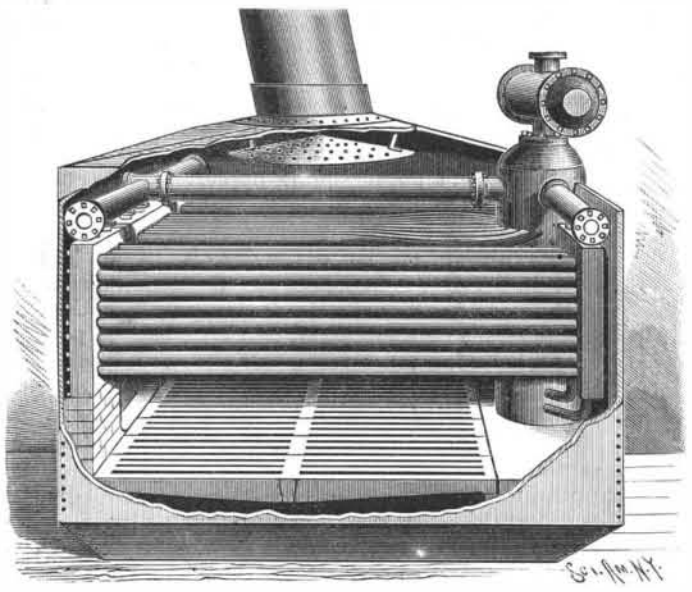
Cement for India Rubber.

The following composition is good for filling the cracks that occur in the rubber belts of band saws, tires of velocipede wheels, and rubber tubing. The sides of the fissure are to be well cleaned, and the following solution to be then introduced:

Sulphide of carbon	5	ounces.
Gutta percha	5	drachms.
India rubber	10	"
Fish glue	2½	"

If the slit is a slightly gaping one, the edges must first be united by a few stitches, and the solution be applied in layers. After the composition has hardened, the threads are removed and the projecting cement is shaved off with a very sharp blade that has previously been dipped in water.—*Revue Industrielle.*



CASWELL'S STEAM BOILER.

AN IMPROVED STEAM BOILER.

A boiler that is designed to generate steam quickly and be very economical in its consumption of fuel is shown herewith, and has been patented by Mr. Charles H. Caswell, of Newport, R. I. Our illustration gives a longitudinal sectional elevation, part of the furnace wall being broken away. The boiler has at its rear an upright cylinder, on the top of which is the steam dome, and this upright cylinder is connected by pipes with rectangular water spaces on either side, and is also connected therewith by the larger pipes extending over the tops of these chambers. At the front of the boiler are also three rectangular water spaces, the ones on either side being connected by pipes with their opposite rear chambers, and the central one being connected with the upright cylinder at the rear, these front chambers being connected with each other by pipes at their sides, and also by larger pipes extending over their tops, from which extends a central pipe connection with the top portion of the large cylinder at the rear. The boiler is fed through pipes opening into the large cylinder near the bottom. With this construction the several connecting tubes and pipes are all exposed to the action of the heat generated on the grate bars of the furnace, giving a very large heating surface, and at the same time establishing a free circulation of water in all the chambers, tubes, pipes, and the upright cylinder. The outer covers of the several chambers are readily removable, to permit of easy access for cleaning the pipes or for other purposes, and a perforated shield is held below the chimney opening to prevent the too rapid escape of the products of combustion.

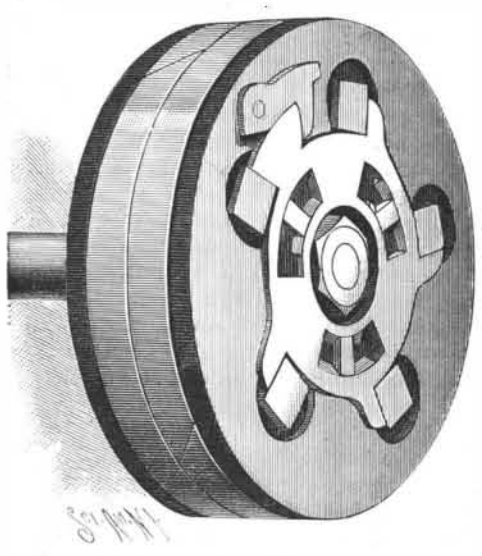
Rights of Inventors and Employers.

