



1897

1908

WOODS ELECTRIC VEHICLES

THE electric vehicles shown herein represent the latest development of the principles and details of construction originally adopted by us, which, although extensively copied, have never been equaled by other manufacturers. Many electric automobile manufacturers assemble parts of their machines from apparatus manufactured by other concerns, but we design especially each part for its specific use and build every part of our machine in its smallest detail in our own shops under a very rigid inspection system. This insures to our customers vehicles properly manufactured by originators and not assembled by copyists.

Running Gear Our method of drive is what is commonly known as "side chain", that is, each rear wheel is driven individually by a separate chain. We employ a unit assembly frame which consists of a bronze casting containing a motor with driving gears and a sprocket at each end. This makes a complete driving mechanism entirely separate and independent from the remainder of the vehicle, and, after it is properly secured to the frame-work, all that is necessary to make it operative is to connect a few wires from the motor to the source of power and controlling apparatus, and also to connect one chain each from these sprockets to corresponding sprocket fastened to the hub of each rear wheel.

Spring Suspension Our special platform spring suspension maintains the axles absolutely parallel. This is accomplished by means of the single shackle connection, as shown in the accompanying illustration. By maintaining axles absolutely parallel, the power required to pull the vehicle is reduced to a minimum.

W o o d s M o t o r V e h i c l e C o m p a n y

Frame We use a frame of armored ash, which is a part of the Victoria body. Besides this, steel reinforcement parts are used at each end to hold side members firmly in place. Steel cross members reinforce ash cross-bars. The body is also firmly braced with steel corner brackets, so that its shape as well as joints are permanently maintained.

Motor We do not rate our motor in horse-power since there is no standard for such. Our motors are designed large enough to carry the vehicle over all sorts of roads and grades. The economy in power consumption under all conditions is unexcelled. This means that the battery is never overtaxed, whether the road be muddy or hilly or deep with snow.

Wheels We use the artillery pattern, consisting of steel hubs and the highest-grade hickory spokes.

Bearings We use nothing but bearings of the Hess-Bright type throughout, thus saving power and lubrication annoyances.

Tires We use solid tires on all of our vehicles, but will furnish pneumatic tires if specified. Records of three years' or more service without one cent for renewal or repairs is the average service with solid tires. The convenience of solid rubber tires and the absolute guarantee against all possible breakdowns, we consider so strongly in their favor that we have spent a good deal of money in developing the proper construction to be used with such tires, and on account of the greater strain coincident with their use, our vehicles must contain the highest-grade material, in order to make them absolutely satisfactory.

Controller Our system of control is such as to give four uniform speeds forward and reverse, up to 18 miles an hour. These speeds are ample for city use. Our vehicles can be run without any detriment to motor or other apparatus on the highest speed.

Highest - Grade Electric Carriages

Brakes Two sets of brakes make the control of our vehicle entirely safe. One brake is operated by a reverse motion of the same lever that applies the power. A forward movement of this (the controller) lever applies the power, and a backward motion applies the brake. This makes it absolutely impossible for one to apply the brake and, at the same time, leave the power turned on. This is a very desirable feature and is our own patented construction. The other brake is applied directly to the hub of both rear wheels and is operated by the foot. In addition, the current can easily be entirely cut off by the turning of a key, which, when the vehicle is not in use, can be carried in the pocket. When the key is removed the vehicle is entirely inoperative and can be left in any public place with absolute safety.

Batteries We use and recommend the "Exide" battery, manufactured by the Electric Storage Battery Company of Philadelphia, the largest storage battery company in the United States. This company has repair stations in all the large cities, and customers are thus enabled to obtain necessary parts and repairs without the delay incident to sending to the factory—an advantage which all automobile owners will fully appreciate. We use forty cells of battery, because this number can be most conveniently and economically charged from direct current circuits.

Mileage We furnish batteries with each vehicle with a capacity for at least 50 miles on one charge on any speed. We guarantee this mileage without a loss of speed of more than 5%. On account of this, the highest efficiency as to charging and battery life is obtained.

Repairs and Maintenance Users of our electric carriages who follow the few simple instructions given in our instruction-book for the care of the machine find that, with one-tenth the care necessarily given to expensive horses and carriages or gasoline automobiles, the cost will be less per mile than with similar vehicles of the classes just mentioned. We will be pleased to furnish a long list of satisfied customers. Over 95% of the electric vehicles now running in Chicago are of our make.

