

# National

*"Highway"*  
*Six*

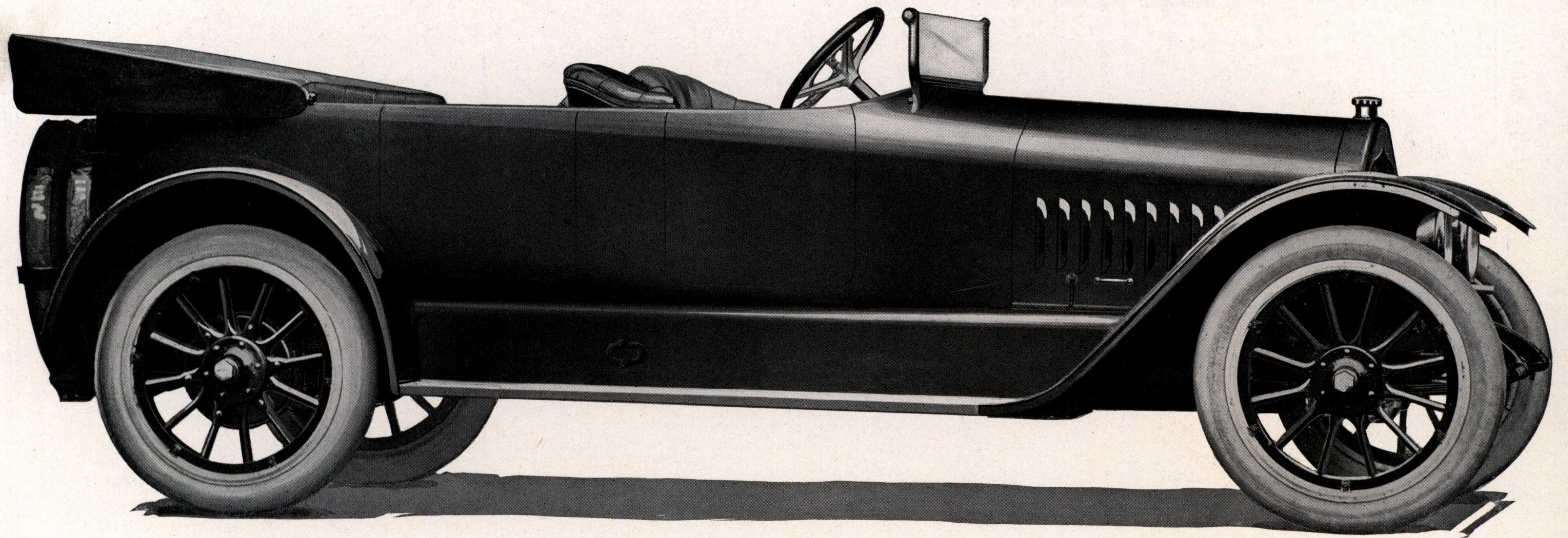
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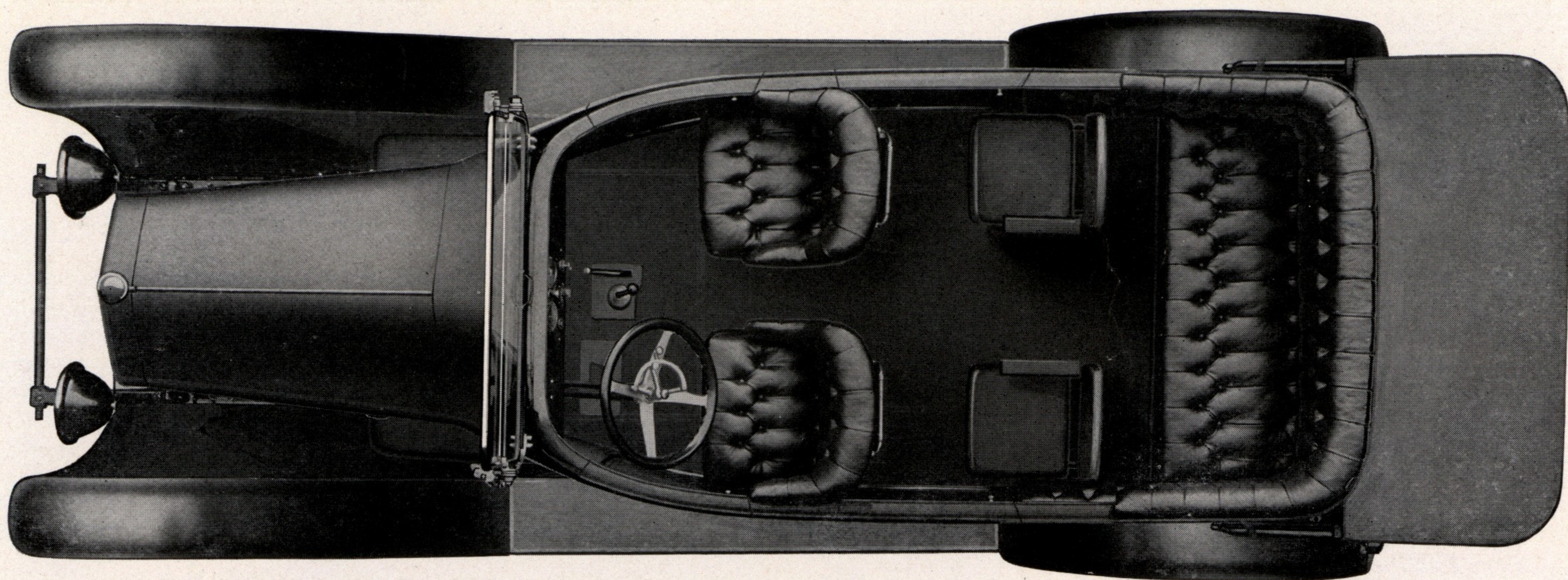
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## National Highway Six \$1690

