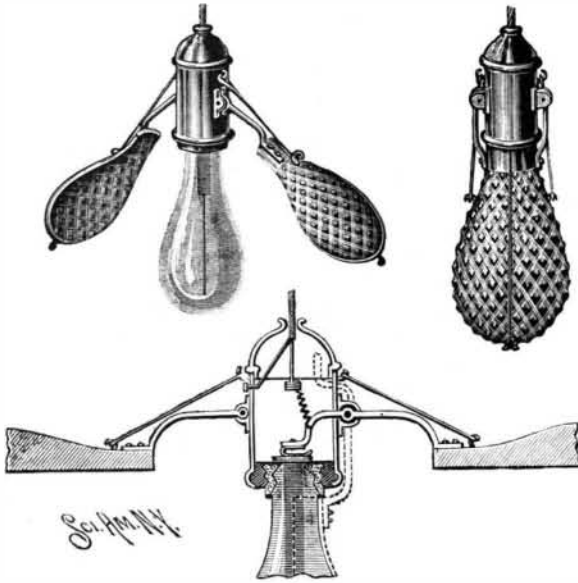


**AN ELECTRIC LAMP COVER AND SWITCH.**

The improved cover shown in the illustration, for inclosing and protecting an electric lamp, is so constructed that the lamp will always be extinguished when the covers are closed upon it. The improvement has been patented by Mr. Emil T. Mueller, La Crosse, Wis. The socket receiving the lamp base has its opposite end closed by a vulcanite cap, through an aperture in which extends the flexible conductor. In ears at each side of the socket are pivoted arms carrying the lamp covers, there being a short stud at the outer end



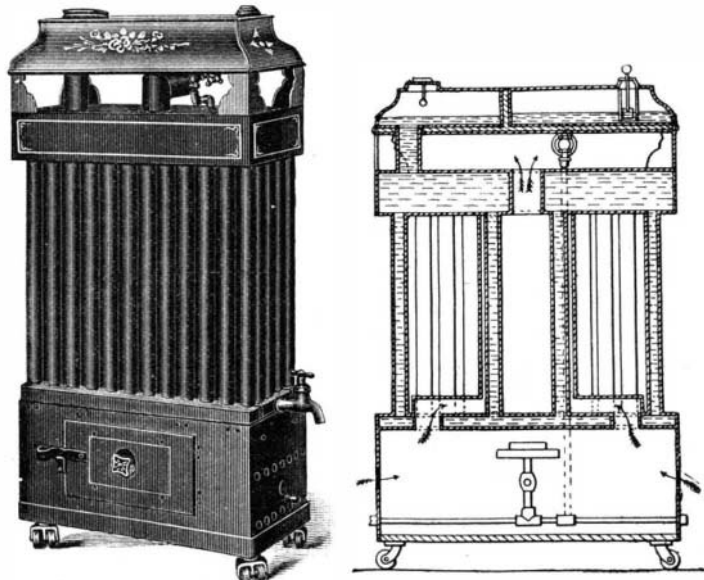
MUELLER'S LAMP COVER AND SWITCH.

of each cover, whereby the covers will be locked when closed on the lamp. An elastic rubber or other spring connects the covers with the sides of the socket, and tends to hold them in an elevated position, as shown in the sectional view. One of the cover-supporting arms is provided with an insulating bushing and washer, and is prolonged in curved form within the socket, having at its inner end a contact spring adapted to form an electrical contact with a button on the base of the lamp. A bracket of insulating material on the inner wall of the lamp socket carries a metallic arm, to which is attached one strand of the conductor, a screw in the arm connecting with a metallic spring whose other end is connected with the projecting inner end of the cover-supporting arm, while the other strand of the conductor is connected with a screw in the wall of the socket. When the covers are closed the contact spring is held away from the button, as shown in dotted lines in the sectional view, and the circuit is broken; but when the covers are in open position, as shown in the full lines, the current flows from one strand of the conductor through the lamp filament to the socket, and thence to the other strand of the conductor.

For further information relative to this improvement address Mr. Charles B. Miller, No. 329 Main Street, La Crosse, Wis.

