

in a vertical position; but when lowered, the chain is slack, allowing the handle to be drawn outward.

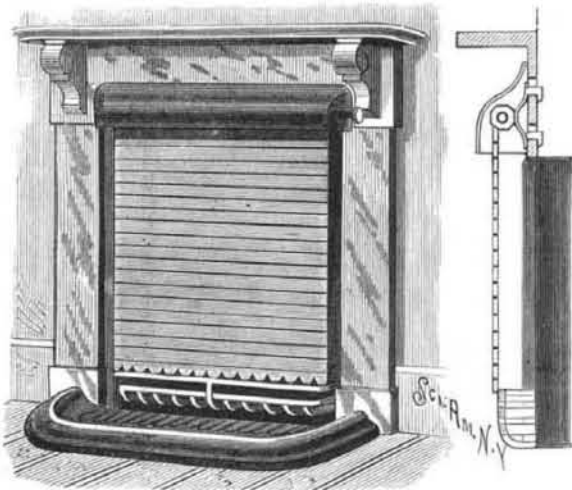
This construction, it will be seen, admits of the valve being forcibly closed as well as opened. To render the movement of the spout and handle bar as easy as possible, and to hold them at any desired angle, the counterweights, *b*, are provided. In some of the ordinary railway tanks, the chain which raises the valve is exposed to the liability of being frozen fast, and the tank rendered useless until the ice is cut away. This invention obviates the difficulty by passing the rod which actuates the valve through a chamber, *H*, provided with suitable stuffing boxes, and attached to the inside of the tank near the bottom. This chamber is made long enough to extend inward beyond the limits of frost, and is filled with common black oil, which serves to lubricate the valve rod, and thereby better prevent any accumulation of ice on the parts extending beyond the stuffing boxes. The chamber is preferably made of wood, and is quite simple in construction, as will be seen from the drawing. The tank may be so arranged as to receive water directly on the valve, which may be further protected against frost by a sawdust box placed immediately beneath it.

Bad Effect of Cement on Iron.

A few days ago, says the *Sanitary News* of Chicago, a large water pipe on the fourth floor of the government building, this city, burst, flooding the floor and badly damaging the ceiling of the third floor. It is thought that it was caused by the cement hardening, together with the jars caused by the workmen while repairing other parts of the work. In relaying the tiles on the floor, it has been found necessary to replace much of the iron gas pipe with galvanized iron pipe, as the iron pipe has almost rusted away, while the galvanized pipe that was put in about nine years ago is almost as good as it was then, showing to advantage the lasting qualities of galvanized iron as compared with iron pipe when embedded in cement. As the cement is so injurious, the pipe is being either incased in boxes or laid in gravel.

FIREPLACE ATTACHMENT.

This attachment can be applied to the front of a fireplace, to serve as a blower to regulate the draught, and to answer the purpose of a summer front. Two brackets are held upon the mantel by hooks that enter slots made at each side of the fireplace. To a roller journaled in the brackets is secured the upper end of a screen formed of metal slats connected together by links, or hinged to each other. One end of the roller is prolonged and provided with a handle or knob, by which it may be turned, and between the handle and bracket is a polygonal wheel, which is pressed by a spring, as shown in the sectional view; the pressure of the spring keeps the roller in any position. A sheet metal cover, secured to the mantel, inclosed the brackets and roller. By turning the roller the screen may be raised so as to entirely open the fireplace, or it may be lowered so as to entirely close it, when it will act as a blower or as a summer front. It may also be placed at any desired height, to regulate the draught of the



DICKINSON'S FIREPLACE ATTACHMENT.

chimney and to prevent smoke entering the apartment.

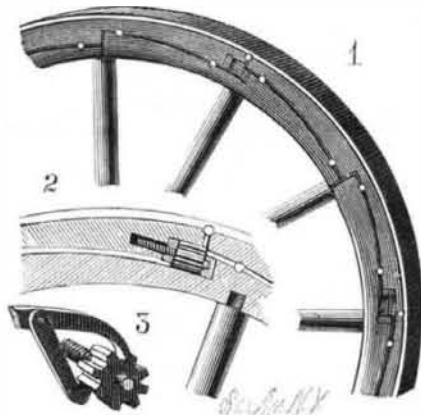
This invention has been patented by Mr. Thomas W. Dickinson, of Sharon, Pa.

