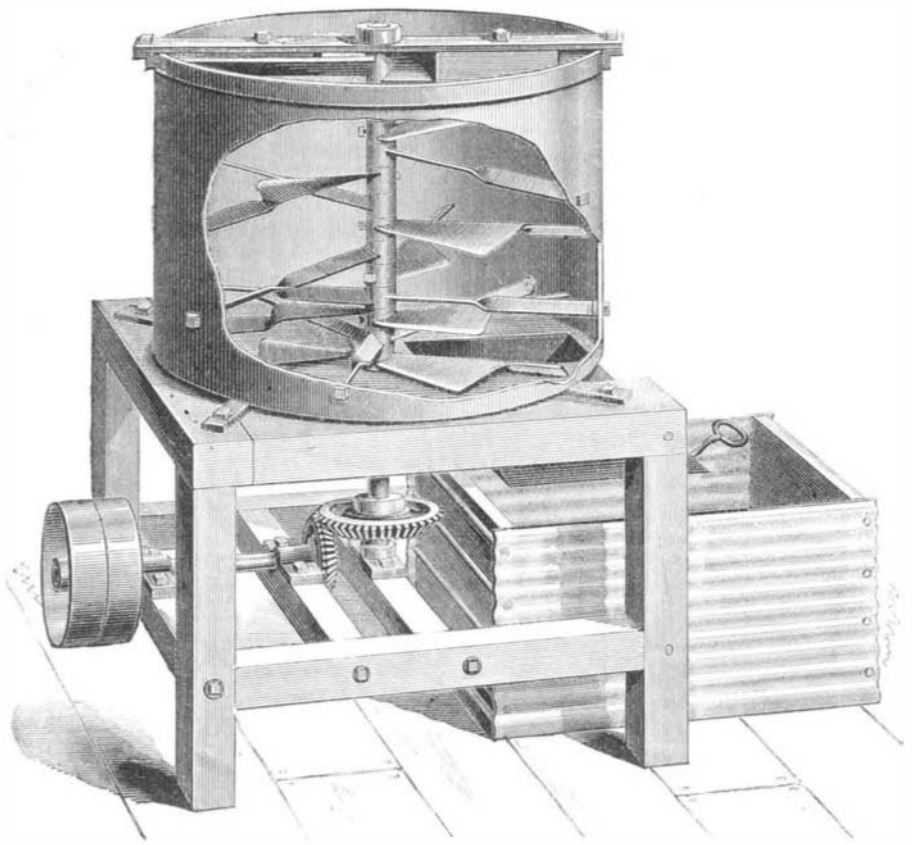
IMPROVED SOAP CRUTCHING MACHINE.

The invention herewith illustrated is an improved machine for mixing or crutching soap. Instead of carrying its contents, a defect which existed in the older apparatus of the same manufacturer, this machine simply crutches, keeping the soap in a body. The vertical wrought iron shaft, which is rotated by the gearing shown beneath, carries a number of cast iron wings, smaller extensions of which project to the inner periphery of the containing vessel. Within the latter are also a number of fixed bars which are rigidly secured, and through sockets in the inner ends of which the shaft freely turns. The wings are constructed in a spiral form and work as a double acting screw, raising and mixing the heaviest material from bottom to top. No air is crutched into the soap, as the stirring is all within the substance, so that it cannot get a spongy appearance or become filled with air holes and blisters. The product, we are informed, looks like the best hand-crutched soap, and is perfectly smooth and firm.

In operation the soap is let into the top of the tank, and run by steam power for from four to ten minutes; the sliding door in the bottom being then opened, the material is conducted directly to the frame, placed, as shown in the engraving, to receive it. All clippings and trimmings can be crutched in with the mass in the tank. The wings quickly cut the pieces up so that they dissolve. This is an advantage of importance, since it saves throwing the fragments back into the kettle.

The machine is of iron, weighs about five hundred pounds, and is made of any size, holding from eight to twenty hundred pounds. It may also be used as a complete mixer for all mineral and liquid compounds.

