ROTARY BRUSH.

Upon the rod forming the axis of the machine are mounted two sleeves, between which is a rectangular frame rigidly secured to the rod. To one sleeve is secured one end of a volute spring, whose other end is secured to a drum revolving loosely on the sleeve, and carrying an arm attached to a spur wheel revolving upon the shaft. This wheel connects by suitable gearing supported by the rectangular frame with a wheel secured to the other sleeve. On the first sleeve is loosely

McCONNAUGHAY'S ROTARY BRUSH.

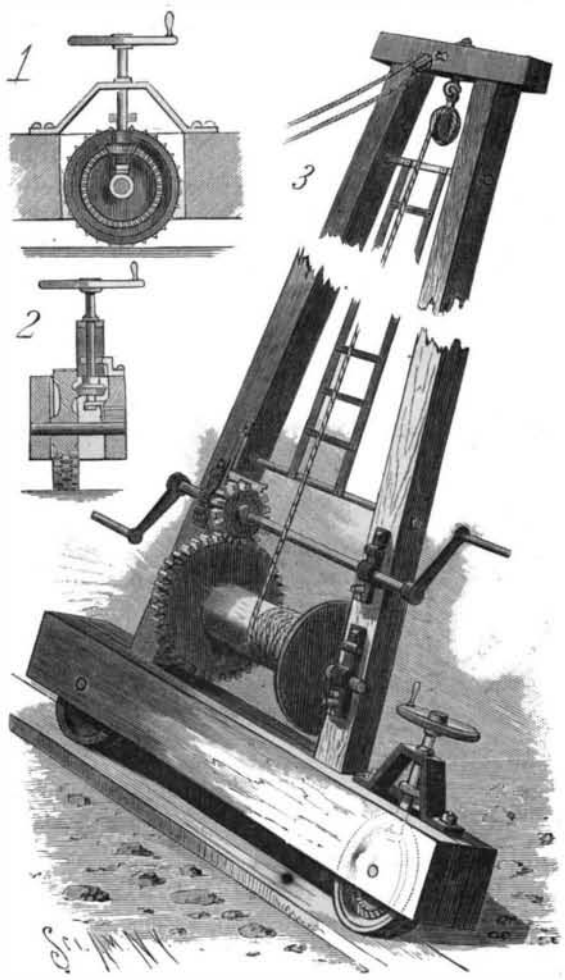
placed a head, and upon the second sleeve a head is rigidly secured. Fitting over the heads is a sheet metal cylinder which supports the brush.

One handle is rigidly secured to the sleeve carrying the spring, while the other is fastened to the rod. The spring is wound up by turning the first handle, and is held under tension by a pawl and ratchet wheel. The brush is then revolved, the power of the spring being transmitted by the gearing to the second sleeve, to which one head of the cylinder is secured. The velocity depends upon the tension of the spring, and, should the speed of the cylinder become too great, it may be reduced by pressing a brake spring against one of the heads. The many uses to which a brush of this description may be put are evident.

This invention has been patented by Mr. T. J. McConnaughay, of Harrisonville, Mo.

IMPROVED DERRICK.

Rising from the platform or base of the derrick are the two main uprights, which are connected by cross rods and a top cross bar in the usual way. At one end of the base is a plain roller, and at the other end is a



BLUNDELL'S IMPROVED DERRICK.

roller formed with cogs, by which it may be revolved, for shifting the derrick. The periphery of the latter wheel is provided with ribs that prevent slipping. This wheel is revolved by means of a beveled cog wheel attached to an upright shaft and meshing with the cogs of the wheel. Upon the upper end of the shaft is a crank or crank wheel, by turning which the derrick may be moved. The arrangement of the wheel and gears is shown in the sectional views, Figs. 1 and 2.

The hoisting rope passes over a pulley attached to the top cross bar, and thence over a hoisting drum, which is revolved by the main crank shaft and cog wheels in the ordinary manner. The bearings of the shafts of the crank and drum are made in two parts, so that the shafts may be removed, thereby permitting the easy transportation of the derrick. The cap piece of each bearing is hinged to the pillow block, and the latter is provided with a stud to which the cap plate may be locked by a pin or key passed through a hole in the stud. To one of the uprights is pivoted a pawl to engage with the cog wheel on the crank shaft, and thereby lock the drum, so that the load being hoisted may be held at any desired point. A ladder, by which a person can easily ascend or descend the derrick, is constructed as shown in the engraving.

