

RECENTLY PATENTED INVENTIONS.

Electrical Devices.

**BUILT-UP INSULATOR.**—L. STEINBERGER, New York, N. Y. The invention relates to insulators of the kind used for currents of high potential and in which it is desirable to secure the greatest possible dielectric quality combined with a maximum of physical strength and a minimum of materials and weight. The invention enables the operator to readily take the same partially apart without interrupting the service, so as to examine the interior portions of the insulator for the purpose of cleaning it or for coating the exposed surfaces or to replace the oil used for increasing the insulation.

**INSULATOR FOR HIGH VOLTAGES.**—L. STEINBERGER, New York, N. Y. This improvement refers to insulators for electric conductors, and especially to insulators for conductors conveying currents of high potential. The main object is to prevent any leakage of current or the possibility of the formation of a destructive arc between the conductor and the line-support, such as a partition or wall, and also to prevent the leakage of the current and the formation of arcs between the conductors and adjacent bodies. Mr. Steinberger further seeks to provide the insulator with hoods movable relatively thereto, whereby the arcing distance may be varied and the hoods disposed to best advantage.

Of General Interest.

**ATOMIZER.**—F. S. DICKINSON, New York, N. Y. An object of this invention is to provide a force-pump to be used in connection with an atomizer, wherein a spring is employed for the return stroke, thereby avoiding muscular action to operate the plunger on the return stroke, which greatly facilitates the operation of the instrument.

**CEMENT PAVING.**—R. KIESERLING, Altona, Elbe, Germany. The present invention relates to improvements in the production of cement paving for streets, roads, floors, yards, closed rooms, and so on. One part of the subject matter of the invention relates to the production of elastic joints in cement paving, which joints make the same permanently free from cracks. Another part of the subject matter relates to means for producing such elastic joints in the paving.

**FRAME FOR MAGNIFYING GLASSES.**—W. J. KEMLER, Pittsburg, Pa. The purpose of the invention is to provide a frame, so constructed that it can be compactly and flatly folded when not in use and quickly and conveniently opened out for use as a standing frame or an eyeglass-frame or so that all the members are placed in practically horizontal alignment, in which latter position of the parts one member can be utilized as a handle and the lens member employed for reading purposes, thus enabling the same device to be used as an eyeglass, a standing view or magnifying glass, and a reading-glass.

**CANDELABRUM.**—A. C. GUNTZER, New York, N. Y. One purpose of the inventor is to provide a candelabrum wherein the body portion is in the form of a cross revolvably mounted upon an adjustable standard and to provide the standard with removable legs at its base and also to provide readily locking devices for the legs. Another purpose is to construct the cross forming the body in sections readily removable, and which when assembled will not show their points of connection at the front, and to provide means for securing sections firmly in place, which means can be quickly and conveniently applied and are not visible at the front of the body.

**UNDERREAMER.**—J. F. THOMPSON, Marietta, Ohio. Mr. Thompson's principal objects are to provide means whereby the reamer can be lowered through a casing, automatically expanding when it reaches the end of the casing and having no parts extending materially below the working edges of the bits; also, to provide means for manipulating the bits for lowering the reamer in the casing without interfering with operation of same when it reaches the lower end thereof to provide means for holding the bits in expanded position to operate the device for reaming and to avoid vertical motion of the bits with respect to the body of the reamer.

**TOBACCO-CONTAINER.**—W. H. BROWNING, New York, N. Y. This invention is an improved device primarily for containing cigars and keeping them in proper moist condition, but may be used with advantage for containing tobacco in other forms. The object is to overcome former disadvantages and produce an effective device for holding the cigars which will at all times keep them in proper order.

**COMBINATION NOTE-BOOK, COPY-HOLDER, AND TOOL-KIT.**—G. H. RICHARDSON, San Francisco, Cal. The object in this case is to provide a note-book stand, copy-holder, and tool-kit for the use of stenographers and arranged to hold a note-book or a loose copy in a most advantageous position, readily to accommodate various tools and to allow of convenient folding into little space for storing or for shipping purposes. The clasp on the front shelf will hold an incoming letter, which the stenographer frequently has occasion to refer to, by the top edge, letting said letter hang down in front of the operator, who then may see at a glance both the letter received and the stenographic notes for the letter to be forwarded.

