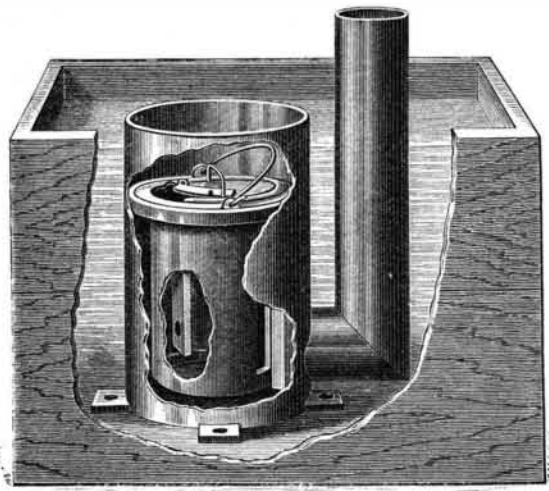


AN IMPROVED WATER HEATER.

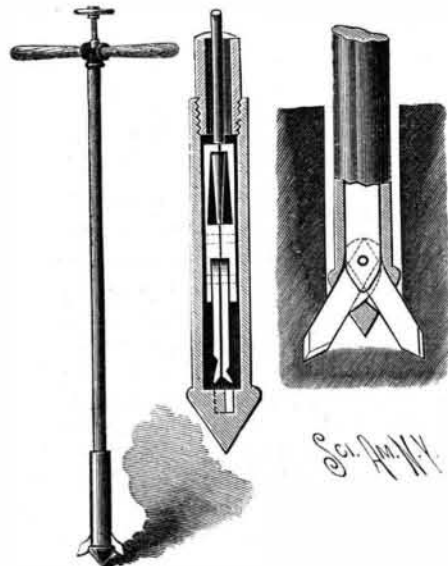
A heater to be set in a trough or tank holding water, to heat the water to any desired degree, as drink for stock, or for tempering milk, etc., as required about a farm or house, is illustrated herewith, and has been patented by Mr. Herbert E. Harrington, of

**HARRINGTON'S WATER HEATER.**

Walden, Vt. It is made with an outer shell or wall, from which leads a smoke flue, a readily removable covered fire box being placed within the outer shell, and its draught flue connected with the outer one, the whole to be placed in a trough or tank containing water. The outer shell is preferably fastened to the bottom of the trough, and the fire box is supported therein so as to leave a clear space between it and the sides and bottom of the shell. In one side of the fire box is a vertical partition forming an air flue, with an opening at the bottom and one higher up into the fuel chamber, with means for carefully regulating the draught, the cover of the fire box being made in two parts, a main part fitting the top of the fuel chamber, and a smaller segmental portion forming the lid of the air flue. The shell has on its inside a radial, or nearly radial, vertically ranging narrow plate, and a vertically ranging plate is fixed to the outside of the fire box, the arrangement being such that by turning the box the draught circuit may be regulated through the heater to the outer flue, the hot products of the fuel chamber being thus carried against the entire inner wall of the shell, to warm and heat the water in the trough. The fire box has a suitable bail by which it may be readily lifted from the outer shell, for regulating the temperature of the water or for recharging the fuel chamber at a place distant from the trough.

AN IMPROVED ROCK DRILL.

A drill especially designed for reaming out or enlarging drill holes at the base, so as to form a chamber or pocket for the charge, is illustrated herewith, and has been patented by Mr. Daniel Kilpatrick, of Morning Sun, Iowa. The point of the implement consists of a cylinder with a central square recess having a circular screw-threaded portion at its upper end, while from its base are outward and downwardly curving grooves. In this recess is a piston or drill holder, square in cross section, made of two spring steel plates, between the lower ends of which are pivoted the drills proper, as shown in the two sectional views, while the upper ends of the plates are offset, or bent inward, and formed with a round aperture and recess adapted to receive the enlarged pointed head of the lower end of the feed rod. The shank of the implement may be made of gas pipe, with a T-shaped steel top piece, to which is fitted wooden handles, the feed rod extending through a central threaded aperture of the top piece, and having a threaded upper portion terminating in a hand wheel. The implement being inserted until its

**KILPATRICK'S ROCK DRILLING IMPLEMENT.**

point rests at the base of a drill hole, the hand wheel of the feed rod is turned to advance the drills downwardly and outwardly, while the implement is revolved by means of the handles fixed in the top piece, to enlarge the base of the hole.

