dampeners. Inertia forces have been neutralized and balanced to such an extent that elimination of "vibration periods" at certain speeds is more successfully accomplished than by any other car.

Of course, the greatly increased visibility enjoyed by Franklin drivers is a vital factor in driving ease. The narrow steel front corner posts do away with the constant necessity of dodging the head back and forth to see the road.

All controls are placed just where you would naturally reach for them. A long, flat accelerator pedal is provided and results in far easier action than the stiff, button type. Motorists appreciate the extra ease afforded by such items.

The 4-speed transmission, by virtue of the easy progression of speeds from low gear to high introduces a range of flexibility that gets the most out of the power provided. In order to accommodate all driving conditions, especially those where the requirement is for a more than average amount of hill work, a sedan specifying a three speed, internal gear transmission is available.

The extremely easy operation of the Franklin foot brakes is an important factor in the driving ease of this car. Brake control in the 1931 Franklin has been made extremely positive and easy by a new extra-rigid mounting of the master cylinder of the hydraulic braking system, which is now attached to the clutch housing. Franklin brakes do not require frequent adjustment and attention to keep them functioning properly. The shock of a sudden stop is cushioned by the full-elliptic springs of the Franklin, which, unlike the springs on other cars, can give in a forward and backward sense, since they are fastened to the frame at but one point. This quality of Franklin springs also eases the sensation of starting.

Franklin's easy driving qualities permit trips of a length and steadily-sustained speed that would wear down the physical resistance of drivers of other cars.

Reliability

It would take a book to go into all the features of the Franklin which are responsible for its reliability — its dependability under all circumstances — freedom from annoyance — long life and low repair bills. Records show that fully 75% of all Franklins built are still in service.

Franklin reliability is due to more than the most careful manufacturing processes — more than Franklin's use of nothing but the finest materials obtainable for motor car construction. There are two other factors — factors which cannot be found in other cars. These are the air-cooled motor, with its great simplicity and convenience, and the flexibility of the Franklin chassis, which prevents the destructive wear of road reactions.

Here are some troubles which Franklin owners cannot have:

Radiator Troubles

There are almost too many of these to list them separately. Air-cooling does away with them all at once. With air-cooling there is nothing to fill, nothing to drain, nothing to freeze, blanket, leak, boil, overheat, or worry about.

Fan Belt

This common source of trouble on most cars — always apt to slip or break, and a nasty, greasy job to repair or replace — is, of course, unnecessary on the Franklin. Franklin's powerful air turbine is keyed direct to the forward end of the crankshaft.

Water-pump packing bother, gasket leaks, radiator hose troubles, rust and sediment troubles and slow warming up are among the constant annoyances of the water-cooled motor. Obviously they cannot occur in a Franklin.

Loss of Power at Sustained High Speeds

The facility with which Franklin cooling reaches all points to the proper degree, obviates completely a trouble sometimes experienced with water-cooled cars. The acknowledged difficulty of jacketing certain cylinders properly leads to overheating—especially under conditions of continued hard driving. The result is, in some cases, distortion of valves — particularly exhaust valves — and

failure of spark plugs that causes pre-ignition. Franklin on the other hand, sends the greatest amount of cooling medium (air) where it is needed most. Consequently you can drive a Franklin at top speed for as long as you want with no loss of power. Furthermore, efficient cooling of the valves, impossible in a water-cooled engine — keeps Franklin valves from pitting — means regrinding far less often.

A new and exclusive Franklin feature is an independent oiling system for the entire overhead valve mechanism. This of course, prevents wear and the consequent noisy operation.

A feature of the new airplane-type engine is a compensating service which maintains constant valve clearance throughout the whole range of motor temperatures.

Main Bearing Troubles

These are next to impossible in the Franklin motor and this is why: The Franklin 7-bearing heat treated crankshaft is so completely balanced as to compensate not only for its own inertia forces, but also for those of the pistons and connecting rods! This results in such even running as practically to relieve the main bearings of load.

The extreme lightness of the aluminum pistons and duralumin connecting rods minimizes wear on both connecting rod bearings.

The Franklin oiling system is so designed as to literally flood the bearings with a large supply of oil — more than a gallon a minute! This assurance of adequate quantity is very necessary in Franklin's powerful, high-speed engine.

An air filter, oil filter, gasoline filter and crankcase ventilator remove all possible impurities from the inside of the Franklin motor — moisture and gasoline fumes are kept out of the crankcase by an efficient pressure ventilator.