The National "Highway Six" is the latest achievement of a factory organization that has successfully produced high-grade cars for fifteen years. Its stylish appearance reflects quality building. Sides of body are neatly and cleverly molded "round," eliminating all moldings on top and around doors. Special axle design permits unusually narrow turning radius of 33 feet. Light weight, with extra volume of power in proportion to weight of car.





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## A MOST COMFORTABLE CAR

In 1905 the National factory built and marketed the first American stock six-cylinder car.

For fifteen years, which goes back to the very infancy of the automobile industry, the National company has produced high grade cars successfully.

The ownership, management and policy of the National Company are the same as they have always been. The company has an enviable record. It has been noted for solidity and conservatism.

This same solid, cautious, conservative company now offers this National Highway Six as a tried, practical and pleasurable car. The design and development of the National "Highway" Six have had the continuous, concentrated thought of many experts. Tests on the Indianapolis Speedway, journeys through rugged Tennessee and Kentucky mountains, research and study of foreign practice, have all been chapters in the history of the creation of this motor.

The Highway Six is comfortable.

To ride in this National is to enjoy drawing-room comfort on wheels—to go out into the highway in your library chair. The National

"aisleway" front seats are veritable armchairs. To imagine motoring with all the comforts of home is one thing; to find a car whose performance will conform with your desire is another.

This "Highway" comfort is creditable to several features—absence of vibration, the roominess of the body, the location of the seats, National cantilever (flat) springs, and the even flow of power from a wonderful motor.

Comfort is inherent in the National. It is the natural result of the way the car is built. It is as much an object in the manufacture of the car as to make the wheels go round. Comfort was reckoned with in the initial conception. It dictated the design and has been built into every part.

National bodies are recognized style leaders in the automobile world, and the body of the Highway Six is up to National standard in every respect.

The front seat is divided by an aisleway, which makes one livable room of the entire car. The driver's seat is movable, and therefore adjustable, so that pedals may be reached comfortably by all members of the family.

## NATIONAL HIGHWAY SIX

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Two auxiliary folding armchairs are supplied at an additional charge of \$30, to give the car a full six or seven passenger seating capacity.

It is noteworthy that you can get a National car now for \$1690. The public has wanted a lighter National car with all the sturdiness of the great Nationals of racing fame—and the “National” Company has designed and built it.

At \$1690 now, you may have a car which is exceeded by no car in the world in that quality known as “personality.”

The National is known as an aristocrat among automobiles, carrying an appearance of more masculinity, perhaps, than any other extremely high grade car. As the National design has tended towards refinement, it has avoided effeminacy. The lithe, low-lined body design of the National today tells of the racing proclivities of its ancestors. The National is a car with fight in its blood and strength in its sinews, and with an outward appearance that bespeaks these inner characteristics.

There is a certain style and distinctive appearance about the National Highway Six that is a source of endless pride and satisfac-

tion to the owner. On fashionable city boulevards the National will never suffer by comparison.

