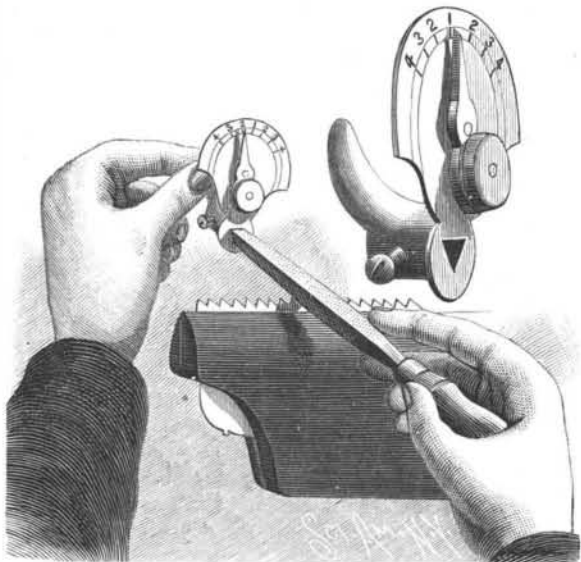


A CONVENIENT DEVICE IN SHARPENING SAWS.

The illustration herewith shows a novel file attachment, for which a patent has recently been allowed. In filing saws by hand it is very difficult, even after years of practice, to so hold the file that after sharpening the saw the cutting edges of all the teeth will be in parallel lines, because the angle at which the file is held to the teeth is likely to be slightly varied in



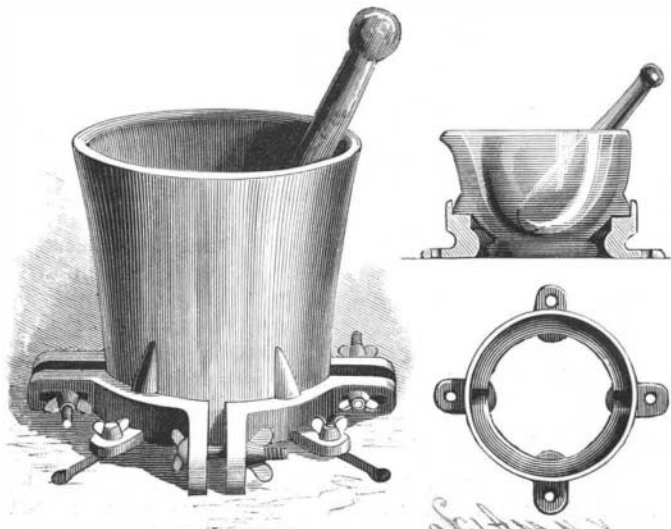
COOK'S SAW FILING ATTACHMENT.

different portions of the work. This invention affords a means of overcoming such difficulty by providing an attachment, to be connected with the file point, carrying a graduated plate having a gravity pointer. The graduated plate is bent slightly backward, so that its index is always in plain sight of the operator, and, at whatever angle it is desired to sharpen the teeth, the pointer indicates the corresponding inclination at which the file is held, and the workman has only to follow this guide to be sure that the cutting edges of the saw teeth will all be filed to the same angle. A thumb piece just back of the graduated plate affords a means of holding and bearing on the end of the file, which greatly facilitates the labor, and cannot fail to be highly appreciated by all who have much of such work to do.

For further information relative to this invention, address Mr. Paul D. Reed, P. O. Box 1507, New York City.

IMPROVED MORTAR ATTACHMENTS.

Those who in the chemist's or druggist's laboratory have had to pulverize substances in glass, Wedgwood, porcelain, or iron mortars, recognize very forcibly the defects of the implement. In the use of the porcelain, glass, or Wedgwood mortar, where rubbing friction is mostly employed, or in that of the metallic mortar, where percussion is the triturating force, the shifting about of the vessel is a constant annoyance. So much so is this the case that sometimes two operators work at the one instrument, one holding the mortar and the other working the pestle, the positions being at intervals reversed. These troubles are disposed of by the very ingenious arrangements patented by Mr. E. G. Purdy, of Ballston Spa, N. Y. They are illustrated in the cuts accompanying this article. If a porcelain, glass, or Wedgwood mortar is to be used, it is provided with lugs or projections near its base. To the table, by screws, an annular frame is secured, that forms a socket for the lower part of the mortar. In the upper surface of the frame or socket recesses are formed that

