T. S. CRANE.

BATH TUB MOLDING APPARATUS.

APPLICATION FILED OCT. 5, 1909.

949,977. Patented Feb. 22, 1910.

2 SHEETS—SHEET 1.

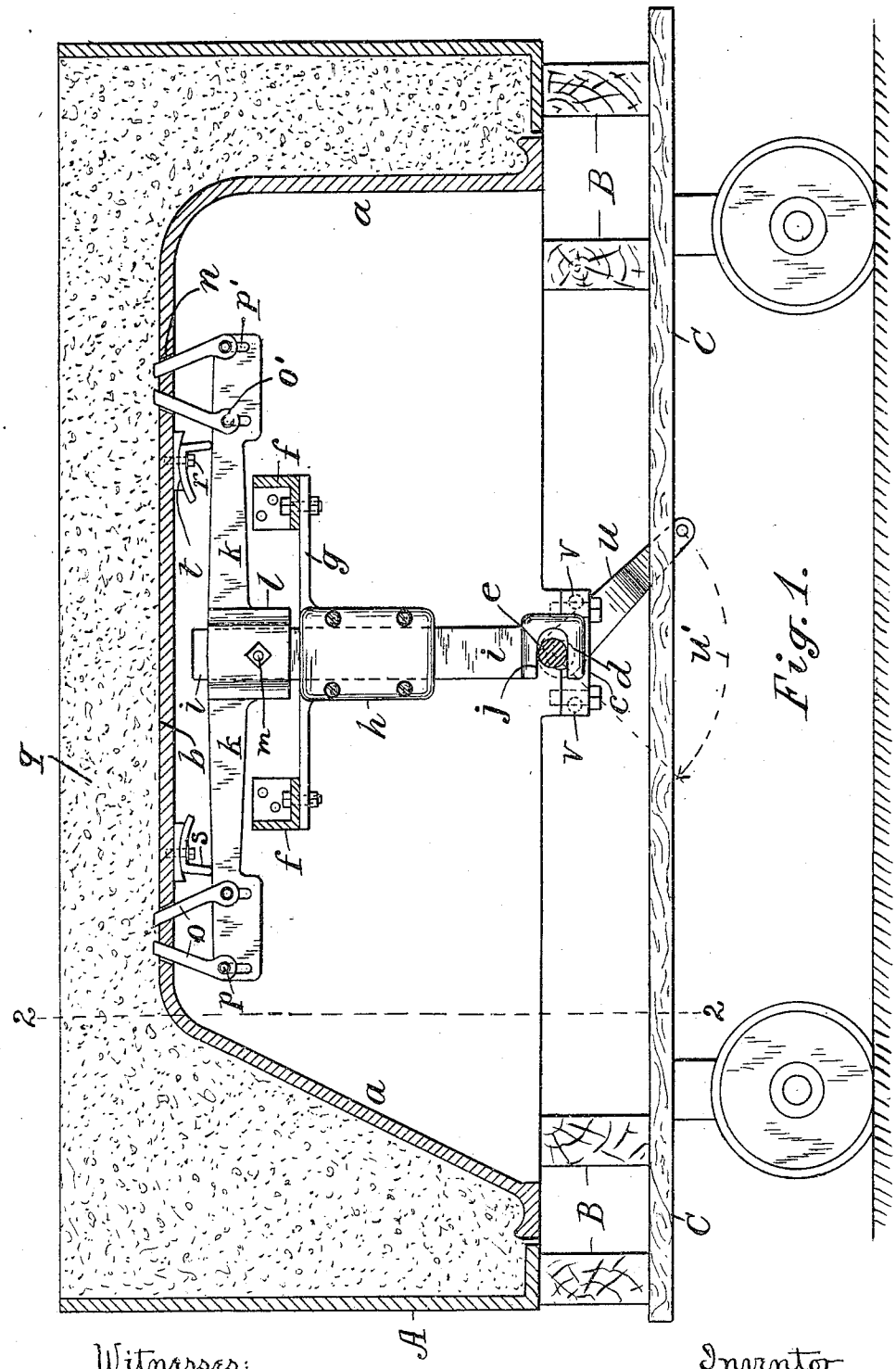

Fig. 1.