# The Incomparable WHITE

## The Car for Service



### “SPEAKING OF THE WHITE REMINDS ME—”

The first appearance of the White Steamer in competition was in the New York-Rochester endurance run of 1901. The four Whites which started all made perfect scores, although only half of the total number of starters even finished.

The latest appearance of the White in competition was in October, 1906, in the London Town Carriage Competition, in which the leading makes of the world were entered. The cars were judged on 14 distinct points, covering practically every phase of the construction and operation of the car. The White entry received the highest award—a gold medal—only one other machine being similarly honored.

In the intervening competitions, extending over a period of six years, the White has won a larger percentage of victories than have any other five makes combined. Included among White honors is the world's track record for the mile, 48 3-5 seconds, some four seconds faster than any other machine has ever traveled except on a special straightaway course.

White progress in designing has been continuous and has had a beneficial influence on the entire industry. We commenced the use of nickel-steel in 1903, at which time the nickel-steel makers informed us that we were the only automobile manufacturers who used their product. Similarly, our engine was the first to be fitted with a ball-bearing crank-shaft. The Jury of Awards at the St. Louis Exposition officially recognized our leadership by conferring on our designer, Rollin H. White, a special gold medal, the only award made to an individual connected with the industry.

The principal advance in the design of our models for this year is the new system of regulation, whereby the steam pressure remains practically constant at a uniform degree of superheat under all conditions. Another way of stating the effect of the improvement is that a person driving one of our new models for the first time will be able to get the same results as the most experienced operator. A number of other improvements, suggested by the study and experience of the year, have also been made. Taking into consideration the new features, together with the features characteristic of all White models—absolute silence, freedom from vibration, the absence of all delicate parts, genuine flexibility (all speeds from zero to maximum by throttle control alone) and supreme reliability—we believe that no other car has so much to commend it as our 30 steam horse-power Model “G” and our 20 steam horse-power Model “H.”

Write for Descriptive Matter, giving Prices and full Specifications of both Models.

**THE WHITE COMPANY**  
CLEVELAND, OHIO



HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication. References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn. Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same. Special Written Information on matters of personal rather than general interest cannot be expected without remuneration. Scientific American Supplements referred to may be had at the office. Price 10 cents each. Books referred to promptly supplied on receipt of price. Minerals sent for examination should be distinctly marked or labeled.

(10288) H. L. P. asks: 1. Can Ohm's law (current = pressure ÷ resistance) be read also resistance = pressure ÷ current, or pressure = current × resistance? I hear that Ohm's law is not strictly true. To what extent is this true? A. Ohm's law is true. The values of resistance and current as you give them are correct. Anyone who has studied algebra would read these values at sight. 2. What is Ampere's law? A. Ampere's law relates to the attractions and repulsions of currents upon each other, and is at the foundation of the use of electricity in motors. You will find them in such a book as Thompson's "Electricity," price \$1.50, or in Sloane's "Handy Book of Electricity," which we send for \$3.50. This last is a very valuable book for one who would learn all about the subject. 3. Is there any way of transforming a direct current without combining a motor and dynamo? Thus: How can 1 volt × 12 amperes = 12 watts be changed to read 6 volts × 2 amperes = 12 watts? A. There is no way, except by a motor dynamo, to transform a direct continuous current into another direct continuous current. 4. When transformers are used on electric lighting circuits, is not the current similar to the secondary of an induction coil? A. A transformer is only a special form of an induction coil. Used with an alternating current, it need not have a vibrator or interrupter. 5. What is the nature of secondary current of induction coils? A. The secondary current in an induction arranged for giving a spark is an interrupted direct current. The plus end of the spark remains at the same pole of the coil. The spark passes all the time in the same direction.