The Wisconsin Supreme Court, in the case of the Fuller & Johnson Manufacturing Company *vs.* Bartlett, has rendered a decision of much interest to inventors. It was an action to enforce the specific performance of an alleged implied contract to assign to the plaintiff an invention made by the defendant while in the employ of the plaintiff and before procuring a patent. The court decided that the mere fact that in making an invention an employe uses the materials of his employer, and is aided by the services and suggestions of his co-employes and employer in perfecting and bringing the same into successful use, is insufficient to preclude him from all rights in it as an invention. An implied contract to assign such rights cannot be enforced from the mere passivity of the inventor. It is the conception in the perfected machine, not the materials, workmanship, and skill employed in its construction, which constitutes the invention, and the defendant, as the inventor, was the lawful owner of the invention in his own right.

The above is a question constantly arising between inventors and employers, and patent attorneys are frequently called upon to decide between the parties. This decision will settle a good many disputes.

IMPROVED BOLT LOCK FOR PISTON HEADS.

For pistons of engine cylinders of the usual construction, in which the several parts of the piston head are held together by bolts, the invention herewith illustrated provides an improved lock to prevent the bolts from becoming loose, and thus injuring the engine. The follower plate may be a fixed part of the piston, or be secured by suitable means on its face,



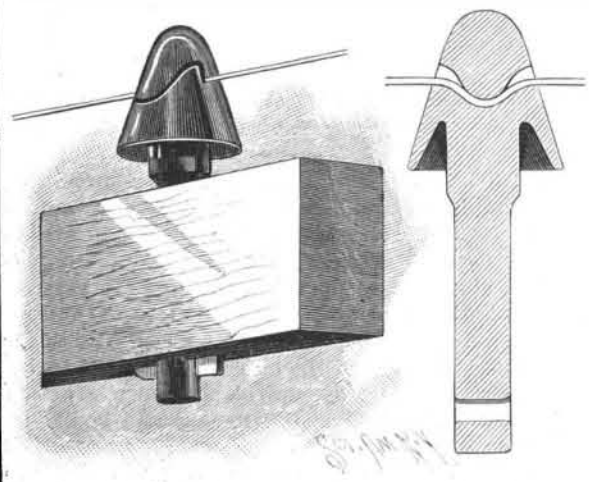
WORMALDS' LOCK FOR BOLTS OF PISTONS.

and it has recesses through which project the square heads of the bolts. On the follower plate, inside these recesses, are flat-headed projecting studs, adapted to engage circular grooves or slots on a lock plate, by which the latter may be readily attached to or removed from the follower plate. On the rim of the lock plate are projections corresponding to the number of bolt heads, and adapted to engage one side with their straight edges, one of the projections having an inclined edge on which fits a pawl pivoted on the follower plate. When the several parts of the piston are screwed together, then the lock plate is secured to the follower plate, the studs on the latter entering the grooves or slots of the lock plate, which is turned until the straight edges of its projections come in contact with one side of the bolt heads. The pawl is then driven by the blow of a hammer into contact with the inclined edge of the lock plate, holding the latter in position and preventing the bolts from turning. This improvement has been practically tested, having been in use on a Baldwin locomotive on the Northern Pacific Railway for several thousand miles of service, and showing no strain or wear whatever on plate or studs.

This invention has been patented in the United States and in England. For further information relative thereto, address Joseph Wormald, Sr., Perth Amboy, N. J., or Joseph Wormald, Jr., Missoula, Montana Ter.

AN IMPROVED INSULATOR FOR ELECTRIC WIRES.

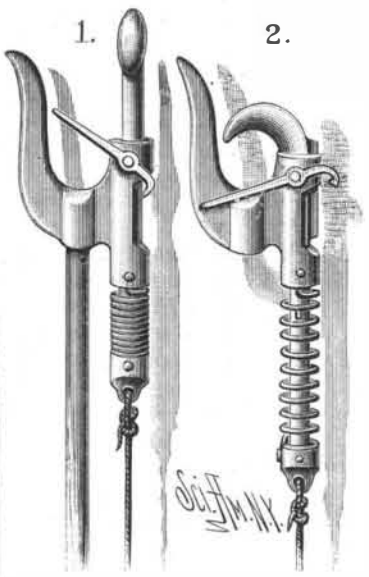
A novel form of "self-tying" insulator for electric wires, to which the wire can be readily and securely fastened, and which will prevent any accumulation of water around the wire, is shown in the accompanying illustration, and has been patented by Mr. Henry K. Ruger, of Bay St. Louis, Hancock County, Miss. It is made of a single piece of glass or other suitable insulating material, and does not require any pin, while the bottoms of the central vertical slots are curved inwardly and downwardly, so that any water or moisture entering will immediately flow out. The curves of the slots, also, are such as to facilitate the quick adjustment and secure holding of the wire. This insulator can be manufactured as cheaply as the usual forms of glass insulator in common use.