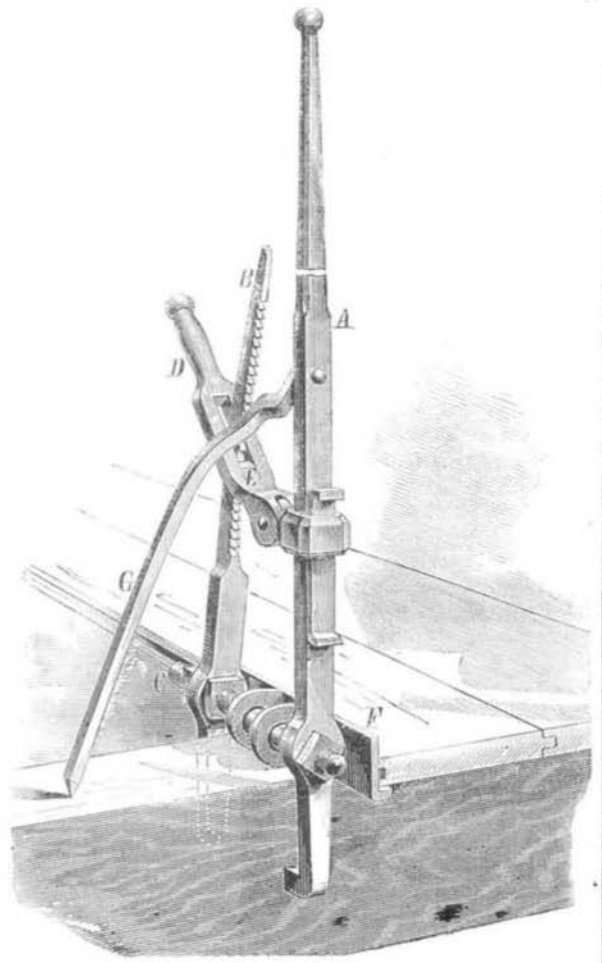
The apparatus is manufactured under two separate patents, issued to Charles Lehrmann, dated March 29, 1870, and September 29, 1872. For further particulars address Willis Humiston (sole manufacturer), Troy, N. Y.



LERHMANN'S SOAP CRUTCHING MACHINE.

DAVIDSON'S IMPROVED FLOOR CLAMP.

This is a novel and simple form of floor clamp, which will find a ready appreciation from carpenters, builders, and others. The lever bar, A, and the ratchet bar, B, are provided with spurs at their lower extremities, to take against each side of the joist. Between them is a connecting screw, C, having a nut, which is used to adjust the implement according to the thickness of the joist. D is the fastening lever, secured, as shown, to the bar, A, and provided with a slot through which passes the bar, B, a step, E, serving to engage in the teeth of and hold the latter at any desired point. F is a plate for protecting the edge of the flooring, and G a pawl for holding the apparatus after clamping up the same.



In operation, the bars are placed on the joist and fastened The upper end of the clamp is then pressed forward so as to force the flooring together by the plate, F. The device can be made to weigh but little; and judging from a model which we have tested, it appears to be an efficient and handy implement.

Patented through the Scientific American Patent Agency January 6, 1874. For further particulars address the inventor, Mr. Robert C. Davidson, Evanston, Uintah county, Wyoming Territory.

Breeding Terrapin and Freezing Fish.

An establishment has lately been started near this city, for the purpose of supplying to our markets an abundance of that greatest of marine delicacies, the terrapin, the artificial breeding of which is an entirely novel idea, and, from the success thus far encountered, appears to be a very successful one. The animals are caught at various points along our Southern sea coast and shipped directly to a fish dealer at Pleasure Bay, near Long Branch, N. J. Here they are placed in a huge pen, built on the beach. About two thirds of the enclosure is under water and the bottom is sloping so as to leave a depth of some eight feet in the deepest part. As many as 10,000 terrapin are placed in this receptacle at a time. For some years past the proprietor has noticed that large numbers of eggs were laid on the unsubmerged sand, but that very few were successfully hatched, as one terrapin would quickly destroy and devour the eggs of another, while the young were sure to be killed as soon as they appeared. In order to supply an artificial breeding place where the eggs could remain undisturbed, another pen has recently been constructed further inland, one third of the surface of which is dry sea sand. Every day the surface of the larger pen is raked and the eggs (carefully removed) transplanted in the new enclosure in regular rows, at a depth about equal to the length of a good sized terrapin's body. As many as 5,000 eggs were thus placed at one time during the past summer, and left to hatch by the warmth of the sun. At the beginning of the present month, the young terrapin began to appear; every day now adds to their numbers, and all seem to be healthy and doing well. Some difficulty is anticipated in keeping the animals over winter; but this surmounted, and the operation conducted on a larger scale next summer, there remains little doubt but that a new and important source of supply has been established. The food upon which the terrapin subsists, fish, crabs, and clams, is easily and cheaply obtained in the vicinity of the pens, so that the cost of maintenance will be small; while (judging from the fact that terrapin readily command from $8 to $15 in the markets), the enterprize will doubtless prove a lucrative one.

Freezing fish for winter use has almost attained in this city the dignity of a separate branch of trade. During the summer months, the markets are glutted with finny food, which, unless preserved by some means, would engender an immense waste, while causing a dearth of the commodity during the cold months. Salmon especially are very abundant during summer and extremely scarce in winter, so that this valuable fish, perhaps more than any other, finds its way into the great freezing rooms of the dealers.

