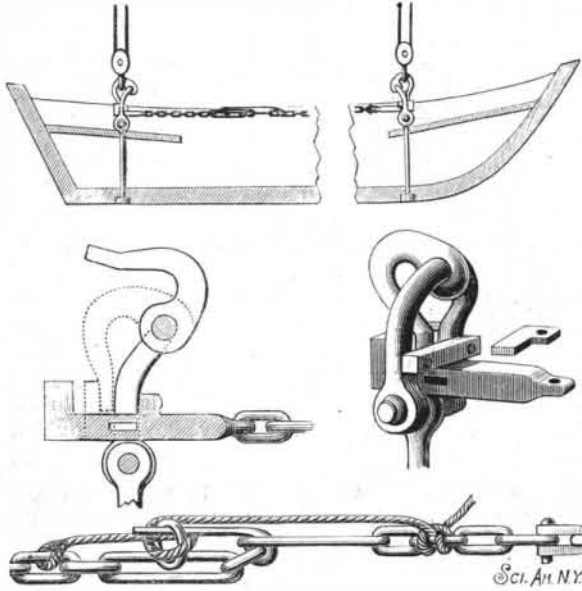


## AN IMPROVED BOAT DETACHING APPARATUS.

An apparatus which can be adapted to a boat in any position on the side, quarter, or stern of a vessel, for detaching boats to be launched, and for again reattaching them to the hoisting tackle, is illustrated herewith, and has been patented by Lieut. Alexander McCrackin, U. S. navy, steamship Pinta, Sitka, Alaska. Arranged for connection with a hoisting sling, a shackle is employed which carries a loose hook that is mounted to turn upon the bow of the shackle, the hook having a straight point or end that fits into a keeper formed

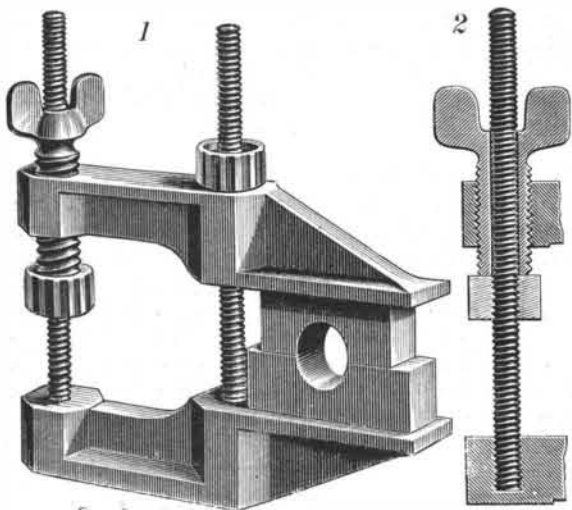


McCRACKIN'S BOAT DETACHING APPARATUS.

upon a sliding bar or bolt, which passes beneath a transverse bar secured to the arms of the shackle. A key is arranged to fit within an aperture of the sliding bar or bolt, by which the latter may be locked to place upon the shackle to hold the hook in closed position. Two such devices are employed, connected by a small chain or its equivalent, made in two parts, joined by a slip hook of novel construction, the arrangement being such that when two sections of the chain are connected by the slip hook, and the chain is drawn taut, the two bars or bolts will be held in position, and prevented from slipping outward to release the hooks turning on the bows of the shackles. When a boat is to be lowered and detached, the lanyard used in connection with the slip hook is cast off, and, the keys locking the sliding bars in the arms of the shackles having been previously removed, the weight of the boat and crew will turn the hooks to allow the boat to drop freely into the water, both hooks being released instantly and simultaneously, and their connecting chain dropping harmlessly on the thwarts, out of the way of the masts and oars.

## AN IMPROVED CLAMP.

A hand clamp in which there are no projections from outside the fixed jaw to be in the way, and in which there is no twisting strain on the screw rods, enabling them to withstand the strain of heavier work, has been patented by Mr. Wendell P. Tarbell, of Milford, N. H., and is illustrated herewith, Fig. 2 showing a vertical section on the line of the inner screw rod of the clamp.



TARBELL'S CLAMP.