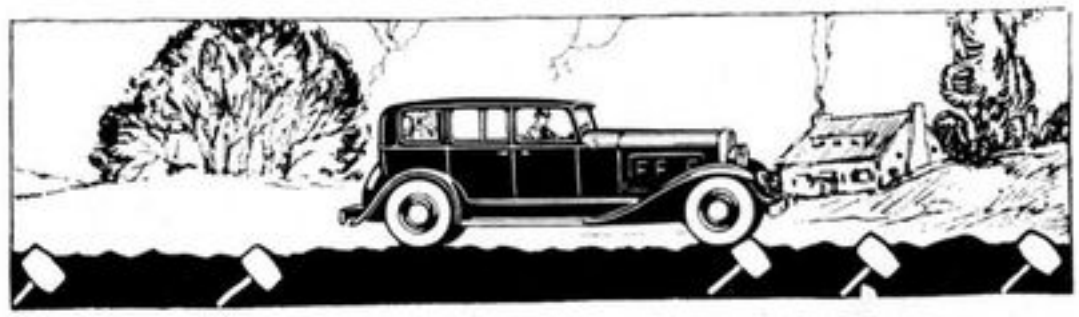
Shackle Bolt Rattle

—is, of course, eliminated on Franklins because there are no shackles. Franklin spring ends are connected by case-hardened spring bolts, which are easily reached and quickly adjusted. These bolts are drilled for oiling supplied by the Zerk pressure system. They run in bronze bush-

ings. Removal or replacement of spring bolts is practically unnecessary, on account of their adjusting features.

Body Squeaks

Most cars are built so that body squeaks and rattles are reasonably absent for the first six months or so. After that, however, it is common practice to have bodies tightened three or four times a year. Franklin bodies withstand use and age with a minimum of wear and squeaking, due to the care used in their construction. It's the parts that don't show which make for strong, quiet bodies.



Without scientific light weight car design, the road is a demon armed with a million hammers to do quick destruction to a car.

Franklin's flexible frame and full-elliptic springs make possible a 6-point body-mounting and reduce the usual strains which cause body wear. As an example of this, you can run a Franklin on two 8" blocks — one under the right front wheel and one under the left rear wheel — a position of unusual strain for the entire chassis and body — without warping. In this position, Franklin doors open and close as easily as if it were on a level surface.

Body woodwork is put together by joiners who are master-craftsmen. Simple bolting of joints, which lets them wear loose, is not relied on in Franklin bodies. Each joint is carefully tenoned and glued before bolting. Where special strain is imposed, felt inserts, in addition to the bracing, eliminate any possibility of squeaks.

Precautions of this sort are typical of the qualities put into Franklins which account in part for their resistance to wear and their extremely high resale value.

Economy of Fine Car Ownership

Franklin defeats the supposed rule that the finer a car is, the more it costs to run. Any Franklin owner will bear out the statement that the performance of the marvelous Franklin pressure air-cooled engine and traditional Franklin engineering skill in design, coupled with almost unbelievable quality in manufacture and material, result in operating costs lower, if anything, than those of cars in far lower price classes.

Any piece of machinery reflects the skill and care of its makers in the economy of its operation, and the Franklin is no exception. Wherever precise measurements and painstaking workmanship can help to reduce friction, jolting and wear, Franklin owners profit in lower operating and maintenance costs.

Complete balance of all possible inertia forces results in extensive reduction of wear in motor parts.

The flexible frame of the Franklin, the tremendously supple full-elliptic springs, the scientific distribution of all weights and all other Franklin qualities which make it hold the road so well, result in a marked increase of tire mileage over other cars. It is obvious that if the tires are free from spinning caused by leaving the road on bumps of all sorts, that they will not be worn away so fast. Another factor which saves tire wear on the Franklin is the "shock-absorbing" effect of drive *through the springs*. With the amount of "give" provided by the springs when the clutch is let in to start, or when the brakes are applied, the tires are saved from spinning or sliding to an extent that would be impossible in other cars.

Higher and more efficient operating temperatures and more thorough combustion cut down on the formation of carbon in the Franklin engine to such a marked degree that carbon removal is rarely necessary before the first 7500 miles. Efficient cooling of valves prevents warpage and consequent collection of carbon that necessitates frequent regrinding.