W o o d s M o t o r V e h i c l e C o m p a n y

Painting Standard colors are blue, green and maroon.

Striping Two narrow gold stripes on blue and green; two narrow carmine stripes on maroon.

Trimming We use the finest hand-buffed trimming leather for cushions and backs, and the very finest grade of straight-grain top leather. The head linings of our Brougham and Victoria tops are of the highest grade of imported Wülfing cloth.

Tops The summer or Victoria top is built on a rail and by means of four nuts is firmly fastened to the vehicle. The Brougham or winter top is interchangeable with this, and by means of four additional bolts is held firmly in place. This is no makeshift affair, but all joints conform closely to the shape of the body by means of aluminum panels. When the Brougham top is once in place, it is hard to distinguish it from a solid top, as to all appearances it is such. The main objection heretofore to interchangeable tops has been the fact that, on account of the cheap and flimsy construction, they rattled. Our construction of this type, obtained from many years experience, as we have been pioneers in building this type of vehicle, absolutely guarantees against this.

Materials Such material as nickel steel, chrome steel, vanadium steel alloys and Parson's manganese bronze, are properly distributed throughout Woods vehicles and eliminate all possibilities of breakdowns.

Heat-Treating We have one of the best heat-treating and hardening plants in the country. All our work is done in connection with salt bath furnaces and Le Chatelier pyrometers. Experts understand what this means in regard to absolutely uniform results. We have found that crystallization is all due to the lack of properly handling the steel before putting it into service. On account of this we have established this fine heat-treating plant, which absolutely eliminates crystallization, especially with the kind of steel we use and, for this reason, we make solid tires possible. Besides this we are in close touch with testing

Highest - Grade Electric Carriages

laboratories, where all our material is tested, and therefore we know which heat treatment is best for the specific use for which the material is intended.

Inspection We maintain a fully-equipped Inspection Department with precision instruments, which will measure accurately to $\frac{1}{10,000}$ part of an inch. Every part of our vehicle, even the minutest nut or screw, is inspected in this department before being assembled. This not alone guarantees to the customers perfect fit and the highest efficiency in working parts, but also greater interchangeability in parts than has heretofore ever been attempted in automobile manufacture.

Factory Equipment We invite inspection of our factory, so that we can show our up-to-date methods of manufacture and that all parts used in Woods Vehicles are manufactured in our plant, and not assembled of bought parts. We have the latest and newest machine-shop equipment and the most complete and modern automobile factory for its size in the world. We doubt if there is any carriage factory in the country that has a better equipped wood-shop for making bodies, or a better equipped trimming or painting department for upholstering and painting of vehicles. In regard to the refinement and manufacture of electric motors, all of which we make ourselves, we know that there are no other manufacturers of electrical apparatus that put their motors through some of the machining operations that we do, such as grinding interior of motor shells and motor shafts. In fact, we grind all of our bearing fits, so that permanency of fit is guaranteed. Our gears are cut on an automatic hobbing-gear generator, guaranteeing theoretically perfect teeth. For this reason we are able to make hering-bone gears of an efficiency beyond that obtained with any other mode of transmission.

Testing All of our motors and vehicles are tested by expert electrical engineers. We test electrical steel and iron for the minutest refinement, so that we obtain the highest efficiency in our motors. All of our motors and vehicles must be within 3% of standard, in order to make them pass electrical test.