Two screw-threaded rods are socketed in the fixed jaw of the clamp, the movable jaw moving freely on these rods, on each of which a thumb nut is mounted, on the outer rod above and on the inner rod below the movable jaw. The inner screw rod also passes freely through a hollow screw with an operating thumb nut mounted in a screw-threaded socket piece of the movable jaw. The hollow screw is formed with a pitch differing from that on the rod, so that the screw will travel faster or slower than the thumb nut on the same rod, giving a differential movement between it and the

nut, affording a greatly increased leverage. With the parts in position as shown in Fig. 1, the article to be clamped being between the jaws, the thumb nut on the outer rod is first screwed down against the movable jaw and the thumb nut on the inner rod is moved up against the end of the hollow screw. The jaw can then be tightened by operating the hollow screw by its thumb nut, which causes the nut bearing against its end to be turned by frictional contact, forcing the hollow screw upward, and exerting a lever action upon the movable jaw, causing it to tilt on the rod, and further tighten the clamp made between the jaws. In a modified form of this device a friction lever is used in place of the hollow screw to tighten the nut. Any desired clamping power can be had from this construction without the use of a wrench or other outside appliance.

## A Smoke Filter.

There was recently an exhibition, on a piece of land adjoining Victoria Mansions, of Loeb's appliances which are designed to enable the wearer to breathe and work with comfort in dense smoke, and also in poisonous gases. The device consists of a respirator with an india-rubber mouthpiece. The respirator is held by two projections, which are grasped between the teeth and a flange which lies between the teeth and the lips, additional security being provided by an elastic band passing round the head. The air is drawn in by the wearer through a series of small filters, containing respectively wet sponge, cotton wool, cotton wool damped with glycerine, and animal charcoal.

These filters are very lightly packed, so that there is no resistance to the act of inspiration, and they are provided with valves which direct the air expired from the lungs into the external atmosphere. The entire apparatus weighs less than a pound, and can be used without previous practice. When it is to be employed in an atmosphere which is deadly in its character, as in the choke damp of mines, the air is drawn from some place where it is pure through a light india-rubber tube. The filter is then strapped to the waist of the wearer, and the respirator merely contains the valves which cause the air to be drawn through the pipe and then to expire into the atmosphere. A tube up to 100 feet in length can be manufactured with facility. Protection is afforded to the eyes by a pair of spectacles with india-rubber rims, which press tightly on the cheek and brow, and exclude all smoke. Mechanical wipers are added to enable the glasses to be cleaned without removal.

At a recent trial in London, says *Engineering*, a man wearing the respirator spent half an hour in a building filled with dense smoke of a most pungent character, without any difficulty, and afterward the inventor's representative, with the aid of a flexible air pipe, entered a room containing a dish of burning sulphur and remained there some time. It was clearly demonstrated that the respirator would enable the wearer to enter a building filled with smoke and discover the exact position of a fire. A few buckets of water promptly applied under such circumstances will do more good than the jet from a steam fire engine directed at random. On board ship, where the result of a fire is to fill the hold with smoke, this respirator would be most useful, and this fact has been recognized in the German navy, where Loeb's respirators form part of the official equipment. Many of the German fire brigades have also adopted them.

## Constant Pressure when Distilling under Reduced Pressure.

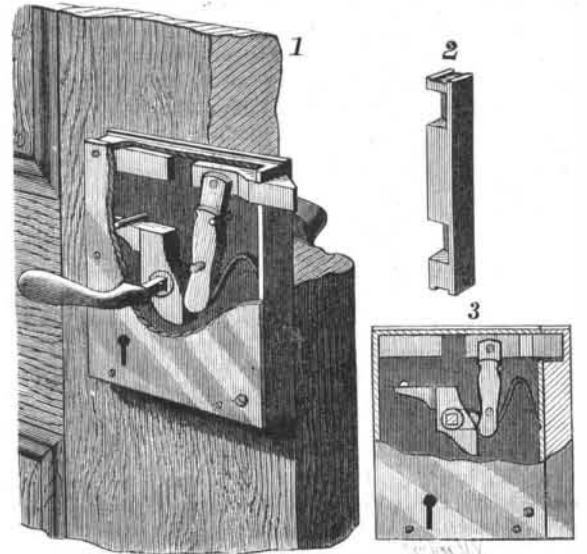
The essential parts of the apparatus are a barometer tube in connection with the exhausted apparatus, and a valve through which air is admitted when, by the action of the pump, pressure becomes reduced below the prescribed point. A copper rod armed with a platinum point passes through the upper end of the barometer tube, and can be adjusted at any desired height. So soon as the mercury rises and touches the point of the rod, an electric circuit is completed and the valve is raised and air admitted. The valve is a glass sphere in a glass seating, the sphere being suspended from the armature of an electro-magnet. The sphere has a weight attached to it, which causes it at once to fall back when the circuit is broken. Even under a pressure of 60 mm.—the lowest obtained with the water pump used—the apparatus renders it possible to maintain the pressure constant to within a millimeter.—W. H. Perkin, F.R.S.