In comparison to power output and size of car, Franklin has always held a reputation for conservative fuel consumption. The manner in which gasoline is converted

into power is due in the first place, not only to perfect carburetion, but also to the inherent principle of the valve in head cylinder combined with scientific light weight of the whole car. Despite its increased power, the fuel economy of the new airplane-type engine is greater than its predecessor.

Painstaking assembly methods, combined with rigid specification of the finest materials obtainable are responsible for the long life of Franklins and their resulting uniformly high resale value. They also account for the lack of body rattles in these cars after long service.

An instance of the Franklin practice of never "cutting corners" where quality it as stake, is in the painting of these cars. Where some manufacturers would consider the final paint coat sufficiently finished by a rubbing with fine sandpaper or polishing compound, Franklin insists that the entire surface be gone over carefully by hand with rotten stone. This is a powder used in the finest cabinet work where a smooth, scratchless surface is desired.

In painting Franklin cars, the procedure is not just three or four coats—but seventeen! This is in line with the most rigid paint specifications of the finest custom coach work. It is the reason why Franklins keep their deep, lustrous finish long after other cars of higher price have become dull and gray.

One of the most expensive and most usual "overhaul" jobs with which motorists have to contend is the replacement of piston rings, wrist pins, and piston rod bearings which have been worn on account of crankcase dilution.

Franklin has reduced crankcase dilution to a negligible minimum. First, a fuemer "cooks" a small quantity of gasoline so that perfectly vaporized fuel will be available for the first few revolutions of the motor. Secondly, grille shutters cut down the cooling air so that the cylinders may warm up quickly. Thirdly, all incoming mixture passes from the carburetor through the Franklin fuel transformer, which heats up any drops of raw gas and delivers the mixture to the intake manifold completely vaporized. In the fourth place, a thermostatically controlled crankcase ventilator clears the atmosphere of the crankcase of moisture and gasoline fumes.

Wherever you look, you will find long life and economical operation engineered into these cars.

Roadability

It's a Better Road With the Franklin—Where You Don't Have to Slow Up for Roughness, More Miles in a day are possible

To travel along at progress-making speeds over the roads as they come is the exclusive privilege of Franklin users.

To run at 60 miles an hour or more with the restfulness of one-half that pace — with security that allows driver and occupants to relax — with quietness on rough roads that permits conversation in ordinary tones — with freedom from the usual chucking of wheels or hammering of the running gear when deep holes or choppy pavement are encountered — and with assurance finally that the car is completely safeguarded against road reactions — these are exclusive Franklin advantages! All this is characteristic of the air-cooled car because only air-cooling permits the full development of scientific weight distribution and flexibility in which principles of design originate these unparalleled performance qualities.

Contrast all this with motoring where high speeds require a strong driver grip on the wheel, where driving becomes a conscious effort and imposes a degree of nerve strain shared by the passengers, where there must be slow-ups for curves and roughness. Then touring is wearying, and passengers grow to look forward to the wind-up of

the day's run as a moment of relief. The man who has felt these limitations and the consequent hard work of covering distances quickly has the ideal background to appreciate Franklin performance.

Veteran drivers know that the better road travelers are, generally speaking, in the *really fine car group.*

When Cannon Ball Baker piloted an air-cooled Franklin sedan from Los Angeles to New York City, he gave a convincing demonstration of Franklin roadability. Other record runs made by Baker, such as the Pike's Peak climb and the Butte to Anaconda round trip, could never have been made without the Franklin's road-holding qualities.

Some idea of Franklin roadability can be gleaned when one compares his impressions of other cars at 60 miles an hour and faster with the Franklin where—

One hand resting lightly upon the wheel assures control.

Caster mounting of front wheels causes the car to follow the road course of its own accord.

The car holds to direction despite road inequalities.

It rights itself almost automatically without effort after rounding corners.

Rough spots have no effect but are taken without change of pace.

Even nervously inclined passengers are unaware when adverse road conditions are encountered.

There is no feeling of danger in rounding curves at high speeds or on wet roads.

And there is less delay due to traffic.

Standardized Service

In a further effort to enable the Franklin owner to get the most out of his car, Franklin has perfected a most comprehensive Standardized Service System. It goes beyond what is known as the flat rate service, because of its attempt to promote scientific time saving and labor saving methods in even the most remotely located repair shops.

