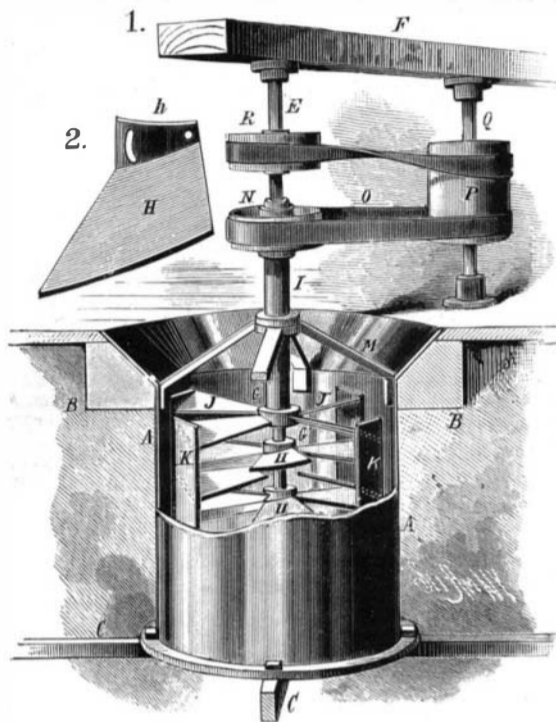


DOUBLE-ACTING WATER WHEEL.

The upper end of the cylindrical case, A, is flared to receive the water, and is attached to a suitable supporting frame, B, its lower end being secured to a spider or frame, C, in which is formed a central bearing to receive the lower end of the vertical shaft, whose upper end revolves in a bearing in the frame, F. To the shaft within the case are secured hubs, to which are attached the blades, H, the inner ends of which are formed with flanges, h, which are slotted to receive fastening screws, so that the inclination of the blade can be adjusted as desired. Upon the upper part of the shaft, E, is placed a tubular shaft, I, attached to the lower end, G, of which are the inner ends of the blades, J, whose outer ends are secured to the upright



RAU'S DOUBLE-ACTING WATER WHEEL.

bars, K. To these bars, below each hub, are attached the outer ends of blades, J, which are inclined in the opposite direction from the blades, H, and whose inner ends project nearly to the shaft. The lower part of the tubular shaft is centered upon the shaft, E, by a bearing formed upon the ends of the bars, M. At the upper end of each shaft is a pulley, R N, about which pass belts, O, leading to the long pulley, P, mounted upon the counter shaft, Q; one of the belts is crossed, as shown in the engraving.

When water is admitted into the case, it acts upon the blades, H J, and revolves the shaft, E I, and pulleys, R N, in opposite directions, and these opposite motions, by means of the straight and crossed belts, O, act together to drive the pulley, P.

This invention has been patented by Mr. Charles W. Rau, of Allentown, Pa.

ROWING APPARATUS.

The main object of the invention herewith illustrated is to provide a rowing apparatus, whereby a boat may be propelled by fore and aft oars acting at opposite sides of the boat, and while the rowers look forward.

Fixed to the shafts of the oars are pins which enter sockets of plates secured to the gunwale of the boat, so that the oars may swing fore and aft on the pins as centers. The blade of the oar (Figs. 2 and 3) is made in two wing sections, which have elongated eyes of about half the length of each blade. These blades are held on the oar shaft by a collar at the lower end, and are prevented from moving upward by a pin. On the oar shaft is a stud, against the sides of which strike shoulders on the wings when the latter are opened or lie in the same plane; and each wing is made with a side extension which bears against the outer face of the other. The stud prevents the folding of the outer edges of the wings closely together, so that at the beginning of the stroke they will open certainly and promptly, and the extensions form together an overlapping brace the full length of the blade, which may thus be made very light and cheap, and still have sufficient resistance on the pulling stroke of the oar. The oar handles (Fig. 4) are made with a long ferrule, having a feather entering a slot in the end of the oar shaft, and to which is fixed a rod carrying a hand roller. The handles extend thwartships, so that they may be



DOSCHER'S ROWING APPARATUS.

filters, leaving the solid and greasy matter behind. This is laid in cloths and called "puddings," which are pressed in hydraulic or steam presses till all the oil is squeezed out. From what is left, potash and other ingredients can be extracted, and the refuse is used as manure. The oil must be purified, and can then be used with great advantage for soap making or lubricating. As it is not worth while for each wool washer to do this for himself, it is advisable to sell the suds. The price, of course, is clear gain, especially when much greasy colonial wool is used

conveniently grasped to work opposite oars. The oars may be worked separately or in pairs by persons facing the stern of the boat in the ordinary position; but the boat may be rowed forward by one or more persons facing the bow and by a pulling stroke. The two oars at the same side of the boat are connected, above and below their respective pivots, by a rod. The engraving represents the rods connecting with the bow oars at each side of the boat at points above their pivots, and with the stern oars at points below their pivots; so that, when the stern oar handles are pulled backward, their blade wings will be moved forward and will close, and the bow oars will be swung to carry their blade wings backward and open them for propelling the boat; when the bow oars are pulled, the actions are reversed. In other words, a pull on the bow oars gives the propelling stroke to the stern oars, and a pull on the stern oars gives the propelling stroke to the bow oars. The rings shown upon each of the oar shafts are used to prevent the opening of the wings when it is desired to use but one pair of oars; they are placed upon the upper parts of the closed wings beneath the lips, plainly shown in Figs. 2 and 3. When the boat is not in use, the oars may be held up at the sides by swinging the handle ends down toward each other and then passing the bent ends of a short rod into the holes of the oars nearest their handles. This apparatus allows the rowers to keep a sharp lookout ahead, and requires but little or no practice to use; the oars make no noisy splashing of the water, and the boat can be rapidly propelled and quickly turned.