Legislating against Thistles.

The recent Indiana Legislature enacted that any person knowingly allowing Canada thistles to grow and mature upon his land, or land under his charge, shall be fined not less than five nor more than twenty dollars; and for the second and each subsequent offense, double the amount of the first fine. Supervisors of the highways of the State who allow thistles to grow on any road in their districts are subject to like penalties; as are also road masters of railway lines who allow the pests to grow about stations or along the right of way under their supervision. This is a wise law, and worthy of enactment in other States.

TIRE TIGHTENER.

The rim of the wheel is formed of a series of two sets of felly sections, the sections of each set all being of the same shape and size. The outer edge of each outer section is curved on the radius of the wheel, and the inner edge has two concave curves forming a shoulder at the middle, as shown in Fig. 1. The inner edge of each inner section is formed to fit the corresponding edge of the outer section. The rim of the wheel is so made that the inner edges of both sections are in contact, and the sections are arranged so as to break joints. On the shoulder of each inner section is a metal plate, into which one end of a screw spindle passes, the other end passing through a nut in the adjacent end of the outer section and into a hole in the end of the section, as shown in Fig. 2. Between



POWERS' TIRE TIGHTENER.

the nut and plate the spindle is formed with a ribbed head. The tire is held in place by rivets placed between the sections and between the tire and rim of the wheel. By means of the tool, Fig. 3, the spindle may be turned to press the ends of the outer sections more or less from each other, thereby increasing the circumference of the wheel at the outer edges of the rim, and tightening the tire. This invention has been patented by Mr. Emory R. Powers, of Paradise, California.

Decay of the Obelisk at Central Park, New York.

Cleopatra's Needle, the Egyptian obelisk at Central Park, is found to be rapidly crumbling away under the influence of our American climate. For 4,000 years the needle suffered comparatively little change in the dry, warm air of Egypt, but though it has been in America only five years, there are already unmistakable signs of its serious decay. Fragments of stone are found scattered at the base of the needle, and flakes an inch or more in length can readily be picked off with the fingers. On the eastern side of the monolith there is a fissure three feet in length and sufficiently wide to admit the insertion of a knife blade for a distance of two or three inches. A finer crevice extends to a much greater depth. The vein containing the fissure can be traced to the south and west sides. Should this large fragment split off, the obelisk would undoubtedly fall.

These indications have led the Park Board to consider means for its artificial preservation. Prof. Doremus strongly recommends the use of paraffine, which is not affected by the atmosphere and has the advantage of being impervious to moisture. The stone would be warmed at its surface, in order that it should absorb the melted paraffine more readily. This treatment would make the stone somewhat darker, but brighter and nearer the color of the original syenite. It is thought that it would prevent further decay. Prof. Egleston, of Columbia College, favors the use of boiled linseed oil, as giving a better protection even than paraffine. The corresponding needle, erected on the Thames embankment, London, has undergone a similar deterioration, and artificial protection was found necessary. In this case a liquid was used composed of a solution of dammar resin in a volatile hydrocarbon, with a small quantity of wax and a still smaller quantity of corrosive sublimate added. Prof. Crookes, the great English chemist, is, however, quoted as preferring paraffine to dammar resin. Prof. Chandler, on the other hand, regards the proposed method of heating the obelisk by means of charcoal furnaces, so that it shall absorb a larger amount of paraffine, as one of unquestionable danger. The expansive action of heat is liable to cause cracks and fissures, which would leave the stone in a more injured condition than before the treatment. It is evident that much caution will be necessary, and that a preliminary trial should be made before the obelisk itself is subjected to any process. It was proposed some time ago to inclose the entire monolith in glass, and though that method would have given rather a clumsy result, it would have been far preferable to the loss, or deterioration of so interesting a relic. The decay of even our native building stones has shown our climate to be particularly trying to all exterior masonry, and has called the attention of architects and engineers to the necessity of some artificial preservative. There are many substances which have been tried

for this purpose, and have been found more or less effective, but opinions differ considerably as to which is the best for general use, and which method of application gives the most satisfactory results.