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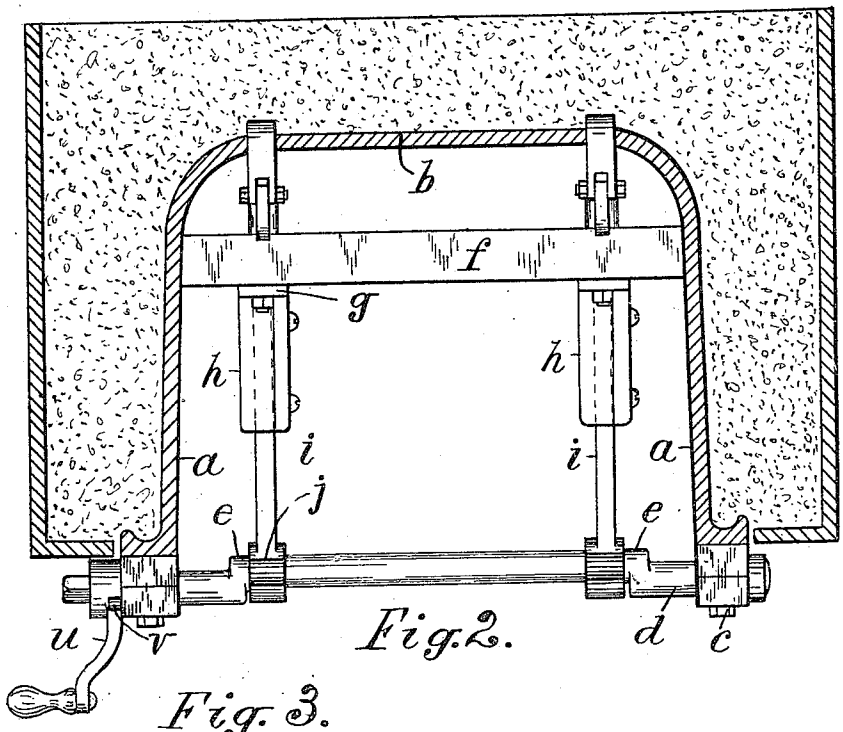


Fig. 2.

Fig. 3.

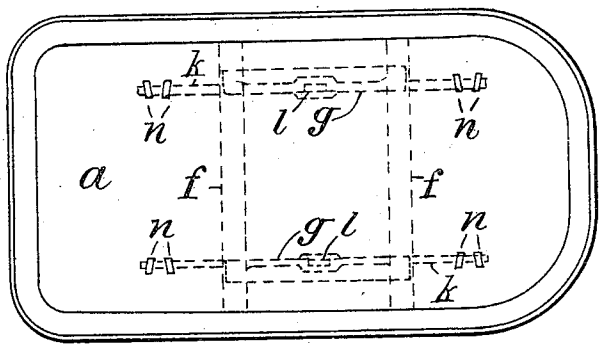
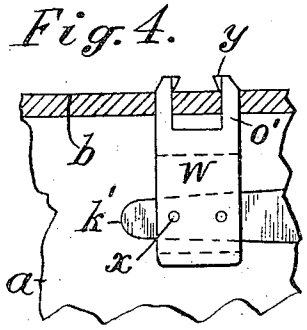


Fig. 4.



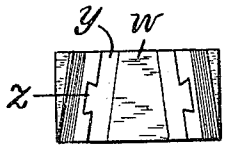


Fig. 6.

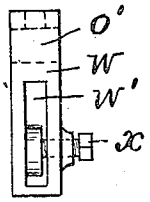


Fig. 5.

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UNITED STATES PATENT OFFICE

THOMAS S. CRANE, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO McCRUM-HOWELL COMPANY, A CORPORATION OF CONNECTICUT.

BATH-TUB-MOLDING APPARATUS.