**A PORTABLE HOT WATER OR STEAM HEATER.**

The portable heater, patented by Mr. A. White, shown in perspective and in section in the illustration,



WHITE'S PORTABLE HEAT GENERATOR.

is designed for use with gas, oil, or gasoline, as fuel, without waste or smoke, and with an entire absence of odor. The heater is mounted on wheels or casters, to facilitate moving it from one room to another. The top of the fire box is formed by a hollow base, which is part of the boiler proper, and the base is connected by pipes with the under side of a hollow top, from which a pipe connects with a steam chamber above. In this chamber is a safety valve, and a portion of the top casing also constitutes a reservoir for liquid fuel, a valved pipe leads from which to the burner in the fire box. In the base are openings leading to a central ver-

tical flue, forming hot air passages, as indicated by the arrows. When the heater is used to heat water, the base vertical pipes, upper water chamber, and part of the top steam chamber, are filled with water, the heat from the burner on the under side of the base then causing a thorough circulation of the water in the boiler. When steam is to be generated, only the base and lower portions of the vertical pipes are filled with water, the remainder of the space then being occupied by steam. When gas is to be used the burner is connected by any suitable means with the gas supply, and special burners are supplied, as desired, for either kind of fuel.

Further information relative to this heater may be obtained of Messrs. A. White & Co., box 456, Geneseo, Ill.

**American Workshops.**

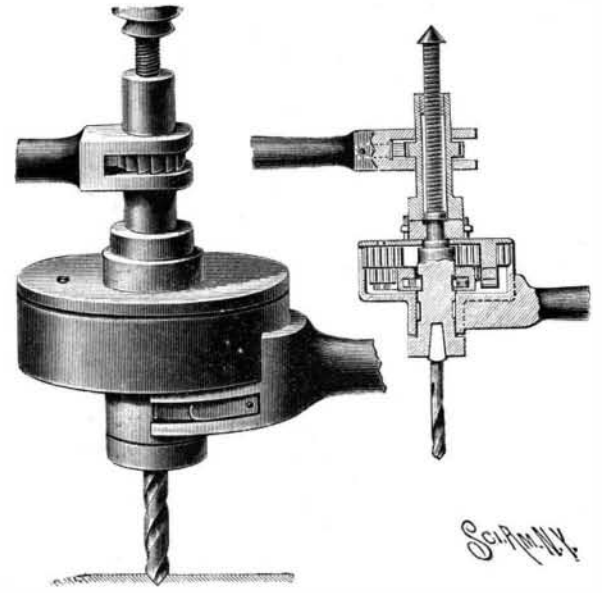
An interesting paper on some of the leading American workshops was read before the members of the Manchester Association of Engineers recently by Mr. Hans Renold. After expressing his opinion, says the *Engineer*, that the English people did not sufficiently look about them or try to understand what other nations were doing, Mr. Renold stated that he had visited that portion of America known as New England, and the works he had inspected were among the best in the United States. Among the many special features he had noticed he mentioned that in a Boston establishment where milling machine cutters were made he had found that £1 spent in wages produced as much as £30 to £40 worth of goods, the cutters being made at the rate of about sixty-four per hour by about a dozen men. Another noticeable feature was the exceptional care taken in storing tools in American workshops. These, in fact, were treated as if they were worth their weight in gold; they were stored in safes much in the same manner as we in England stored our money. He was, however, impressed by the fact that the mere understanding of the method of American working would not enable them to do likewise in England, because the American workmen had gone through a special training, and a similar training would be necessary to enable English workmen to adapt themselves to American machines.

One very noticeable feature in American engineering shops which he visited was that all the machine men and turners were seated on blocks or stools at their machines, and the question naturally arose in his mind what would English engineers say if such a practice were adopted in their shops. In other ways he was also struck by the special attention devoted to the comfort of the workmen, and he was much impressed by the healthy condition of the emery polishing shops as compared with similar shops in this country. In England these shops in most cases were simply death-traps to the workmen, and he urged that the superior method of ventilation carried out in the States should be adopted in this country by introducing a fan to each wheel to take away the particles, etc., which were so injurious. One very special feature in the United States was that works were devoted to the manufacture of one particular article to an almost inconceivable extent, and that heavy machine tools complete and ready to be dispatched were kept in large numbers. American enterprise was not hampered, as it too frequently was in England, by want of capital; while in England we were ready to put our savings in South American railways or fictitious gold mines, but very chary about investing capital which would assist an engineer in bringing out an honest improvement, in America, on the other hand, it was a common practice among the best firms to invest their savings over and over again in their works, which were thus kept in a high state of perfection.