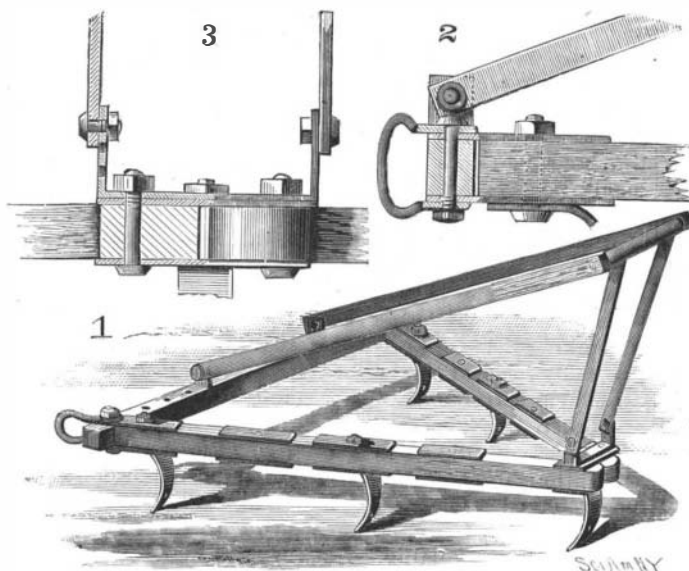


PURDY'S MORTAR ATTACHMENTS.

correspond to the lugs upon the body of the vessel. Dropped into this receptacle, the mortar cannot shift about, and cannot rotate or twist on its vertical axis. The operations of pulverization can be conducted with far greater rapidity and comfort than when the mortar has to be embraced by one arm, or at the least held by one hand of the operator. For the metallic mortar a similar socket is provided. This is made in segments that are fastened together by bolts passing through lugs. The segments are secured to the table by bolts with thumb nut, working in a strip of iron provided with a slot, the strip of iron being screwed to the counter, table, or other support. The mortar is provided with lugs fitting into notches in each segment. As these notches weaken the segments, the holding-down ears, through which the bolts already alluded to pass, are placed opposite to the notches, so as to act as a re-enforcement. The circle of segments can be screwed up so as to embrace the bottom of the mortar with great rigidity, and the socket thus constituted affords an admirable basis to resist the shocks of the pestle. The lugs upon the mortar prevent it effectually from turning. The adjustable socket will operate with glass, Wedgwood, or porcelain mortars equally as well as with iron or metallic mortars, and the "annular frame" is likewise adapted for glass, porcelain, or Wedgwood, and *vice versa*. Each of these devices is the subject of a separate patent.

AN IMPROVED CULTIVATOR.

A cultivator which provides for the employment of a good many plow shovels, and in which the distance between the plows may be regulated or adjusted at will by very simple means, is illustrated herewith, and has been patented by Mr. James M. Sutton, of Bryan, Brazos County, Texas. The front bar of the triangular



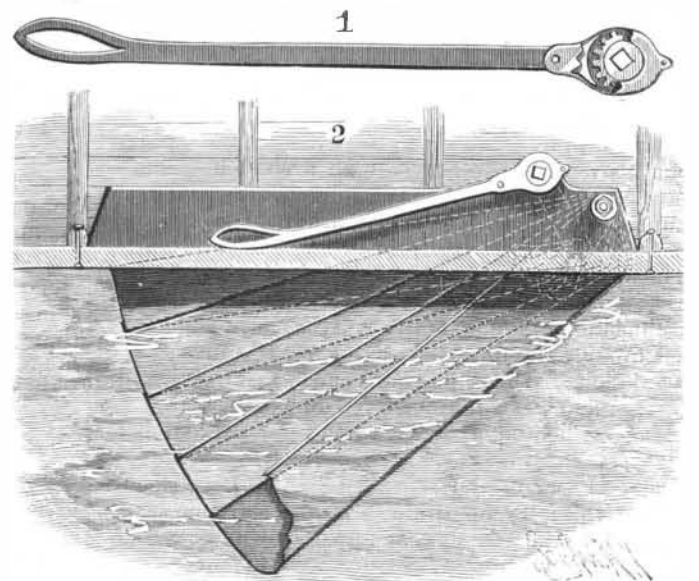
SUTTON'S CULTIVATOR.