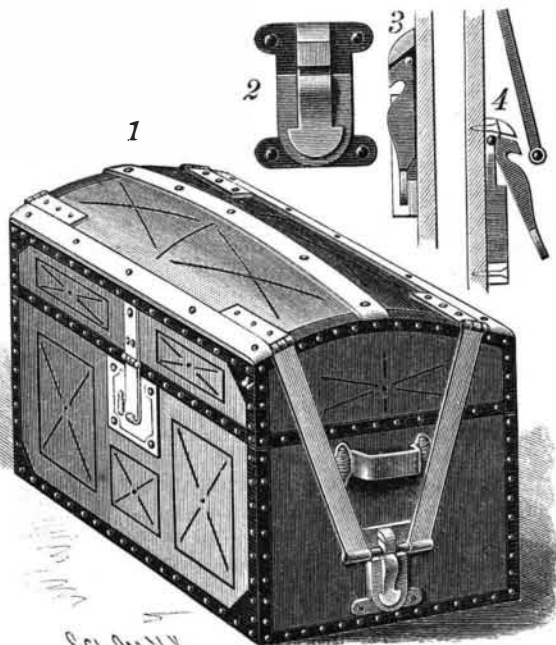
The London Hydraulic Power Company.

Water power for driving lathes, sewing machines, printing presses, elevators, electric light machines, etc., is supplied by the above company with much success.

The demand upon the mains of this company is continually increasing. The company has only been established five years, and already it has been found necessary to build a second pumping station at Millbank Street, Westminster, in addition to the central one at Falcon Wharf, Blackfriars. The number of consumers is 780, and the weekly consumption of water over 3,000,000 gallons. Nearly thirty miles of hydraulic mains are at present laid in London, embracing nearly the whole of the City and Southwark, and extending westward to Victoria Station, Westminster, Pall Mall, and Piccadilly. The power is available day and night and on Sunday, all the year round, at a pressure of 700 lb. per square inch.

AN IMPROVED TRUNK BRACE.

A simple and effective device for strengthening traveling trunks, that they may better withstand rough handling, has been patented by Messrs. George W. Rush and Joseph J. Weightman, and is illustrated herewith. A metal loop, consisting of two flat members, is hinged on top at each end, the members extending diagonally downward toward each other on either side of the trunk handle. These members are united at their lower ends by a transverse bar adapted to be engaged with a fastening device, shown in the small figures, having a locking lever which may be swung upward for disengagement of the loop, as shown in Fig. 4, while by engaging the loop with the notch

**RUSH AND WEIGHTMAN'S TRUNK BRACE.**

in the lever, and pressing the latter down into a central opening and depression in the body of the device, the loop is firmly held in tension against the end of the trunk. This brace may also be applied at the front as well as the ends of the trunk, and may also be made of wire, in the shape of a parallelogram or other form.

For further information relative to this invention address Messrs. G. W. Rush & Co., Bridgeton, N. J.

Rules for Fat People and for Lean.

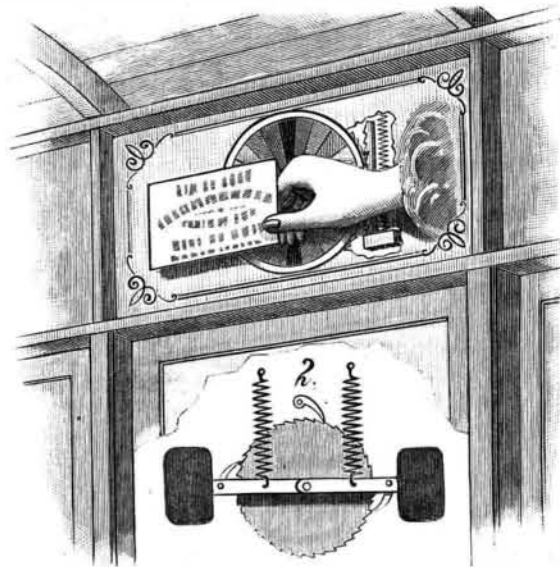
To increase the weight: Eat, to the extent of satisfying a natural appetite, of fat meats, butter, cream, milk, cocoa, chocolate, bread, potatoes, peas, parsnips, carrots, beets, farinaceous foods, as Indian corn, rice, tapioca, sago, corn starch, pastry, custards, oatmeal, sugar, sweet wines, and ale. Avoid acids. Exercise as little as possible; sleep all you can, and don't worry or fret.