By providing fixed charges for an examination of internal troubles, Franklin Standardized Service makes it possible for an owner to know just what internal repairs should be made and the exact cost before the work is started. Aside from the advantage of lowered repair cost, the factor of the system which appeals largely to owners is the fact that estimates given on overhaul before work has commenced can be relied upon to agree with the final bill to be rendered — the complete price given for the job.

The Franklin Automobile Engine Flies an Airplane

Among the most spectacular tests to which an automobile engine has been subjected were those which took place at the Municipal Airport in Dayton, Ohio, during December, 1929.

The Franklin-powered Waco in flight at Dayton, Ohio, December 28, 1929. Al Johnson, the pilot said "I have never flown with such a smooth engine before!"

A standard Series 14 Franklin engine, which had done 6000 miles in block and road tests by the factory and which had subsequently been used by Cannon Ball Baker in the Pike's Peak runs during the autumn of 1929, was taken to Dayton and installed in the fuselage of a stock Waco "90" biplane. This is a comparatively large airplane ordinarily equipped with the 150 horsepower Hispano-Suiza V-type 8-cylinder water-cooled engine.

The standard Franklin carburetor was used.

After a few preliminary tests to determine the proper propeller, this Franklin-equipped Waco was wheeled out on a field covered with mud and snow on December 28th. Al Johnson, President of the Johnson Aircraft & Supply Corp., and veteran test pilot, climbed into the cockpit, threw on the ignition switch and said "contact!"

An eager mechanic gave the "prop" a spin, the engine burst into a smooth, purring roar and the plane taxied down to the far end of the runway. Johnson turned her around, faced into the wind and opened the throttle.

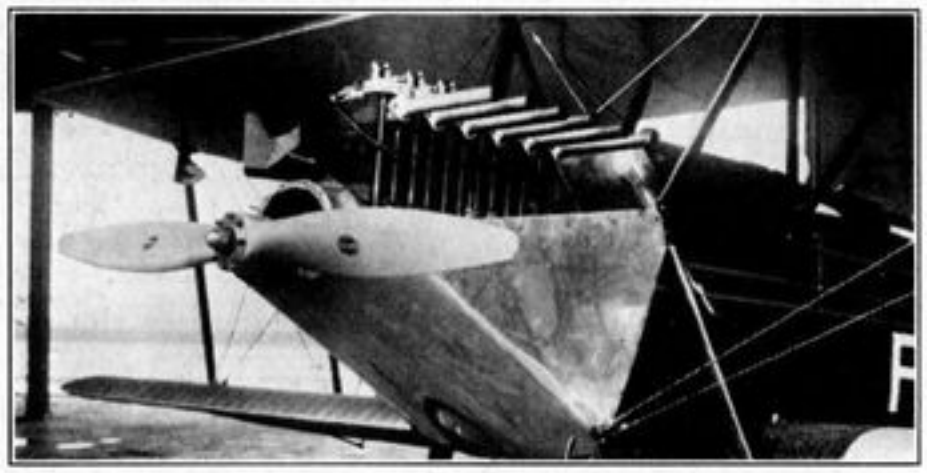
After a surprisingly short run, considering the condition of the field, the plane left the ground easily and gracefully, climbed to the right in a turning climb, flew around a circle of about one mile and a half and came down again for a perfect landing.

Mechanics, pilots and moving picture operators — a distinctly "hard-boiled" lot, burst into cheers and ran about the field slapping each other on the back with enthusiasm.

Those of us who were there will never forget the extraordinary enthusiasm which seemed to spread to everybody at the flying field — whether they were attached to the Franklin Company or not.

Three days later, when the visibility was better, Johnson took the plane up and flew it throughout the day, while moving pictures were taken of it from another plane that flew alongside.

"She performed beautifully!" said Johnson. "What got me about this engine was the fact that I could feel no vibration either while taxiing along the field or while the ship was in the air. It was the first time that I had ever flown with a motor which did not shake the fuselage when the throttle was opened up. This is one of the biggest things that has ever happened in the history of aviation, because it is the first step toward the production of a relatively inexpensive high grade, air-cooled powerplant for airplanes."