This invention has been patented by Mr. William J. Blundell, of 221 E. 125th St., New York city.

New Method for Protecting Iron.

A new method, which promises to be easier of application than any previous, has been lately brought out by M. A. De Meritens, the well-known electrician, and if it succeeds as well in the hands of the public as it does with the inventor, should find a very extended application. The article to be protected is placed in a bath of ordinary or distilled water, at a temperature of from 70° to 80° Centigrade (158° to 176° Fah.), and an electric current is sent through. The water is decomposed into its elements, oxygen and hydrogen, and the oxygen is deposited on the metal, while the hydrogen appears at the other pole, which may either be the tank in which the operation is conducted or a plate of carbon or metal. The current has only sufficient electromotive force to overcome the resistance of the circuit and to decompose the water, for if it be stronger than this, the oxygen combines with the iron to produce a pulverulent oxide which has no adherence. If the conditions are as they should be, it is only a few minutes after the oxygen appears at the metal before the darkening of the surface shows that the gas has united with the iron to form the magnetic oxide Fe_3O_4, which it is well known will resist the action of the air, and protect the metal beneath it. After the action has continued an hour or two the coating is sufficiently solid to resist the scratch brush, and it will then take a brilliant polish.

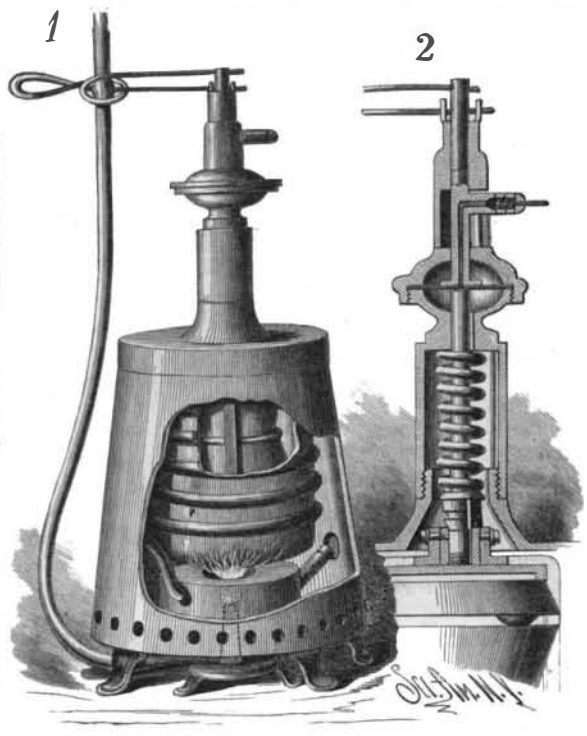
The process is simple, and demands but little skill in its execution. Now that dynamo machines have superseded batteries as sources of electricity, all that is required is a tank, a quantity of distilled water, and a little power to drive the machine.

An Artesian Hot Well.

A remarkable example of the increase of temperature in the earth toward the center has been presented at Pesth, where the deepest artesian well in the world is that now being bored for the purpose of supplying the public baths and other establishments with hot water. A depth of 951 meters—3,120 feet—has already been reached, and it furnishes 800 cubic meters—176,000 gallons—daily, at a temperature of 70 degrees C.—158 degrees Fah. The municipality have recently voted a large subvention, in order that the boring may be continued to a greater depth, not only to obtain a larger volume of water, but at a temperature of 80 degrees C.—176 degrees Fah. It is suggested that it is thus within the bounds of probability that the time may come when a brewer will obtain his water supply from a well of sufficient depth to yield "liquor" at the mashing temperature.

IMPROVED VULCANIZER.