**A CONTINUOUS DRIVING RATCHET DRILL.**

The improved drill shown in perspective and in section in the illustration is adapted to drive the bit continuously on both the forward and backward strokes of the handle. It has been patented by Mr. George L. Evatt, of Port Hope, Ontario, Canada. The stock holding the bit has a shank turning in a hub in the bottom of the casing, a collar on the shank abutting against the under side of the hub, while farther up on the shank are two ratchet wheels, one above the other, the reduced upper end of the shank having an annular groove and extending through a cover held on top of the casing. The operating handle to work the drill extends outward from the casing. Formed on top of the casing cover is also a hub having threads or a fixed nut in its upper end, in which screws the feed screw, and on this hub turns loosely a handle carrying a spring-pressed pawl engaging a ratchet wheel to turn the hub and cover to screw up the feed screw when feeding the device. The lower ratchet wheel on the shank is engaged by a spring-pressed pawl pivoted in the handle of the casing, and the other ratchet wheel

farther upon the shank within the casing is engaged by one, two, or more spring-pressed pawls pivoted in a gear wheel turning loosely on the shank, the wheel being in mesh with a number of pinions journaled in an annular flange, and each of the pinions carrying a larger gear wheel in mesh with an internal gear wheel formed on the inside of the casing. On the backward movement of the handle, when the pawl glides over the lower ratchet wheel, the internal gear causes the rotation of the stock and its bit, the pawl of this gear sliding back on the inner ratchet



EVATT'S RATCHET DRILL.

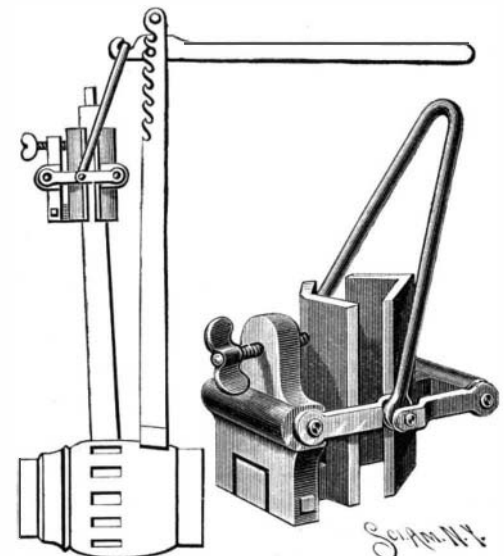
as the handle is drawn forward, and the lower pawl then engaging the lower ratchet to rotate the stock. It is not necessary to hold either handle stationary, but the upper handle should be moved from the operator while the other one is being drawn toward him.

**To Improve the Roadways.**

The Road Congress, which is to meet in Pittsburg on November 23, has for its object, it is said, "the discussion of plans for the improvement of highway roads throughout the country." It is stated that delegations from twenty-five States will be present, and the congress will include many men of ability and standing. "Discussion and the education of public opinion on this subject are needed," says *Railroad and Engineering Journal*, "and there is much which can be done by such an assembly as that which is expected in Pittsburg."

**A WAGON MAKER'S SPOKE PULLER.**

The device shown in the illustration is designed to afford a simple and efficient appliance for use in carriage repairing and similar work, for easily and quickly pulling spokes from the hub of a wheel. It has been patented by Mr. Henry Dahlman, of Dalstrop, Minn. One of the jaws of the device has at its bottom a rearwardly extending lug, on which is pivoted a plate, through the upper end of which passes a thumb screw impinging on the back of the jaw, whereby the jaw may be tilted, so that the device will fit spokes of any size. The jaws are connected together by arms whose



DAHLMAN'S SPOKE PULLER.

inner ends are pivoted to a bail adapted to be placed on a hook on the end of a lever, as shown in one of the views, where the spoke puller is represented applied to a spoke on a wheel hub. A pin in the side of the lever is adapted to rest in one of a series of sockets in the upper end of a post whose lower end is adapted to rest on the wheel hub. By pressing down upon the lever an upward pull is exerted upon the bail, and the jaws are tilted inward so that they will clamp the spoke with a pressure which is greater according as the force applied to the lever is increased.