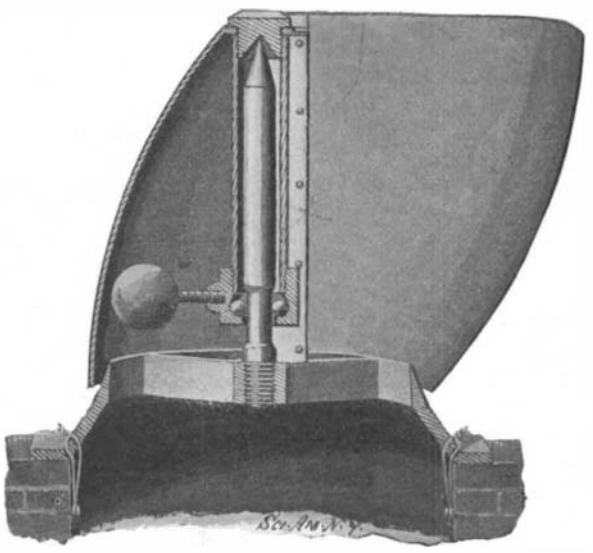
REVOLVING CHIMNEY CAP.

In order to insure at all times a perfect draft in the chimney pot the chimney cap here illustrated has been invented. The device forms a shield for the chimney top, which rotates with the wind to such position as to prevent the wind from blowing down the chimney. By its use the necessity for high smokestacks is avoided. Mrs. Anna E. Cook and Mr. Frederick J. Cook, of Lawrenceburg, Ind., are the inventors of this device.

A head piece is employed which may be secured by any suitable means to the top of the chimney or smoke-



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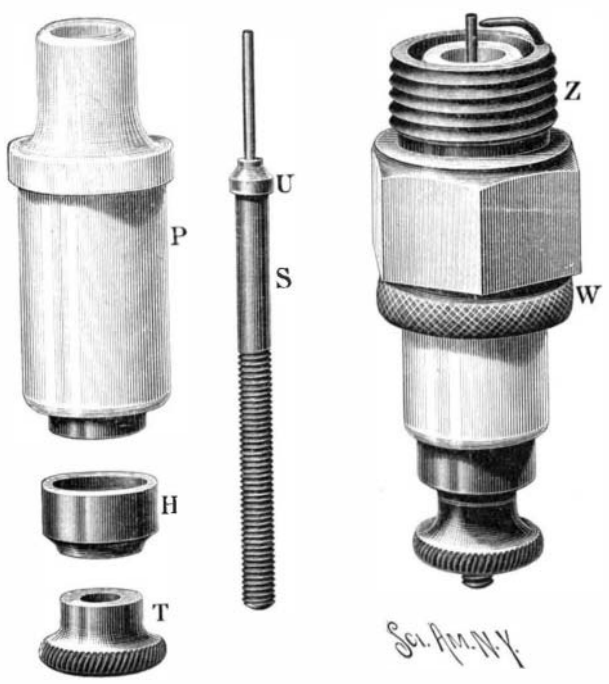
stack. The head piece comprises a peripheral plate and a central hub supported by radial arms. Threaded into the hub is the lower end of a vertical stud or rod on which the chimney cap proper is mounted to rotate. The upper end of this rod is conical and fits into the conical recess of a cap screw. A sleeve piece is threaded at its upper end over the cap screw, and is provided at its lower end with a bearing hub in which are placed a series of balls that bear against the rod. The chimney cap proper is made in two sections. The section shown on the left is of cast metal and is held in place between the head of the cap screw and the sleeve piece. The other section is much lighter, being formed of sheet metal bent to shape and riveted to the cast metal section. Projecting from the ball bearing cup is a stud on which a weight is threaded. The weight may be adjusted along the stud to balance the chimney cap properly. In operation the wind striking the chimney cap will rotate it to the position offering the least resistance. This position will be reached when the upwardly sloping cast metal section is presented to the wind. In this position it will be seen that the products of combustion passing up the chimney are directed at an angle with the wind. A good draft is thus maintained, and the evil effects of wind blowing down the chimney are avoided.

A NEW SOOT-PROOF SPARK PLUG FOR GASOLINE MOTORS.

Our illustration shows the parts and ensemble of a recently patented spark plug, the invention of Mr.



A NEW SOOT-PROOF SPARK PLUG FOR GASOLINE MOTORS.

C. A. Mezger of 12 Clinton Street, Brooklyn, New York city. The plug has two wide and deep air gaps between the center wire and the outer shell. These parts are well insulated from each other by a single, heavy porcelain, which fits loosely in the shell *Z* and rests upon a shoulder in the latter. A brass packing ring, *W*, that screws into shell *Z* presses the procelain *P* tightly upon an asbestos washer that rests upon the shoulder in *Z* and makes a tight joint between it and the porcelain, thus preventing any gas leakage. The spindle *S* is also packed with asbestos where its shoulder *U* is pressed upon the edge of the hole in *P* through which *S* passes. The cap *H* is screwed on the threaded part of *S* till it presses tightly against *P* and thus clamps the spindle *S* tightly in place. The porcelain is tipped with a brass cap over which *H* fits. A thumb-screw *T* is used for securing the wire from the spark coil.

The construction of this plug is of the strongest. The porcelain being in the form of a single large tube, of which the inner end, exposed to the hot gases, forms a tapering shell, it would seem as if the chances of breakage should be very slight. Furthermore, the center spindle and wire are made of one piece of nickel steel, the spindle being turned down to the size of a wire at the end that projects into the cylinder. A nickel-steel wire also is fastened into the shell, the inventor having found this to have more lasting qualities than the platinum wire that is generally used.