The annexed engraving represents a vulcanizer in which dry steam is supplied to the vulcanizing oven, and in which the moulds containing the work are closed by spring pressure, after the rubber or other plastic material has been softened by the heat of the steam. Below the oven is located an annular steam generator, which surrounds the upper portion of the burner, and is connected with the top and bottom of the oven by a spiral tube, shown in Fig. 1, which opens into the oven near the top. The screw cap of the oven has a hollow cylinder surmounted by a casing containing a diaphragm, as shown in the enlarged sectional view, Fig. 2. Connected with the upper side of the diaphragm is a rod having a lateral branch near the top, which contains a safety valve in communication, by a passage through the rod, with the space below the diaphragm. The safety valve is arranged to blow off at the pressure required for vulcanization in the oven. The flexible tube supplying the burner with gas passes through a wire nipper tap, which is arranged, in connection with the diaphragm rod, to regulate and finally shut off the gas flowing to the burner. The flasks containing the work to be vulcanized are received by a three-armed yoke, having in its top a follower secured to the end of a rod provided with a collar, for taking the pressure of a spring arranged as shown. At the beginning of the moulding operation, the rod is in contact with the under surface of the diaphragm. When starting the oven, the collar of the rod is held in an elevated position by a block of fusible metal, placed between the collar and top of the three-armed yoke. The gas tube is not then pressed by the nipper tap, which is raised by the pressure of the rod upon the under side of the diaphragm, so that gas will be supplied to the burner. When the temperature in the oven reaches about 220°, the fusible block will melt, permitting the spring to exert its force upon the flasks and their contents, and the rubber,



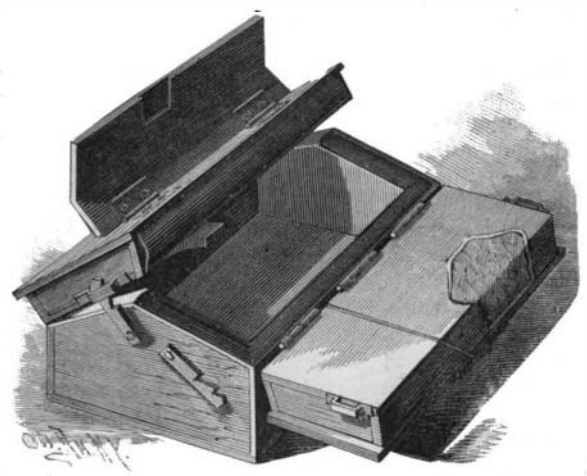
CARLL'S IMPROVED VULCANIZER.

having been softened by the heat, will be pressed into all parts of the mould. At the same time the temperature and pressure continue to rise until the upward movement of the diaphragm shuts off the gas. The safety valve begins to blow off steam, and continues to do so until the water is entirely exhausted, when the pressure falls and the elasticity of the wire nipper tap causes it to close down upon the tube and shut the gas off entirely from the burner.

This invention has been patented by Mr. Maskell F. Carll, of 134 Oxford St., Providence, R. I.

REFRIGERATOR STOREHOUSE FOR FRUITS, ETC.

This refrigerator is designed especially as a receptacle for potatoes, but may be used for other kinds of vegetables or fruits. The space between the outer and inner walls of the storehouse is packed with sawdust, hay, or some other non-conducting material. This packing is held in place by strips nailed to the upper edges of the walls, so as to form a continuous line of cushions, upon which the upwardly opening doors rest. The doors are hinged to the upper side walls, and consist of box-like structures filled with packing. The free edge of one door is provided with a cushion, so as to effectually close the storehouse when the doors are shut. One door is formed in sections as shown; and in order that the meeting edges of the sections may be properly supported, the opposite door is provided with a projecting arm upon which the edges rest when the divided door is closed. Upon each end of the storehouse are arms formed with teeth which may be brought into engagement with brackets



BROWN'S REFRIGERATOR STOREHOUSE FOR FRUITS, ETC.

carried by the doors, which, by this means, can be held open, to allow for the ventilation of the storehouse. After the doors have been closed, the opening between their meeting edges is protected from the weather by a hinged saddle or weather cap, shaped to conform to the pitch of the roof. It will be readily seen that this storehouse, which is the invention of Mr. Samuel Brown, of Russellville, Ark., protects the contents from injury by excessive cold or excessive heat, and provides for proper ventilation.