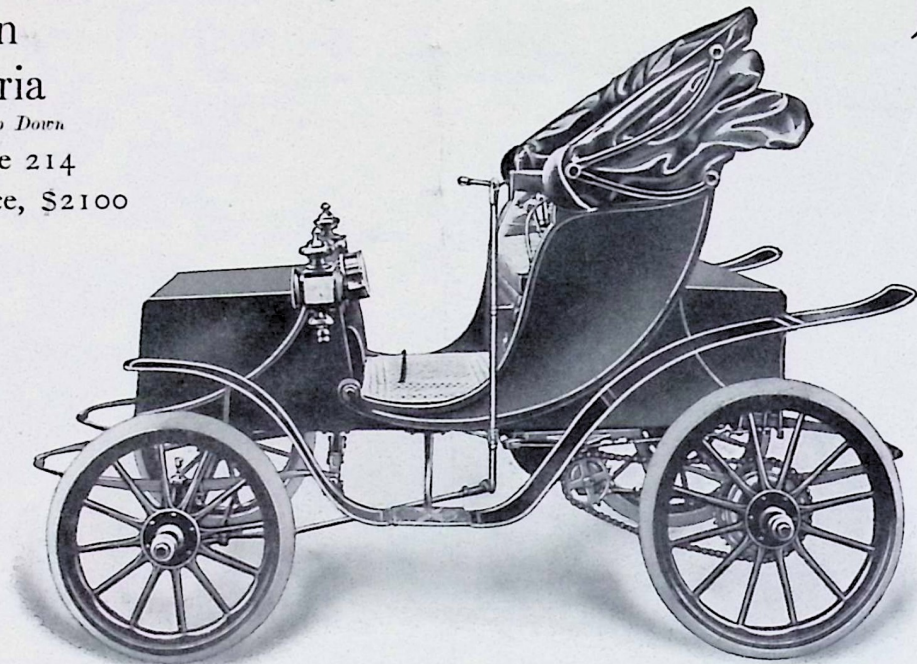
Queen
Victoria

—Top Down

Style 214

Price, \$2100

Woods



Two passengers; 45-inch seat; battery 40 cells 9 M. V.; 73½-inch wheel-base; weight 2,500 pounds
Hess-Bright bearings throughout

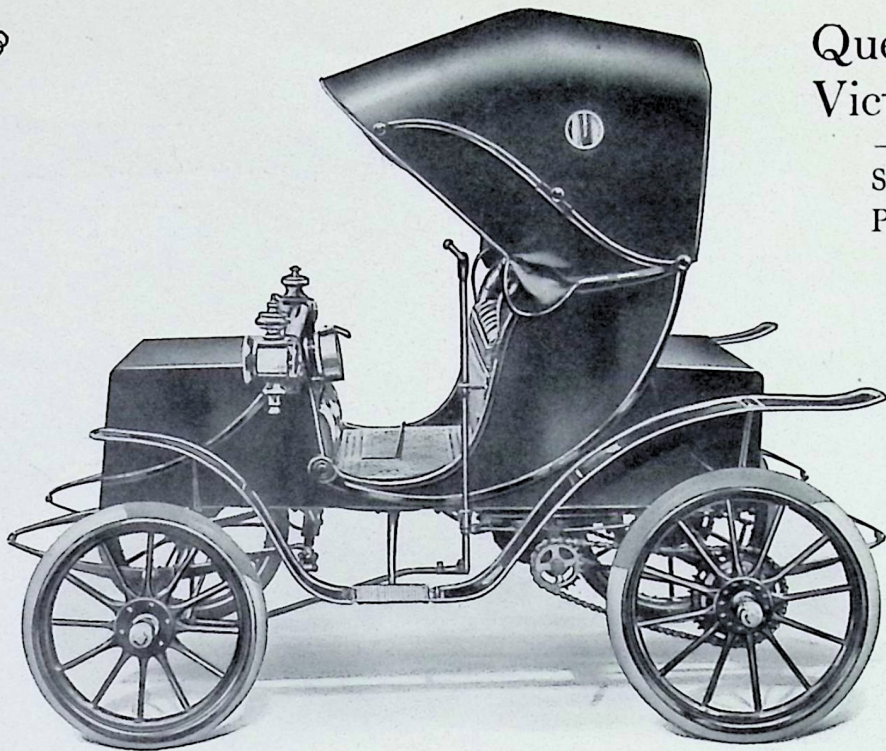
Woods

Queen
Victoria

—Top Up

Style 214

Price, \$2100



Two passengers; 45-inch seat; battery 40 cells 9 M. V.; 73½-inch wheel-base; weight 2,500 pounds
Hess-Bright bearings throughout