RUGER'S INSULATOR FOR ELECTRIC WIRES.

A DEVICE FOR CATCHING ANIMALS.

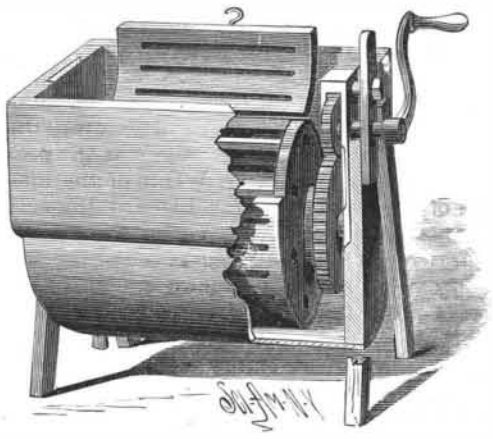
A simple and effective implement for catching sheep, hogs, and other animals by their legs is illustrated herewith, and has been patented by Mr. John Betz, of Jordan, Minn. The device has a fixed and a movable arm, the latter arranged to be pushed forward and turned out of the way, as shown in Fig. 1, but with a spring for turning it and bringing it into engagement with the leg of the animal, in the position indicated by Fig. 2. By pressing the fork forward upon the leg of the animal, a trigger is pushed backward, releasing the spring-held shank of the movable arm, this shank being formed with a feather to fit a slot in the guide arm which holds it, so that the arm turns and the spring draws its hook forward toward the closed end of the fork, securely holding the leg of the animal.



BETZ'S ANIMAL CATCHER.

A SIMPLE AND EFFICIENT WASHING MACHINE.

The invention herewith illustrated provides a machine by which clothes may be washed without any of the ordinary pounding or rubbing, and consequently without injuring the fiber, tearing off buttons, etc. It has been patented by Mr. Hiram Lawrence, of Salem, Oregon. The general features of the washing cylinder, with the narrow open spaces in its periphery and the holes in its heads, with the manner in which it is revolved by the crank handle, will be readily understood from the illustration. The tub has a semi-cylindrical bottom, and in washing clothes with the machine is to be about one-third full of hot suds, the openings in the cylinder permitting the water also to be at the same height therein. Longitudinal bars are fixed along the inner walls of the cylinder, and these, as the cylinder is revolved, carry the clothes up on the side and drop them over again upon themselves and into the suds, thus keeping up a constant agitation and stirring up of the contents of the cylinder. The clothes are put in through the hinged door making part of the periphery of the cylinder, and the latter is hung in movable bearings, by which it may be adjusted at the desired height in the tub, which is closed by a cover to confine the heat and steam.



LAWRENCE'S WASHING MACHINE.

Soldering Cast Iron with Tin.

Many ornamental articles are made of cast iron, variously decorated. The smaller specimens of this kind break very easily if carelessly handled. Then the question arises of how to mend the broken article, a question that has puzzled many, as it is so very hard to firmly unite pieces of cast iron. It is hard to find a simple method, because cast iron has but a slight affinity for tin solder. The soldering can be made much easier by first cleaning the faces of the broken parts from all impurity, which is not necessary when the fracture is of recent occurrence and the broken parts are perfectly clean on their faces. With a brass wire scrubbing brush, the faces of the fracture are continually scrubbed until they finally appear perfectly yellow, thus in a certain sense being "dry plated" with brass; the rough cast iron rubs off brass from the fine wires very quickly. The brazed surfaces are tinned just as brass is tinned, and then with no greater difficulty the parts can be soldered together.—*Der Metallarbeiter.*