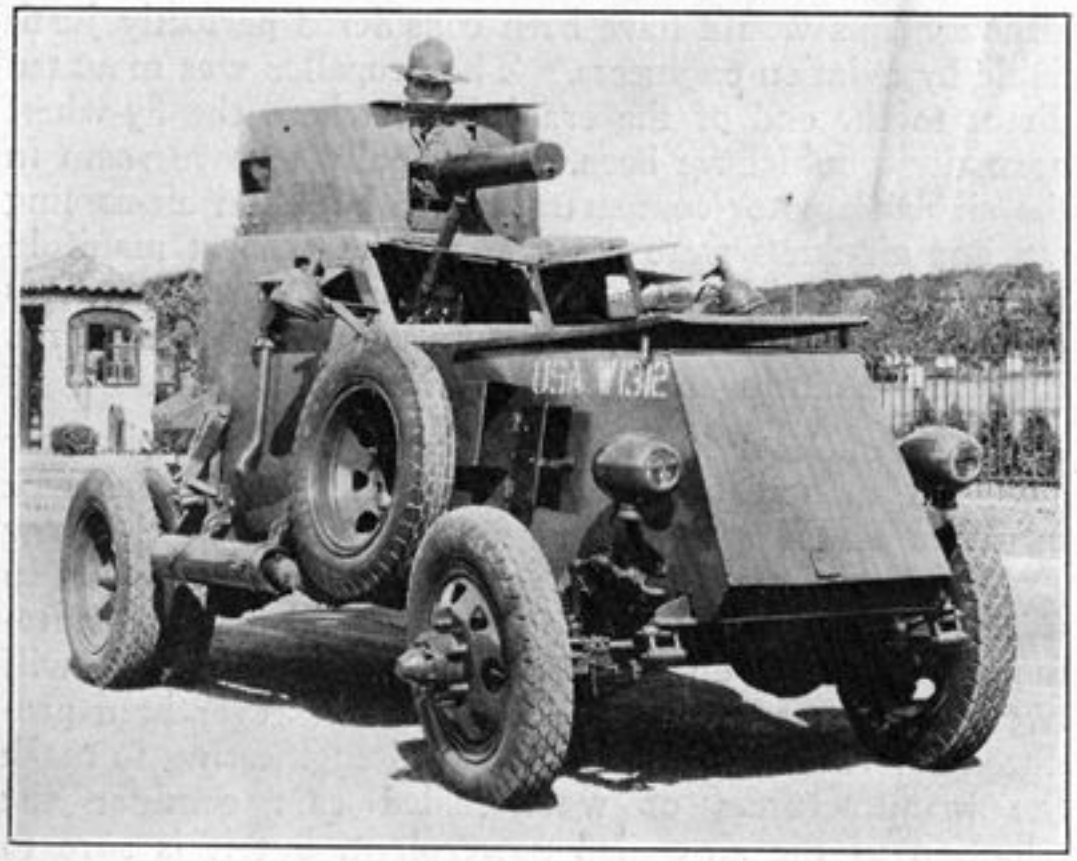
Close-up of the Franklin Series 14 engine installed in the Waco plane which it flew. Note the bell-housing which was left on the crank-case assembly

The Franklin engine as installed in the plane, was given no favors. No attempt was made to enable it to exercise its full power by gearing down the propeller,

although this would have been considered perfectly justifiable by aviation engineers. The propeller was mounted direct to the end of the crankshaft, where the fly-wheel normally would have been. Principally to save room in the airplane motor compartment, the Franklin air-cooling fan and air-ducts were removed. The exhaust manifold was replaced with the usual individual exhaust pipes, as the regular Franklin exhaust pipes would have interfered with the mounting of the motor in the airplane.

Mr. Wm. B. Stout, the designer of the Ford tri-motor all-metal monoplane, and one of the most important members of the aeronautical fraternity, said of this new Franklin motor: "Franklin engineers have produced in this new powerplant an engine which will make all automotive engineers do some very hard thinking. It will not only do more than anything that has ever been produced before in the line of air-cooled engineering to make the manufacturers of water-cooled cars consider the adoption of the air-cooled powerplant, but it is sure to result in great interest among the ranks of aviation motor experts."

Over the top in a Franklin powered tank! Thoroughly outclassing and out-performing every water-cooled tank which came into competition with it, a 7-ton U. S. Army tank, powered by a stock Franklin motor, won new laurels for Franklin and air-cooling by successfully meeting every requirement imposed by Army officials at Ft. Meade, Md. in a series of spectacular tests during the summer of 1930.



The Army recently placed unsolicited orders for a number of Franklin motors to be used in armored combat and transport cars. Vigorous tests proving air-cooling were conducted by the Quartermaster's Department at Camp Holabird