This invention has been patented by Mr. B. Doscher, of 136 Meeting Street, Charleston, S. C.

Mother-of-Pearl Designs on Tissues.

A German has patented a design in Germany for producing mother-of-pearl designs on cloth by the following method: A thin layer of caoutchouc is spread over a thin copper plate, on which the design is cut. The cloth is spread over the plate, and a hot roller passed over it. By the heat the caoutchouc layer becomes liquid, and by the pressure it adheres to the cloth, on which the required design is thus obtained. The cloth is now covered with powdered mother-of-pearl, which is spread evenly by means of a hot roller, and the excess of mother-of-pearl which does not stick to the cloth is taken away by means of a soft brush. The cloth is now covered with very fine crepe which has been wetted in gum water, and, after drying, the crepe can be made fast on the cloth, so as to protect the mother-of-pearl powder from falling off, while, owing to its fineness and transparency, it does not spoil the brilliance of the powder.

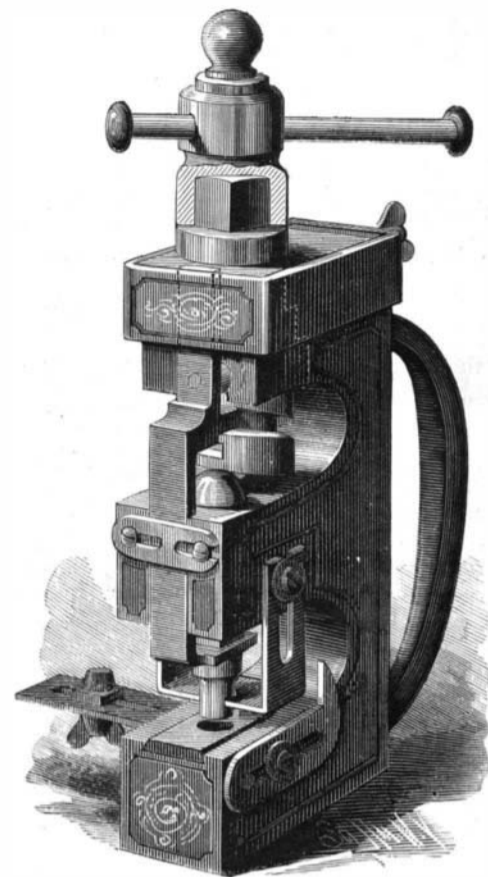
Oil from Soapsuds.

The saving arising from extracting oil from soapsuds is so great that no wool washer ought to allow his suds to run into the sewer in the form they leave the bowls. Tanks are prepared to receive the suds, and when a tank is full, a certain quantity of vitriol is poured into it. This causes the suds to curd or crack, and the grease and all solid matters fall to the bottom, leaving the water comparatively clean. This water is then run off down the drain, and the thicker portion at the bottom is afterward run into a filter bed of sand and gravel, through which the rest of the water gradually

COLD IRON PUNCH.

The punch shown in the accompanying engraving is designed for the use of boiler makers, tank builders, and workers in tin, sheet iron, and brass generally. While promising the greatest amount of strength, the material is so distributed that none of it is useless.

The block or frame is provided with two recesses, between which a horizontal prong is formed, in which



THE ACME GOLD IRON PUNCH.

the male die slides vertically. On the lower end of the die are projections resting on the prongs of a fork formed on the lower end of a bar sliding in grooves in the end of the block, the forked end of the bar being bent into the bottom recess. This bar is held in its grooves by a clip on the end of the horizontal prong and by a band surrounding the top of the block, and provided with a binding screw for clamping it on the block. The upper end of the spindle, held to turn in the end of the top prong, is formed with a square head, and on the lower end is a nut formed with a spiral groove into which a stud projects from the sliding bar. The bottom of the nut forms a spiral plane acting on the rounded top of the male die. The female die is dovetailed, and slides into a groove in the bottom recess. Held on the sides of the middle prong, as shown in the engraving, is a U-shaped frame having slotted prongs. This frame may be held at any desired distance from the female die. On one side of the lower prong of the block a gauge plate is held, and on the opposite is a slotted bar carrying a movable gauge, which can be locked by means of a winged screw. At the rear of the block is a handle for holding it. In the bottom edge of the front of a block forming half of the box for the spindle, and held on the outer end of the upper prong of the frame by the band, is held an anti-friction roller, on which the top edge of the spindle head runs.

The piece of metal to be punched, being placed on the female die, the spindle is turned, when the spiral plane acts on the rounded top of the male die, and forces it through the plate. The spindle then being moved in the reverse direction, the spiral groove in the head acts on the stud and pulls the sliding bar upward, this in turn pulling up the male die. The U-

shaped frame prevents the plate from rising with the die. One revolution of the spindle accomplishes the work. The convenient form of this punch, which has been thoroughly tested with the most satisfactory results, will commend it to boiler makers, as it can be used in places where it has been almost impossible heretofore to punch with a machine, and less power is required to operate it, as none is consumed in overcoming friction. Further particulars may be obtained from the inventor and manufacturer, Mr. S. Coons, of Orbisonia, Penn.