## For Swollen Feet.

Policemen, mail carriers, and others whose occupation keeps them on their feet a great deal, often are troubled with chafed, sore and blistered feet, especially in extremely hot weather, no matter how comfortably their shoes may fit. A powder is used in the German army for sifting into the shoes and stockings of the foot soldiers, called "Fusstrepulver," and consists of 3 parts salicylic acid, 10 parts starch and 87 parts pulverized soapstone. It keeps the feet dry, prevents chafing and rapidly heals sore spots. Finely pulverized soapstone alone is very good.

## AN IMPROVED DOOR LATCH.

A door latch so arranged within an ordinary lock casing that the latch bolt may be easily operated by handles, so placed that the action of pushing down the handle is such as to cause the door at the same time to be pulled open as soon as the latch is disengaged from the keeper, is illustrated herewith, and has been patented by Mr. Latimer S. Shelly, of Steelton, Pa. A dog is mounted on the spindle to which the handles are attached, having an angular projection at one end adapted to bear against a stop pin projecting

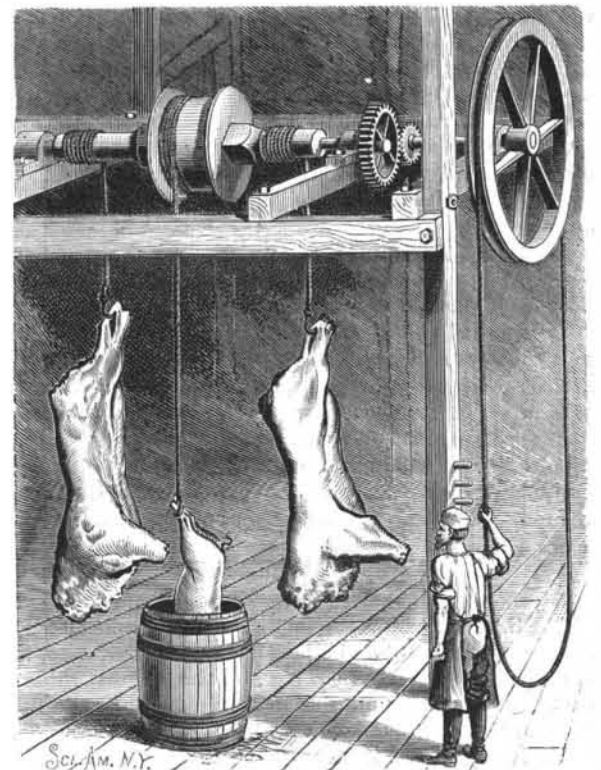


SHELLY'S DOOR LATCH.

from the side of the casing to limit the movement of the dog. The lower end of a lever pivoted to the side of the casing is held to bear against the lower end of the dog by a spring, there being a stop pin secured to the casing which limits the return movement of the lever, to the upper end of which a sliding latch bolt is pivotally connected. Fig. 3 represents a perspective view of the keeper containing the recess for receiving the latch and also one for the regular locking bolt.

## AN IMPROVED SLAUGHTER HOUSE HOIST.

A hoist in which the weight of a heavy animal is employed for raising the weight of a lighter animal is illustrated herewith, and has been patented by Mr. Jules H. Tardy, of Glencoe, Minn. It is made with drums of two diameters, the smaller to be usually employed for raising the heavier animals, and the larger for raising the lighter ones, the ropes or chains on the large and small drums being wound oppositely with respect to each other. The windlass shaft is operated by a pinion on another shaft, which carries a grooved



TARDY'S SLAUGHTER HOUSE HOIST.

wheel for receiving an endless rope employed in working the hoist, this rope being held to prevent movement of the load by introducing it between parallel pins projecting from the framework of the hoist. When large and small animals are to be killed, by the using of the larger drum for raising the smaller and the smaller drums for raising the larger, whereby, in the various manipulations, the weight of one animal is made to counterbalance that of the other, the work is rendered lighter and the different operations facilitated.