To reduce the weight: Eat, to the extent of satisfying a natural appetite, of lean meat, poultry, game, eggs, milk moderately, green vegetables, turnips, succulent fruits, tea or coffee. Drink lime juice, lemonade, and acid drinks. Avoid fat, butter, cream, sugar, pastry, rice, sago, tapioca, corn starch, potatoes, carrots, beets, parsnips, and sweet wines. Exercise freely.—*Kansas City Medical Index.*

THE large stones at the base of the Gate City National Bank building are smooth and soft, and make excellent whetstones. This fact has become known to a great many citizens and small boys, and it is no uncommon sight to see a half dozen persons standing near the building sharpening their knives. Whenever two men stop at the bank corner to hold a conversation, out come their knives, and the sharpening goes on as long as the talk lasts.—*Atlanta Journal.*

AN IMPROVED ADVERTISING DEVICE.

A novelty in the advertising line has been patented by Ed. C. Magnus, 244 and 246 East Randolph Street, Chicago, Ill., and is illustrated herewith. It provides for utilizing the jolting or trembling of public conveyances, such as cars, stages, etc., for giving motion to

**MAGNUS' AUTOMATIC ADVERTISING DEVICE.**

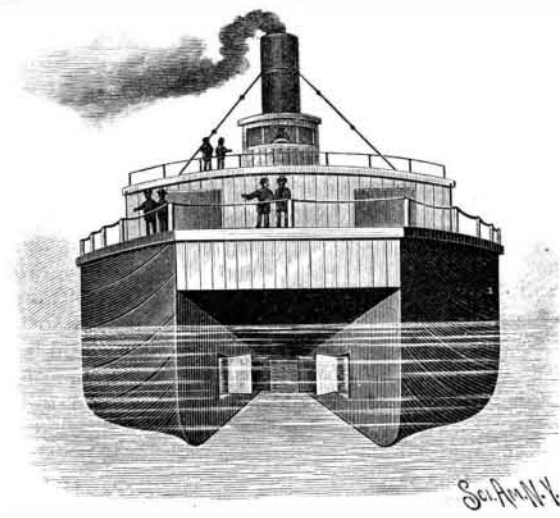
advertisements. The motion is obtained from spring-supported weights, the vibrations of which are utilized in such a way as to produce a great variety of effects. The motor consists of one or more weights attached to arms or levers, the latter being suspended from very elastic springs. A disk or ratchet wheel is actuated upon by pawls attached to the arms, but prevented from retrograding by a fixed pawl. The arms vibrating, the disk will consequently revolve. The illustration shows one way of employing the motive power thus obtained, the hand holding a card being made to alternately appear and recede through a slit, for example, which is effected by a crank pin engaging in one of two parallel swinging arms from which the hand is suspended. A great variety of other arrangements is possible; for instance, colored disks or geometrical figures can be made to rotate, or endless bands of fabric made to move along openings, displaying more advertising matter than would, under ordinary circumstances, occupy the allotted space, and pictures of any description can be thus exhibited.

Discriminating State Legislation.

The Supreme Court of New Hampshire lately held, in the case of the State vs. Wiggin, that a statute fixing the price of licenses for the sale of lightning rods at \$100 to citizens of the State and \$500 to citizens of other States created a discrimination prohibited by article 4, section 2, of the Constitution of the United States, which provides that the citizens of each State shall be entitled to all privileges and immunities of citizens in the several States.

AN IMPROVED PADDLE WHEEL.

Horizontal paddle wheels, adapted to vessels of shallow draught, or with variable load lines, have been patented by Mr. Richard Kirsch, of No. 7 Wall Street, New York, and are herewith illustrated as applied to a double-hulled vessel. The wheels have fixed blades radiating from a central drum and power shaft, and are submerged. Recesses in the hulls isolate the major portion of the wheels, while a minor portion of the drums with a corresponding number of blades project into the open water. The two straight sides of the hulls inclose a waterway undisturbed by the wave of progression which follows the curved outsides of the hulls, and the wheels operate in undisturbed water. The drums of the wheels are made to project sufficiently to compensate for the slip of the wheels, so that, by narrowing the channel where the slip occurs, the normal water level may be maintained throughout the channel.

**KIRSCH'S HORIZONTAL PADDLE WHEEL.**