(10289) W. P. K. asks: In the SCIENTIFIC AMERICAN SUPPLEMENT of April 7 last, it is stated that the ultra-violet rays have proved singularly successful in curing baldness; twenty-seven cases out of thirty-two submitted to the treatment having been perfectly cured, though many of the cases were of many years' standing. As this is a matter which interests many of your readers in the present, and is likely to interest most of us in the future, you may perhaps be so kind as to favor us with some information on the subject. First, do you happen to know, or to have heard, of any case of baldness submitted to and cured by this treatment? Secondly, considering the powerful action of the ultra-violet rays on the human body, is there no danger likely to be incurred in submitting a part so important as the head to their influence? A. Several esteemed correspondents ask regarding the production of hair by ultra-violet rays. The simplest way to get ultra-violet rays into contact with the scalp is to go in the sunshine without a covering for the head. If all did this, there would probably be no baldness. The tight hat impedes the circulation of the blood through the scalp, and the hair dies. We have no other information regarding the treatment referred to in the note than is given in the SUPPLEMENT named.

(10290) A. M. D. asks: Through the columns of your valuable paper will you please give a decision on the following dispute? A claims that in the manufacture of a mirror, the chemical reaction generates an electric current, the glass acting as a conductor on which the silver deposits. B claims the glass in a non-conductor, and the action is purely chemical. Will you please state which is correct. If B is correct, does the hardness of the glass surface have anything to do with the brilliancy of the deposit? A. The precipitation of silver upon glass in silvering a mirror is a simple chemical action due to the presence of some reducing agent, such as glucose. There is no electrical action whatever, and glass is not a conductor of electricity, but a strong insulator.

(10291) H. W. S. asks: Does it take more power to pull a 100-light dynamo when 100 lights are used, than it does when there is only one light used? Dynamo in both cases registers 110 volts. A. Does it take more gas to light 100 lights than it does to light one light? This is a parallel question to that above. A dynamo which is lighting one lamp is furnishing the amperes necessary to light one lamp. A dynamo which is lighting 100

(Continued on page 39.)

lamps is furnishing the amperes necessary to light 100 lamps. The voltage required for one lamp is the same as required for 100 lamps if the lamps are in multiple, as lamps are ordinarily arranged on a 100-volt circuit. If the lights were arc lights in series, then the amperes would be the same for 100 as for one lamp, and the volts would vary from lamp to lamp. One lamp would require about 50 volts, and 100 would require 5,000 volts. It is, however, not usual to put more than 50 lamps in series upon 2,500 volts.

(10292) J. F. M. asks: I would like to know if the small dynamo can be run as a motor on a 110-volt circuit, and what changes in winding would have to be made for that purpose. A. The small dynamo of SUPPLEMENT No. 161 cannot be run on a 110-volt circuit. It would burn out directly. We have not the winding data for changing this dynamo to 110 volts. You will find such a machine described in Poole's "Designs of Small Dynamos," which we send for \$2.

(10293) E. L. W. asks: Will you kindly state in your Notes and Queries column what causes the report made by the cracking of a whip? A. The crack of a whip communicates a shock to the air which is transmitted to the ear, and we hear the sharp, sudden sound.

(10294) G. L. S. asks: Will you kindly tell me if I hold a strong horseshoe magnet near a copper wire, say within a half inch, and then pass a powerful current of electricity through the copper wire, will there be any attraction between the wire and the magnet? If I make the magnet stationary, and then hold the wire very close to it, and slack enough for it to readily reach the magnet when the current is sent through it, would they move toward each other, or would there be no change of position at all? If they do attract each other, how strong a magnet, also how strong a current, will be needed to pull this wire say a distance of an inch or a little less? A. If a coil of wire carrying a current of electricity is brought near a powerful magnet, one end of coil will be attracted toward the magnet and the other end will be repelled from it. This is because the coil is itself a magnet and behaves as a magnet does. A straight wire will be very slightly affected by even a powerful magnet. It will be twisted around till its field of force lies with the lines parallel and in the same direction as that of the magnet. It will then move toward the magnet, but not with much force. The energy of a single wire is not great enough to cause it to do so.