frame of the cultivator has at each end several vertical apertures, through which and aligned apertures in plates on the front ends of the side bars are passed bolts, thus extending or diminishing the distance apart of the end plow standards. Each of the side bars is also provided with vertical apertures for the insertion of additional plow shovels. When it is desired to use the machine merely to lay off the rows for sowing, all the plows except those attached to the front standards are removed, and a wheel or roller is attached to the rear end of the machine, of which Fig. 3 gives a detailed section, showing the attachment of the braces to support the handle bar, Fig. 2 showing the forward end of one of the side bars. With this cultivator, the plows may be easily adjusted to plow close to or far from the rows, as desired. No singletree is required, but the draught animal may be hitched to hooks in clevises that are connected to the ends of the front bar, this also making the cultivator very easy to lift around when plowing, as most of the weight will be on the draught animal.

A FOLDING CENTER BOARD FOR SMALL BOATS.

A center board which can be readily fixed in the bottom of a boat, folds into a very small space, and can be easily manipulated, is shown in the accompanying illustration, and has been patented by Mr. Thomas R. Brough, of Gananoque, Ont., Canada. The casing is of galvanized iron, 27 inches long, 4 inches high, and $\frac{5}{8}$ inch thick, with a flange around the base perforated every

two inches for screws, with which the case is secured to the keel or keelson, a strip of soft rubber packing rendering the joint water-tight. Inside the box, on a loose sleeve, are swung five blades, the lower one double and hollow, closed front and bottom, and



BROUGH'S CENTER BOARD FOR VESSELS.

partially at the rear. When the board is extended, this bottom blade stays the others, and when closed incases them, discharging any floating dirt through the opening in the rear. Through an upward extension of the casing passes a rock shaft, with a central squared portion, to which is fitted a forked arm extending down in the case. The blades, swinging on a common pivot, have slots through which passes a roller carried by the forked arm, the slots varying in their angle of inclination in such way that the blades are opened out like a fan, or folded, by turning the rock shaft which operates the forked arm, the slots being so made that when the board is fully returned to place it will be locked there, as the roller has passed over a center. A specially devised wrench for operating this rock shaft is shown in Fig. 1. It is about 18 inches long, with a cog wheel having a square in the center to fit on the shaft, and a double pointed pawl pivoted in the rear to engage at the operator's will with either point, whereby the board can be expanded or contracted by a very slight motion of the wrench. When sailing with the board extended, if any obstruction is encountered, the board will close into the case without motion being imparted to the wrench, which will act as a stop to prevent the board from dropping more than half way, but nothing more, except in the hands of the operator. Quite a number of these center boards have already been for some months in use, and their convenience and efficiency are highly spoken of.

A SIMPLE AND INEXPENSIVE HAT HOOK.

A quickly applied and neat little attachment by which hats may be readily suspended from the back of a chair or other support is shown in the accompanying illustration, and has been patented by Dr. Augustus H. R. Guiley, of No. 413 Center Street, South Easton, Pa. The device consists of a hook of brass wire, which may also be readily made into a loop by catching its open end into a smaller loop, the latter being attached to a ribbon or cord, which has on its other end a little piece of wire bent in the form of a staple, for conveniently attaching it to the hat. This little wire staple is passed between the hat body and the sweat band, and the two side parts of the staple are then bent outward, so as to lie next the stitching which connects the sweat band to the hat body. It is thus concealed from view, and where it cannot hurt the head of the wearer. In adapting the device to ladies' hats the crown lining may serve to place the hook behind instead of the sweat band, or a piece of ribbon sewed to the hat to form a slip pocket for the hook.



GUILLEY'S HAT HOOK.

FACE POWDER.—Wheat starch 12 lb., powdered orris 2 lb. Mix together, and add attar of lemons $\frac{1}{2}$ ounce, attar of bergamot and cloves each 2 drachms.