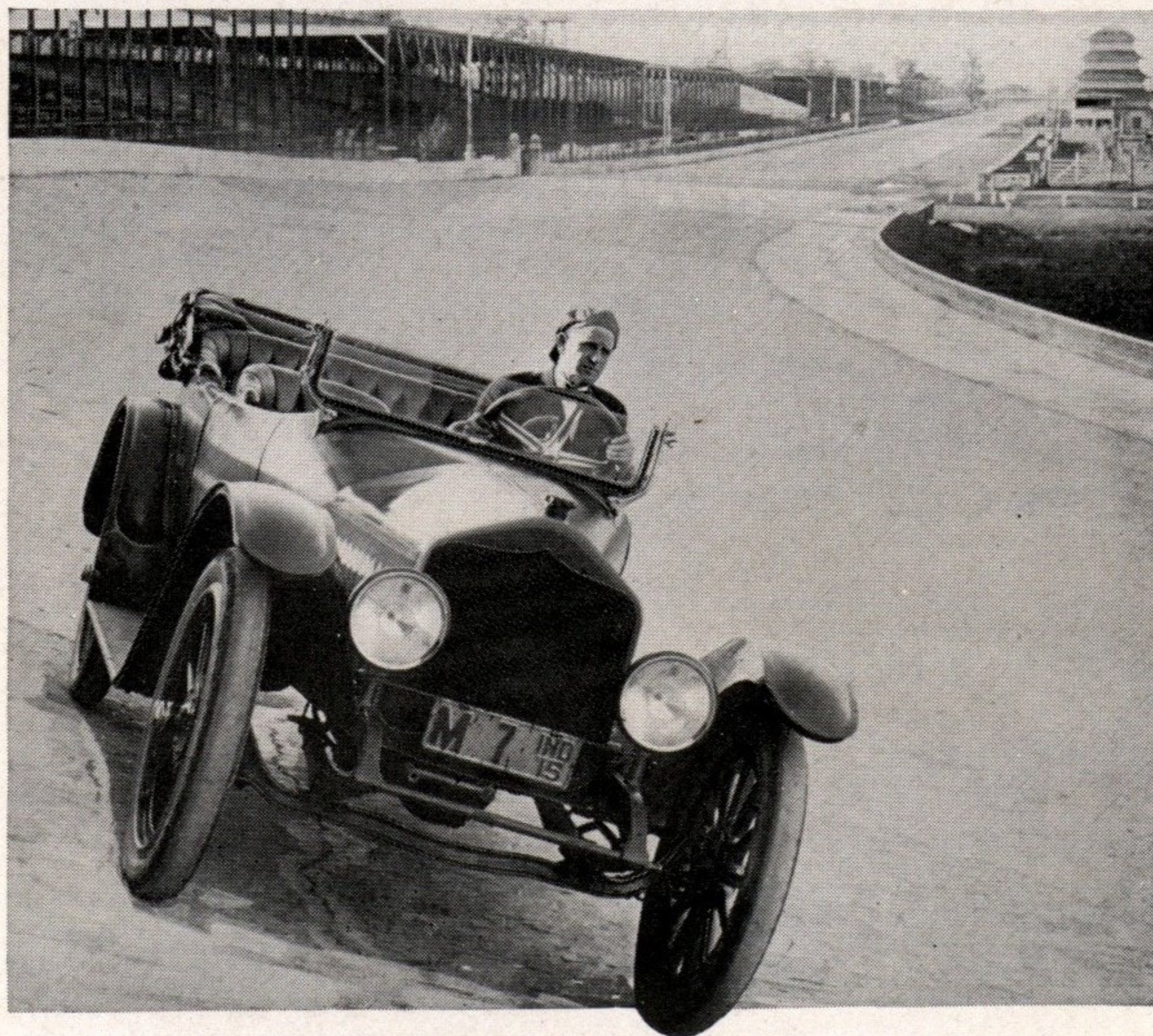
It may safely be said that the National Highway is the best possible car immediately before you cross the line into the extravagant class.

It is the force of public opinion that is making the National Highway Six so popular.

It is the same with all master products of brains and experience. Of “second choices” there are many, but in the select group of the few superior cars, the National ranks pre-eminent.

No human being is immune to the influence of public opinion—no car owner but desires to have the best in appearance, construction and performance, and owners know that it is only the reputation of the National builders for fifteen successful years that makes possible this prestige and universal recognition accorded the “National.”

That this National Six is complete in every respect—that it is advanced in design and finish and that it is capable of years of service has been accepted as a matter of course.