949,977. Specification of Letters Patent. Patented Feb. 22, 1910.

Application filed October 5, 1909. Serial No. 521,092.

To all whom it may concern:

Be it known that I, THOMAS S. CRANE, a citizen of the United States, residing at 3 University Place, East Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Bath-Tub-Molding Apparatus, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to a simple and effective means of molding the undercut lugs which are required upon a bathtub pattern for attaching the feet thereto, and the invention consists of the particular means herein described for holding prongs retractably in the surface of the pattern to project the same when molding the undercut lugs.

The invention will be understood by reference to the annexed drawing, in which—

Figure 1 is a longitudinal section of the pattern adjacent to one side; Fig. 2 is a transverse section on line 2—2 in Fig. 1; Fig. 3 is a plan of the pattern; Fig. 4 shows one end of the crosshead with a modified construction of the prongs for using loose tins; Fig. 5 is an edge view of the casting which holds such prongs adjustably upon the crosshead; and Fig. 6 is a plan showing the usual construction for the tins.

a is the body of the pattern, *b* its bottom surface which requires undercut lugs and which is held uppermost in the molding operation.

c are bearings attached to the lower edges of the pattern, *d* an eccentric shaft journaled in such bearings, and *e* are eccentric portions upon such shaft.

Crossbars *f* are shown extended transversely of the pattern at opposite sides of the middle line where the shaft is located, and *g* are beams extended between the crossbars supporting vertical guides *h* in which slides *i* are fitted movably and connected each to the eccentric portions of the shaft by a transverse notch *j*.

A crosshead *k* is fixed adjustably upon the upper end of the slide by a vertical socket *l* at the middle of its length, which is secured upon the slide by a set-screw *m*. The opposite ends of the crosshead extend parallel with the surface *b* of the pattern beneath the apertures *n*, four pairs of which are shown in Fig. 3, two pairs of them being located near each of the opposite ends at the location of the desired undercut lugs. In Fig. 1, the apertures in each pair are shown inclined toward one another, and prongs *o* are shown jointed upon the crosshead by transverse bolts *p*, the prongs being suitably inclined to extend through the apparatus when the crosshead is elevated and standing at an inclination to one another to form undercut recesses in the sand *q*, which is indicated only in Fig. 1. Vertical slots *p'* are shown in the crosshead to receive the bolts *p*, and in practice the eyes at the lower ends of the prongs *o* are formed with bushings which, when the nuts upon the bolts *p* are tightened, are clamped against the opposite sides of the crosshead without clamping the eyes of the prongs, and can form stationary fulcra upon which the prongs can rock, as required in their movement through the inclined apertures *n*. This construction permits the prongs to be adjusted vertically upon the crosshead, but if the parts are suitably designed and constructed, no such adjustment is required, as the adjustment of the crosshead upon the slide *i* and the adjustment of the stops *s* suffices to regulate the projection and retraction of the prongs.

The stops *s* are shown secured by bolts *r* to the inner side of the pattern adjacent to the apparatus, and are adjustable to and from the crosshead upon inclined seats *t* which moves them out toward the crosshead as they are moved longitudinally upon the seat.

In Fig. 1, the prongs are shown projected above the surface of the pattern as when molding the recesses, and the crosshead is shown proportioned so that in this position it contacts with the stops *s* and clears the tops of the crossbars *f* sufficiently to be lowered into contact with the crossbars when the prongs are retracted flush with the surface of the pattern.

A crank-arm *u* is shown upon the end of the eccentric-shaft, and a quarter turn of the shaft suffices to move the crosshead upward and downward to the desired point. When the eccentric-shaft is moved, its arm oscillates between the stops *v* upon the bearings *c*, which stops determine the required movement of the arm to lower the prongs the desired distance.

Figs. 4 to 6 show the prongs *o'* parallel with one another and made integral with a block *w* having a slot *w'* to slip upon the

end k' of the crosshead, upon which it can be adjusted vertically and clamped in any desired position by set-screws x. The prongs o' pass through parallel apertures in the surface of the pattern and have the loose tins y held loosely upon their adjacent faces by dovetails z in the usual manner, which leaves the tins in the sand when the prongs are retracted; permitting them to be picked out of the recesses after the pattern is removed from the mold.