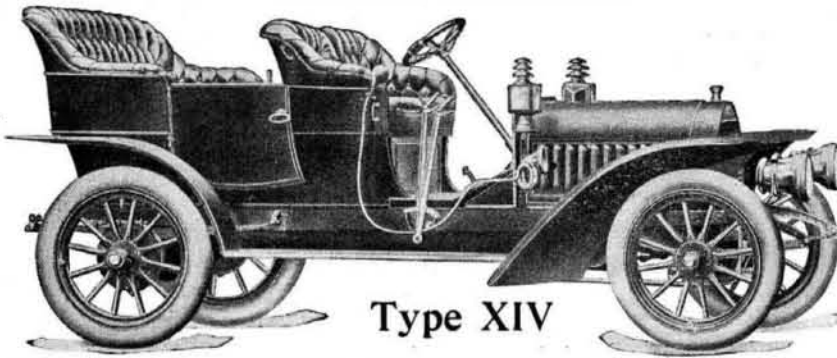
(10295) G. O. V. asks: Will you please let me know what century or year, and where, the Romans first made the day to begin at 12 o'clock and end the next night at 12 o'clock? A minister told me some time ago that he guessed they did it in the fourth century. I want to know sure. A. We think you have been incorrectly advised as to the practice of the Romans in beginning the day at midnight. They did not begin to do this in the fourth century, since they seem always to have begun the day at the middle of the night. Varro, a learned Roman of the time of Cicero, wrote a book which has not come down to us, but which has been quoted by several authors whose works we have. The title of the book was "Concerning Human Affairs." One of the chapters was upon "Days." This chapter is quoted in the "Saturnalia" of Macrobius, Book I., Chap. 3, as also by Gellius in his "Attic Nights": "Men who are born in the 24 hours from midnight to the next midnight are said to have been born upon the same day." By which words it is evident, Macrobius says, "that they divided the observation of the day so that he who was born after sunset and before midnight, that should be his birthday in which that night begins; on the contrary, he who was born in the six later hours of the night should be considered to be born on that day which followed that night." And this, so far as the authorities go, was always the practice of the Romans. The Babylonians reckoned from sunrise to sunrise (Isidorus, "Orig." V. 30), while the Athenians and the Hebrews reckoned from sunset to sunset (Gellius, "Attic Nights," III., 2.) "The same Varro in the same book has written," says Gellius, "the Athenians observe differently, in that they say that all the time intervening from one sunset to the succeeding sunset is one day."

**PNEUMATIC STEEL HUB FOR AUTOMOBILE WHEELS.**

While the pneumatic tire admirably performs its function of absorbing obstructions and inequalities of a roadbed when these are small, it falls far short in the case of large obstacles and deep ruts and holes. The novel construction illustrated herewith is offered as a remedy for this deficiency. In order to relieve the tire which, as shown by incessant tire troubles, is entirely too delicate a member to be subjected to such rough treatment as it ordinarily receives, an auxiliary cushion is provided at the center of the wheel to take up heavy shocks. This air cushion, which is in the form of a column of air, is placed between the wheel and the axle, so large obstacles can

# The Autocar

## 1907

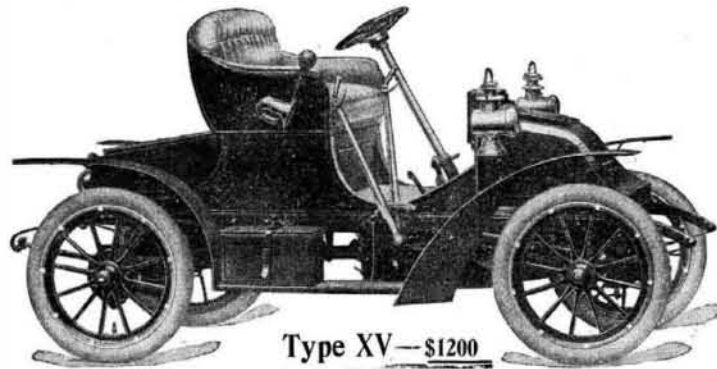


Type XIV

**30 horsepower** Five Passengers **\$3,000**  
112-in. wheel base

More power, more speed, more strength, more room; finer lines and more impressive style than ever; together with the important new feature of three-point unit suspension of power-plant, preserving perfect alignment at all times of all parts from motor to rear axle and wonderfully conserving power in transmission to the driving wheels.