# Specifications of the National "Highway" Six

## MOTOR

**CYLINDERS**—L-head, cast en bloc. Large water jackets. Removable top cover to allow free access to water jacket space. By a special process the National cylinders are annealed—a process which removes all the strains from the iron so that no unusual pressure or strains can result. Highway size,  $3\frac{1}{2} \times 5\frac{1}{4}$ .

**HORSEPOWER**—National Sixes develop the maximum power without fuss or vibration. Highway, 51 horsepower, 296 cubic inch piston displacement.

**PISTONS**—Each piston is fitted with three rings. They are provided with special oil recesses and drilled with relief holes to prevent motor smoking in the event too much oil is used. The pistons and all reciprocation parts are of highest quality material. They are unusually light in weight. Corresponding weight has been added to the crank case and crank shaft, which makes the National motor light and economical but solid and sturdy in operation. High speed is possible without vibration.

**CRANK CASE** is of special aluminum alloy. It is strong and rigid. It holds the moving parts in perfect alignment at all speeds. Crank case is divided horizontally, the upper half contains shaft and bearings, while the lower half serves as oil basin. This oil basin can be quickly removed. The pistons and connecting rods can be readily removed from below without disturbing the main bearings.

**CRANK SHAFT** is heavy and firm. It is drop forged from open-hearth steel, heat-treated. The solid crank shaft and rigid crank case are greatly responsible for the long life of the National motor. They compel all other parts to perform without strain or vibration. There are four extra large main crank shaft bearings. They are nicked babbit, bronze backed. Size of bearings—

	FRONT	TWO CENTER	REAR
Highway . . . . .	$1\frac{3}{4} \times 2\frac{7}{8}$	$2 \times 2\frac{1}{4}$	$2\frac{1}{8} \times 3\frac{1}{4}$

**VALVES**—Valve mechanism is entirely enclosed and operated by one-piece cam shaft. Valves are all located in right side. Valve stems and push rods work in separate removable bushings and are protected by removable side plates. Liberal size valves.

**CARBURETION**—National-Rayfield design of carburetor. Carburetor is hot-water jacketed, also warmed by hot air from the exhaust. It gives a positive mixture and a wonderful flexibility to the motor. "Choking" is practically impossible. Dash adjustment and primer for cold weather use are conveniently located.

**IGNITION** is supplied by a reliable high-tension magneto, the most positive ignition to be had. Entirely separate and independent of electrical equipment. Ignition wires neatly held in non-conductive tube.

**TIMING GEARS** are cut helical, insuring noiseless gears at all times.

**COOLING**—Special radiator of improved National design. (National "Shield" radiator first used in 1907.) Radiator mounted on trunnions. Adjustable ball-bearing fan. Water circulated by centrifugal pump. Capacity of water system: Highway, 5 gallons.

**LUBRICATION** is of the self-contained, positive feed type, the oil being pumped from the oil reservoir, beneath the crank case, and forced to top of main bearings. From there the oil overflows into pockets in bottom of crank case into which the connecting rods dip. Pockets have overflow holes which allow the oil to drain back into reservoir beneath so that a constant level of oil is maintained. An indicator, which shows at all times the amount of the oil, is placed adjoining the filling tube. Oil pump and strainer are removable from the outside of crank case without disturbing any other parts.

## CLUTCH AND TRANSMISSION

**CLUTCH**—Aluminum cone, faced with durable material, operating in fly-wheel of motor. National design, and successfully used for years in National cars. Proven efficient by many gruelling races.

**TRANSMISSION**—Selective type. Three forward and one reverse speed. Large, broad-face gears. Annular ball-bearings throughout.

## GASOLINE SUPPLY

**TANK** in rear, securely fastened to main frame and easily filled without disturbing passengers. Highway capacity, 17 gallons.

**MILEAGE**—National owners throughout the country testify, unsolicited, to the remarkable records made. Fuel efficiency of sixteen miles per gallon is a fair average. Many owners claim more.

## ELECTRICAL SYSTEM

**LIGHTS**—Conveniently controlled by one switch on the dash. The two powerful headlights are also fitted with small bulbs, thus giving two sets of lights in front. Small, enclosed lamp illuminates the dash. Tail lamp is combined with the license holder. Lighting system is entirely automatic. Current generated by small dynamo and stored in storage battery for use when car is standing. Dynamo is separate from starter motor, eliminating possibilities for troublesome "shorts". Battery is concealed behind running board splashers and accessible by means of easily removed cover.