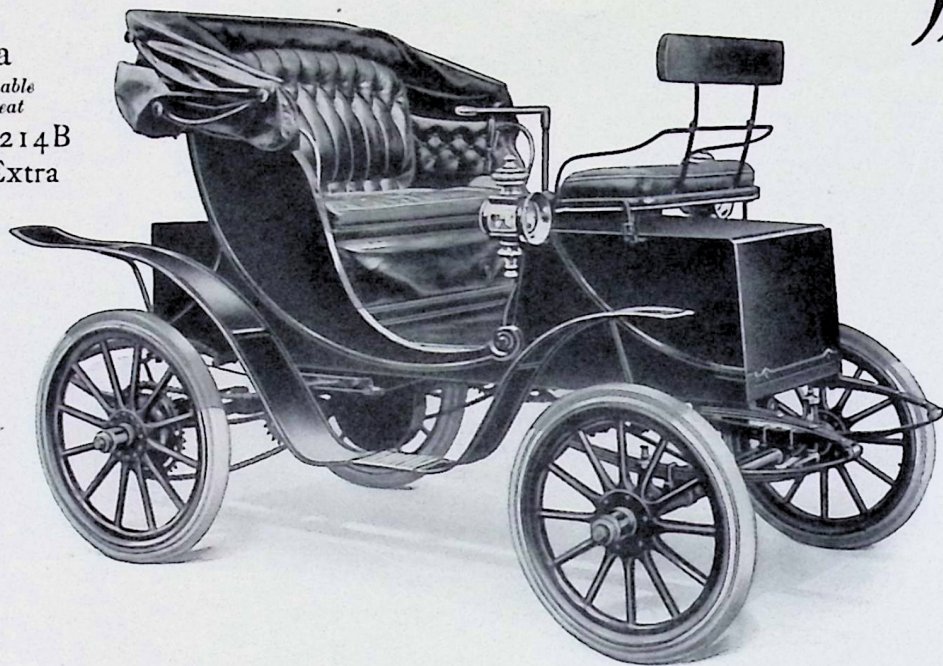
Queen
Victoria

— Detachable
Child's Seat

Style 214B

\$50 Extra

Woods



Vehicle same as shown on pages 8 and 9, with detachable child's seat
Hess-Bright bearings throughout

Woods



Queen
Victoria

— *Detachable
Brougham Top*

Style 214 A
\$600 Extra

Seating four passengers; vehicle same as shown on pages 8, 9 and 10, showing detachable brougham top for winter use
Hess-Bright bearings throughout