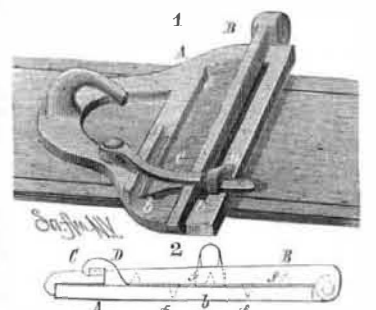
Many of our readers have doubtless given some attention to this subject, and have perhaps been able to collect information in regard to actual experiments which have come under their notice. We should be glad to hear from them, and to have them suggest a practical method for the preservation of the obelisk.

The Magnesium Light.

Magnesium, which has more than once been abandoned as a source of light, appears about to be employed again. A Mr. Graetzel has succeeded in producing pure magnesium by electrolysis, and at a price much less than that at which it has hitherto been sold. So there are serious thoughts of using it for lighting purposes. The Bremen aluminum and magnesium manufactory that is working the Graetzel process has just offered two prizes for magnesium lamps with clockwork movement. Five hundred and two hundred marks (\$125 and \$50) will be awarded to the constructor whose lamps shall be adjudged the best and most practical. The Bremen manufactory reserves to itself the right of working the two systems that are rewarded. —*La Nature*.

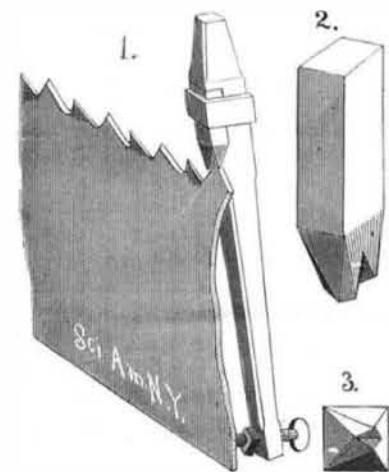
HOOKE BUCKLE.

The frame, *A*, of the buckle is formed at one end with a hook, and at the other end is slotted to form cross bars. The central bar is formed with points, *f*, to retain the strap, *C*, which is passed through the slots, as shown in the engraving. A bar or lever, *B*, is hinged at one end to the frame, so that it may be closed over in line with the forward slot, and locked in this position by a lever pivoted to the frame, and adapted to be turned over the end of the bar and held by a hook, *b*, formed on the frame. The hinged bar is formed with teeth, *f*, to hold the strap, to which the buckle may be applied. A lug on the free end of the bar, *B*, enters a notch in the frame, thus preventing lateral movement of the bar. This buckle, the invention of Mr. Victor Berthelot, of Cannon Store, La., may be cheaply made, and can be easily shifted upon the strap.



IMPROVED SAW SET.

Fig. 1 shows the saw set applied to the blade of the saw, and Figs. 2 and 3 show the detachable die. The steel stock or bar is formed at one end with a slightly tapered head, below which is a notch in one edge. In the lower end of the die, which is held in the recess in the stock by a wedge band, is a notch inclined from the inner edge downward toward the middle of the lower end, the sides of the notch being beveled. The lower



MARSH'S IMPROVED SAW SET.

end of the recess for receiving the die is inclined outward. The saw to be set is held in a horizontal position in a vise; the saw set is placed on that side of the saw opposite the bevel of the tooth to be set, in such a manner that the point of the tooth passes into the notch in the end of the die, the point of the screw passing through the lower end of the stock resting against the blade. A blow is then delivered on the head of the stock, whereby the point of the tooth is pressed over by the die. By means of the screw, which is provided with a locking nut, the inclination of the stock to the saw can be governed, and the desired set given to the teeth; as the inclination of the stock to the saw increases, the set given to the teeth decreases. The device is convenient to handle, reliable, and not liable to get out of repair.

This invention has been patented by Mr. Gideon Marsh, of Mancelona, Mich.