**STARTER**—The electrical system is the National-Westinghouse design of separate units. Built and guaranteed by the well-known Westinghouse Company. Starting is effected by a small but powerful electric motor geared to the fly-wheel. It is silent, swift and sure. The engagement is mechanical, automatically made by pressing small push-button on the car floor. Ammeter on dash.

## NATIONAL HIGHWAY SIX

### WHEELS

WHEELBASE—Highway models, 128 inches.

TIRES—Option of Firestone, Goodrich or United States. Highway size, 34 x 4½.

RIMS—Firestone demountable (Q.D.) rims. Extra rim included. Double tire carrier on rear of car.

### FRAME

FRAME—Pressed steel, five-inch channel section. Well braced and strong. Curved up over rear axle to allow low suspension of body and low center of gravity. Frame narrowed in front to permit short turning radius.

### BRAKES

SERVICE BRAKES—National brakes stop car gently without jerks or noise. Easily operated by foot pedal. Pedals adjustable to suit driver. Brakes contract on rear wheel drums. Highway size, 15 x 2.

EMERGENCY BRAKES—Instantly applied by convenient hand lever. Internal expanding type.

### SPRINGS

FRONT—Semi-elliptic type. Fitted with special lubricant pockets on each leaf, which keep springs quiet. Highway size, 38 inches.

REAR—National horizontal cantilever; attached rigid on rear axle, swiveled to frame at center, and "linked" in front, giving rocker effect and soft riding qualities. Highway size, 51 inches.

### CONTROL

STEERING COLUMN—On left side. Plenty of room in driver's compartment—enter car from either side.

LEVERS—In center of the car. Handy, but do not obstruct passageway.

CONTROL BUTTONS—Magneto switch, light switch and carburetor adjustment, within easy reach on the dash. Starter button on the toe board. Hollow heel plate facilitates driving with accelerator.

### FINISH

COLOR—National reputation for high-class finish is not excelled. Standard color of cars is National blue. Fenders black enameled. All metal trimmings black and nickel.

UPHOLSTERING—Unusually deep, plump and durable. Genuine leather. Special deep cushion springs.

### AXLES

FRONT—I-beam, one-piece steel forging. Large adjustable roller bearings in hubs.

REAR—Full-floating axle; wheels turn upon two rows of large roller bearings. Weight carried on housing, live axles used only for turning wheels. Driving pinion and ring gear have spiral cut teeth. These spiral gears are silent.

DRIVE—From motor to rear axle by straight line shaft. Strong torsion member relieves shaft from strains.

### EQUIPMENT

TOP—Graceful "one-man" top made of "Never-leak", a water-proof material. Each top specially tailored to conform to graceful outlines of car. National tops are fitted with Jiffy curtains of same material.

WINDSHIELD—Ventilating and rain-vision style. Solid mountings. Easily operated.

SPEEDOMETER set flush in dash. Speedometer driven from drive shaft.

HORN—Under-hood type of electric horn, large button in center of steering wheel.

TIRE PUMP permanently mounted on motor. It is set to operating by pushing small lever. Long tube to reach all tires. Equipped with tire gauge.

TIRE CARRIER—Double tire carrier in rear.

GASOLINE GAUGE—Accurate gauge on tank.

TOOLS—Full complement of tools, carried in specially fitted pocket located in the front door. Neat lock on flap protects the tools.

## WARRANTY

*We Warrant* each new motor vehicle manufactured by us, whether passenger car or commercial vehicle, to be free from defects in material and workmanship under normal use and service, our obligation under this warranty being limited to making good at our factory any part or parts thereof which shall, within six months from date of shipment from our factory, be returned to us with transportation charges prepaid, and which our examination shall disclose to our satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on our part, and we neither assume nor authorize any other person to assume for us any other liability in connection with the sale of our vehicles.

This warranty shall not apply to any vehicle which shall have been repaired or altered outside of our factory in any way so as, in our judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident, nor to any commercial vehicle made by us which shall have been operated at a speed exceeding the factory rated speed, or loaded beyond the factory rated load capacity.

We make no warranty whatever in respect to tires, rims, ignition apparatus, horns or other signaling devices, starting devices, generators, batteries, speedometers or other trade accessories, inasmuch as they are usually warranted separately by their respective manufacturers.

## National Motor Vehicle Company, Indianapolis

*For Fifteen Years Successful Builders of High Grade Motor Cars*

1916

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