The body-pattern is shown surrounded by the sand q within a flask A, the flask and pattern being supported by blocks B upon a truck C; and this arrangement is advantageous because it affords room beneath the bottom of the body-pattern for the eccentric-shaft, but any suitable means for supporting the pattern when molding may be used.

The mechanism for operating the prongs is of exceedingly cheap construction, as nearly all the parts may be made of rough castings without any fittings, except that of the slide i to its guide h, and the eccentric-shaft to its bearings and to the slot j in the slide i.

In the drawing, the eccentric-shaft is made with a body-portion eccentric to the end-portions which fit the bearings c, and the notches in the slides i fit upon such eccentric portion near its opposite ends. The portions which engage the notches operate as two independent eccentrics, and it is immaterial whether the shaft be made with one bent portion forming two eccentrics to operate the slides i, as shown in the drawing, or be made straight as is common in such cases, and the eccentrics made larger than the shaft at two different points.

The term "eccentric-shaft" applies equally to both constructions.

Having thus set forth the nature of the invention what is claimed herein is:

1. A bathtub pattern having apertures through the surface of the pattern near each of its opposite ends at the location of the desired lugs, bearings upon the lower side of the pattern, a shaft journaled therein having an eccentric portion, a slide connected thereto and movable vertically over the eccentric, a guide for such slide, a crosshead upon the slide having its ends extended beneath the apertures at both ends of the pattern, and prongs extended from the crosshead through the apertures to form the recesses in the sand, means for oscillating the eccentric shaft, and means for regulating the movement of the crosshead to suitably project and retract the prongs.

2. A bathtub pattern having two apertures through the surface of the pattern for each of two feet near its opposite ends, bearings extended transversely beneath the pattern, a shaft journaled therein and having two eccentric portions, two slides connected thereto and movable vertically over the eccentrics, a guide for each of such slides, a crosshead upon each of such slides having its ends extended beneath the apertures at both ends of the pattern, prongs extended from the crossheads through all of the said apertures, and means for turning the eccentric shaft through a regulated arc to suitably project and retract the prongs.

3. The combination, with a bathtub pattern, of two crossbars within the pattern at opposite sides of its middle line, transverse bearings supported below the pattern intermediate to the crossbars, a shaft journaled in said bearings and having an eccentric portion, a slide connected thereto and movable vertically over the eccentric, a guide for such slide supported upon the crossbars, a crosshead upon the slide having its ends extended beneath the apertures at both ends of the pattern, and prongs extended from the crosshead through such apertures.

4. The combination, with a bathtub pattern, of two crossbars within the pattern at opposite sides of its middle line, transverse bearings supported below the pattern intermediate to the crossbars, a shaft journaled in said bearing and having two eccentric portions, slides connected to said portions and movable vertically over the eccentrics, guides for such slides supported upon the crossbars, a crosshead upon each of such slides having its ends extended beneath the apertures at both ends of the pattern, prongs extended from the crossheads through all of the said apertures, and stops upon the pattern for regulating the projection of prongs when the crosshead is raised.

5. A bathtub pattern having apertures through the surface of the pattern near each of its opposite ends at the location of the desired lugs, bearings upon the lower side of the pattern, a shaft journaled therein having an eccentric portion, a slide connected thereto and movable vertically over the eccentric, a guide for such slide, a crosshead having adjustable connection with the slide and its ends extended beneath the apertures at both ends of the pattern, and prongs extended from the crosshead through the apertures to form the recesses in the sand, means for oscillating the eccentric shaft, stops upon the pattern adjacent to the prongs to contact with the crosshead when the prongs are projected, and stops within the pattern to contact with the crosshead when the prongs are suitably retracted.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

THOMAS S. CRANE.

Witnesses:
L. Lee,
J. Walter Greenbaum.