The operations preliminary to the freezing process are the selection of the finest fish, and their careful cleaning. In large establishments, the entire first floor forms a gigantic refrigerator, having double walls of zinc, and divided into three sections, in each of which are two compartments. Ice and salt, ground together in a mill, are introduced into the spaces between the walls through openings in the floor of the second story, these apertures being so arranged that any number of the compartments can be cooled without affecting others. After the fish are cleaned, they are placed in pans, the latter being piled above each other in layers, packed in ice and salt, and covered up. Here the fish are left until thoroughly frozen, after which they are thrown into the huge refrigerators where they are kept. Within these receptacles the temperature is maintained at about 12°, and the fish are consequently rendered about as hard as solid lumps of ice. In this condition they are kept ordinarily six months and sometimes for eleven months, remaining perfectly fresh and only requiring thawing out to render them ready for cooking. It is estimated by the *Tribune*, from which we extract the above facts, that at the present time fully 250,000 pounds of fish are thus stored in this city, for next winter's use.

Self-Propelling Steam Fire Engines.

Steam engine No. 32, of the New York city fire department, stationed at Burling Slip, is provided with a very simple device which adapts it perfectly for self-propulsion. On one end of the crank shaft operated by the steam cylinders, and outside of the heavy fly wheel, is secured an iron flanged pulley, the periphery of which is corrugated. In line with this, on the rear axle and inside one of the rear wheels, is a similar though larger pulley, to which power is communicated from the one first mentioned by means of a strong endless chain. This is the only point of difference between this engine and that of the ordinary form drawn by horses. In fact, by merely removing the chain and attaching the pole, animals can be at once harnessed to the machine. The working of the steam cylinders of course propels the rear wheels, and a man in the driver's seat governs the ordinary hand steering wheel, and so directs the apparatus.

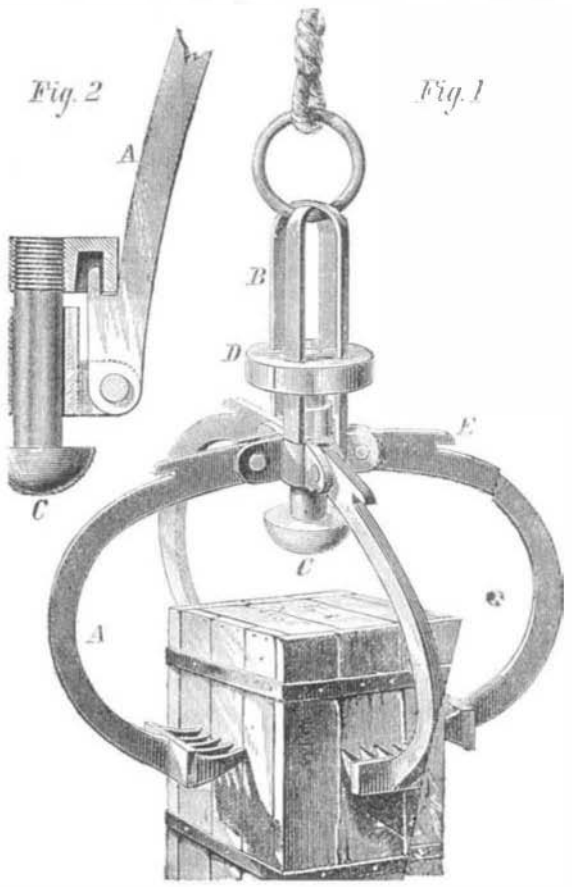
This engine weighs about 8,500 lbs., and is of great power; and since it would be a heavy load for two horses, the device above described has been fitted to it. It travels at a speed about equal to that of the moderate trot of a team.

A NEW GRAPNEL.

A novel and ingenious form of grappling iron has recently been patented through the Scientific American Patent Agency by M. J. B. Toselli, of Paris, France.

The device, which will be readily understood from our engravings, consists in a number of curved arms, A, provided with claws at their lower extremities. These arms are pivoted to lugs on a supporting frame, through the center of which loosely passes a shank, terminating below in a weight, C, and above in a disk provided beneath with a ring, D. These parts are shown in section in Fig. 2.

To set the apparatus, the arms are raised, and catches, E, thereon hooked, under the ring, as represented in the last mentioned figure. The grapnel is then lowered until the portion, C, strikes the object to be grasped. The shank is then forced up, carrying the disk and ring, D, so releasing the catches, E, when the arms fall by their own weight and clutch whatever is beneath them. In order to secure speci-



mens of the bottom, in making soundings, the claws may be made scoop-shaped and provided with lids, so that fragments of rock, sand, shell, etc., may not be washed away when the apparatus is raised to the surface; or horizontal ribs may be placed upon the arms, which, when the latter are closed, would form a perfect cage for specimens.

NEW FULMINATE.—M. Prat says: Tartrate of lead has the property of detonating when struck, and may serve as a substitute for fulminate of mercury in percussion caps. He also gives an account of an explosion which occurred in his laboratory on triturating together chlorate of potash, picrate of lead and amorphous phosphorus.