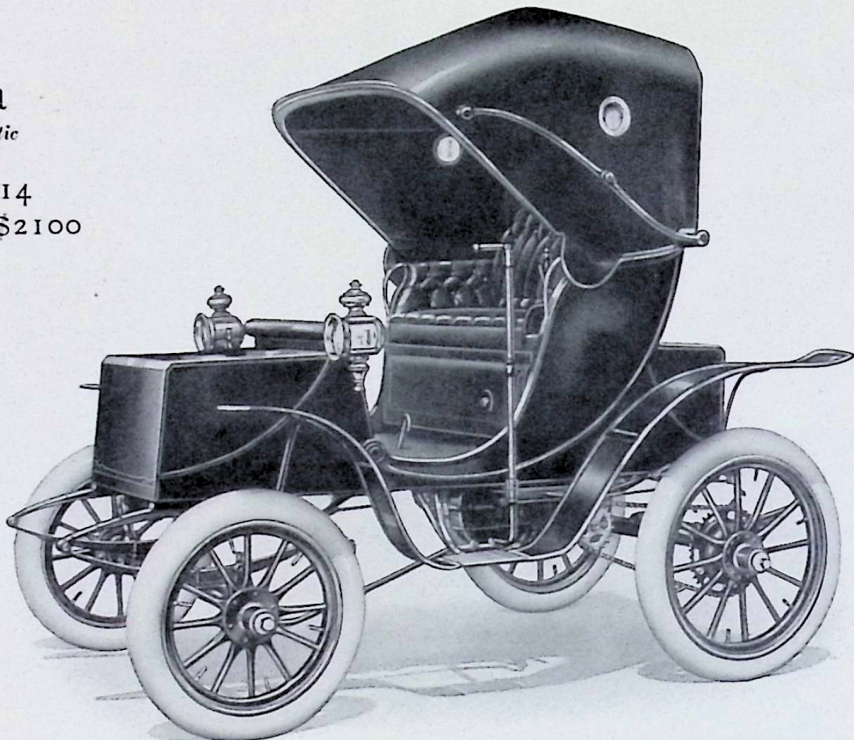
Queen Victoria

—*Pneumatic
Tires*

Style 214

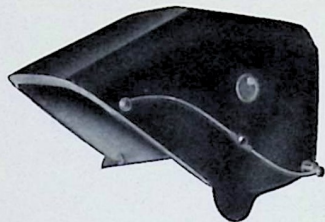
Price, \$2100

Woods

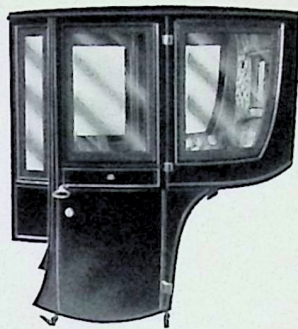


Queen Victoria same as shown on pages 8, 9, and 10. Pneumatic tire equipment optional
Hess-Bright bearings throughout

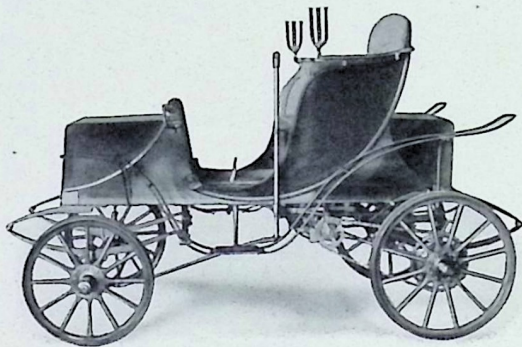
Woods



VICTORIA—Summer Top



BROUGHAM—Winter Top



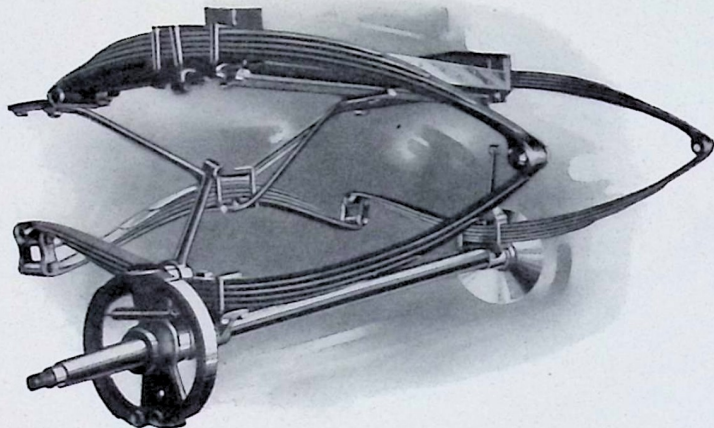
VICTORIA CHASSIS

Showing the interchangeable features of the Woods Queen Victoria with both tops
Hess-Bright bearings throughout

Spring Suspension

—Woods *Electrics*

Woods

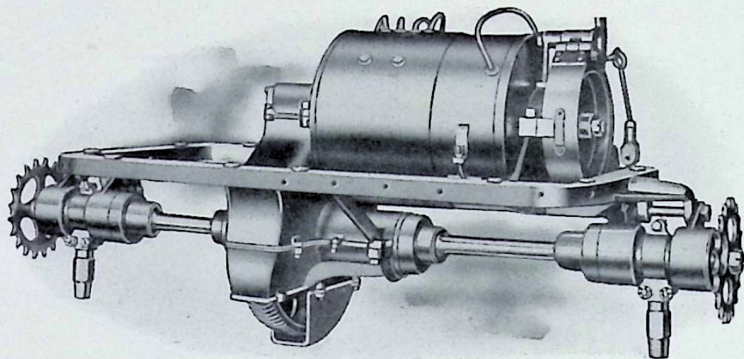


Illustrating the Woods Platform Spring Suspension. Used on all our vehicles, maintaining axles absolutely parallel and eliminating the necessity of using pneumatic tires

Woods

Unit
Assembly
Frame

— *Woods Electric*



Showing the entire working mechanism of the Woods, assembled on "Parson's Manganese Bronze" unit frame, independent of remainder of vehicle. Also illustrating universally-jointed countershaft. (*Patented.*)

PRICES quoted herein are f. o. b. Chicago.
Terms:—Twenty-five per cent. cash deposit with
order; seventy-five per cent. sight draft attached
to bill of lading.

No charge for standard crating for United States,
Canada and Mexico. Additional crating for foreign
shipments at cost.

Press of
Munroe & Southworth
Chicago