The principle followed by the inventor in designing this new plug is, that by arranging for a sufficiently great surface of insulating material between the outer shell and the center spindle, the resistance of any layer of carbon that may happen to form on the porcelain will be greater than that of the spark gap in the compressed gas. Consequently, following the path of least resistance, the spark will always jump. Proof of this is to be had by the fact that if the porcelain shell is coated with carbon in a gas-jet, and the plug then inserted in the motor, the latter can be started with the same ease as if the plug were perfectly clean. The plug appears to be one of the best solutions of the high-tension ignition problem that has as yet appeared upon the market.

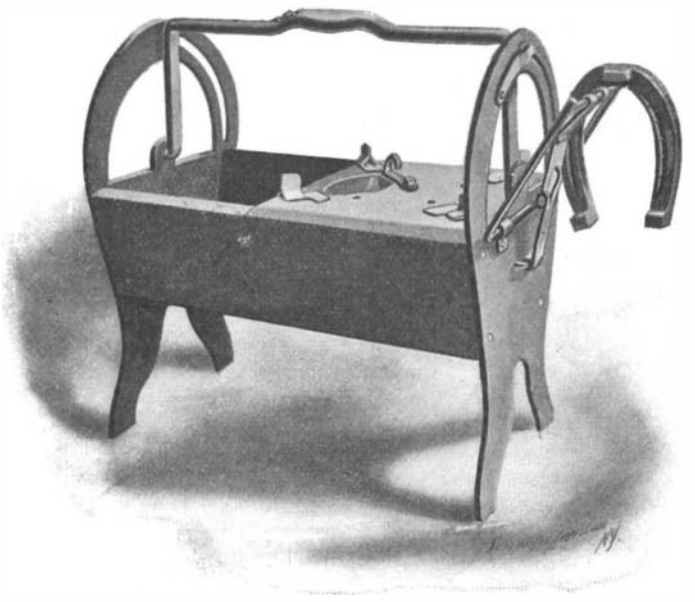
AN AUTOMOBILE AMBULANCE.

The automobile has been applied to a wide variety of uses since it became popular in the United States, but it is believed that the city of Cleveland has the only one which is used for an animal ambulance. Dr. W. H. Staniforth, of that city, has an infirmary for dogs and cats and makes a specialty of their treatment. For some time past he has used an auto especially designed for taking patients to and from his hospital. The rear portion is similar in design to the ordinary runabout, but the front portion has been enlarged to sustain a platform containing a wooden case which is divided into upper and lower sections, the upper portion being used for cats, as its name implies, and the lower portion for dogs. The sides of the case have slits protected by wire to admit the air, while each contains a dish of water. The portion for the dogs is divided also into two sections, so that three or four canine patients can be taken at a time. The accompanying photograph shows the doctor making his rounds in the automobile, with his two pet bulldogs, who usually accompany him.

As the result of an extensive series of investigations into the subject of streaming protoplasm, A. J. Ewart comes to the following conclusions: The viscosity of the protoplasm is the most important physical factor which determines the velocity of the streaming motion. Change of temperature causes a reaction mainly in so far as it alters the viscosity; a rise in temperature decreases the viscosity and increases the velocity. Light has no direct action, and gravity only affects the movement to a very slight degree even in large cells. Acids, alkalies, and metallic poisons all retard the streaming; but alkaloids, although they are strong muscle or nerve poisons, have but slight action. In agreement with other experimenters, alcohols and anæsthetics, when present in small quantities, are found to accelerate the motion, but in larger quantity produce an inhibiting effect. With regard to the energy which gives rise to movement, Ewart is of the opinion that the only kind of energy which appears to be capable of being generated is due to surface tension. This is produced in the moving layers by electrical currents, and their source is to be looked for in chemical changes in the substance of the protoplasm.—Proc. Roy. Soc.

HORSESHOER'S BOX.

Of particular interest to blacksmiths is a recent invention patented by Mr. John B. Fladby, of Rutland, North Dakota. The invention relates to improvements in boxes for holding horseshoers' tools, nails, and shoes. One of the principal features of the box is the provision of a tray divided into compartments for different sizes of nails, and so arranged that only one compartment will be uncovered at any one time, thus preventing



HORSESHOER'S BOX.

mixing of nails on the floor, should the box be tipped over. Another feature is the provision of a convenient folding rack for holding horseshoes.

The box, as illustrated, is divided at the center by a transverse partition, at one side of which is an open receptacle for rasps, hammers and other tools. At the other side of the partition is the circular tray divided into compartments for containing the different sizes of nails. The tray is mounted on a center post having a step bearing in the bottom wall of the box and extending at its upper end through the cover piece or lid. The lid is provided with an opening at one side through which access may be had to the compartment directly below. A lever which is secured to the projecting end of the tray post may be operated to bring any of the compartments of the tray under this opening. If the operator should desire some nails of a certain size, the lever is turned until it points to the corresponding indicator-plate; this will bring the proper compartment under the opening. A simple catch is provided for holding the tray against turning except when it is desired to use a new compartment. A convenient handle is provided for carrying the box about and this, when not in use, may be turned down out of the way. At one end of the box is the rack for holding horseshoes. This rack when in its upper position is supported by a series of links which have hinged connection with each other. The arrangement is such that when the horseshoe rack is raised to this position a finger on the lowest link snaps into an opening in the middle link and locks the parts

AN AUTOMOBILE AMBULANCE.

against downward motion. When not in use the rack must first be raised slightly and the joint between the lower links forced outward when the rack may be folded down neatly against the side of the box.

The invention is noteworthy for the simplicity of its design and of its construction, and for the efficiency of its operation.