Autocar Limousine and Landalet for immediate delivery. Autocars are sold with standard warranty of the N. A. A. M.



Type XV—\$1200

12 h. p. Two horizontal-opposed cylinders. Motor under hood. The only two cylinder car with sliding-gear ball-bearing transmission, three speeds forward and reverse. Direct shaft drive. The most highly developed motor car in the world. Standardized.

SPACE 24: MADISON SQUARE GARDEN SHOW

Write for the Autocar Book, illustrating and explaining Autocar construction and describing the unique system of factory tests assuring Autocar Reliability.

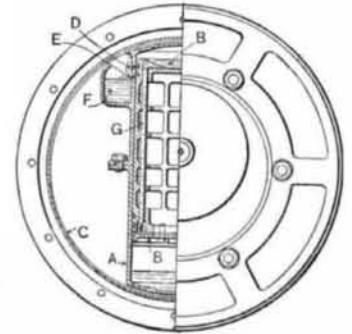
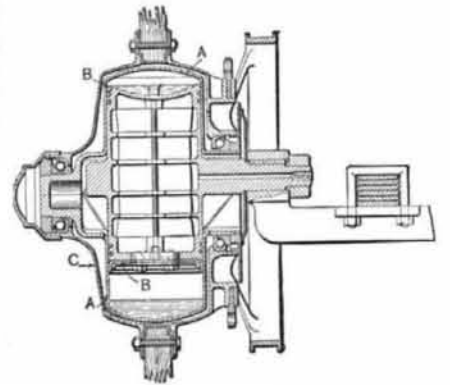
The Autocar Company, Twentieth St., Ardmore, Pa.

Member: Association Licensed Automobile Manufacturers.

# Reliability

be overridden without lifting the car body. The new construction has been subjected to a thorough test during the last year on a double-chain stock machine weighing about 3,000 pounds with its full complement of five passengers. The wheels, which are of the usual artillery type, 36 inches in diameter, are fitted with solid tires.

The construction of the wheel may be readily understood by reference to the accompanying sectional views. It will be observed that it consists of three essential parts. A vertically-disposed double cylinder, A, mounted in ball bearings on the wheel, a hollow piston, B, operating within the cylinder and formed integral with the axle, and a hollow hub, C, entirely enveloping the piston and cylinder. The car is provided with a small air compressor driven by the engine, which delivers air under pressure to a reservoir or tank provided with a safety



valve controlled from the dashboard. The air from this tank is delivered through a central bore in the axle to the hollow piston. Between the top of the piston and the upper end of the cylinder, an air cushion is provided, which is utilized to produce a forced circulation of oil to the moving parts.

In operation, when an obstruction is encountered by the wheel, the latter is raised, compressing the air between the bottom of the piston and the lower end of the cylinder, while at the top air is drawn through a row of ports, D, in the cylinder, and oil is sucked in through a lower row of ports, E, from the reservoir, F. This oil flows into the concave top of the piston, lubricating the piston rings and guides. On the rebound of the wheel the oil trapped is forced down a tube, G, to the lower end of the piston. It escapes past the piston rings, lubricating the latter, and through ports in the lower end of the cylinder drips into the hollow hub. As the latter is rapidly revolving, the oil is carried upward, as shown in Fig. 2, and dashed against the upper end of the cylinder, whence it falls into the oil reservoir, F. Thus a complete cycle is established. It is claimed the loss of air and wear of the parts is very small. This wheel is particularly adapted for use on such cars as use compressed air.

**A NOVEL REFLECTOR.**

The accompanying illustration represents in longitudinal section the Gray-Davis acetylene lamp for automobiles. In order to obtain a light which will answer the dual purpose of being visible at a great distance and which will, at the same time, brightly illuminate the road ahead of the car, a novel arrangement of a concave mirror and convex lens has been adopted. It will be seen that the

(Continued on page 43.)