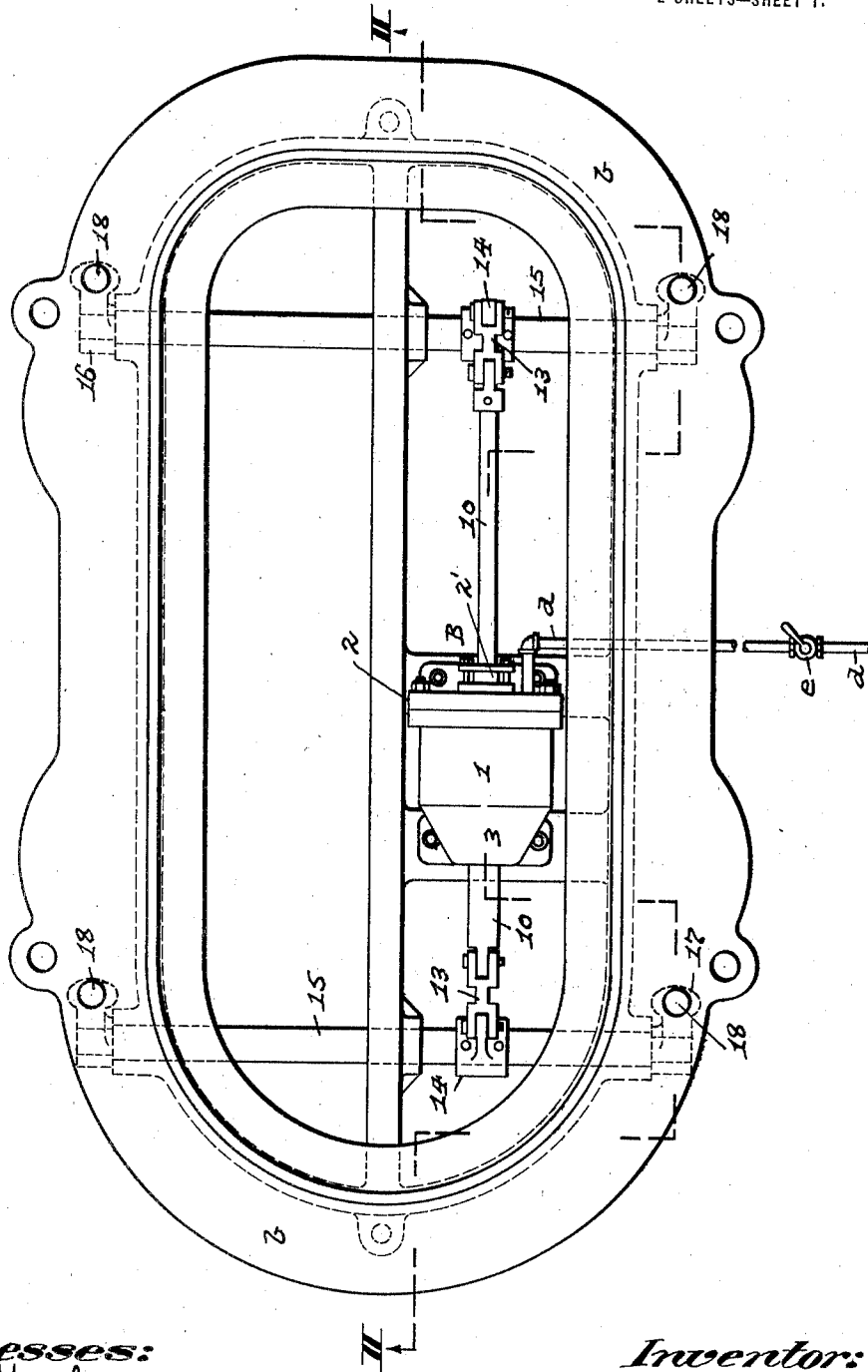


R. F. RINGLE.
LIFTING DEVICE FOR BATHTUBS.
APPLICATION FILED DEC. 12, 1919.

1,360,147.

Patented Nov. 23, 1920.
2 SHEETS—SHEET 1.

Fig. 1.



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1,360,147.

Fig. 2.

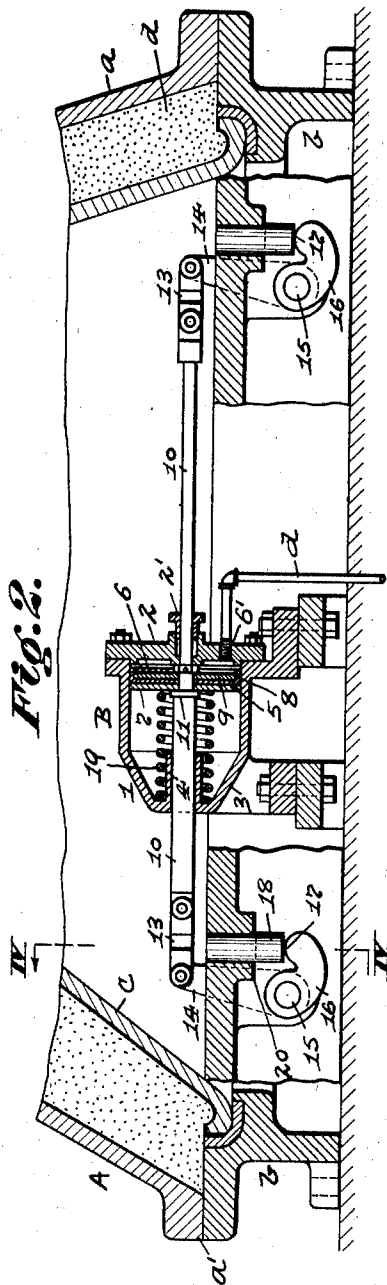


Fig. 3.

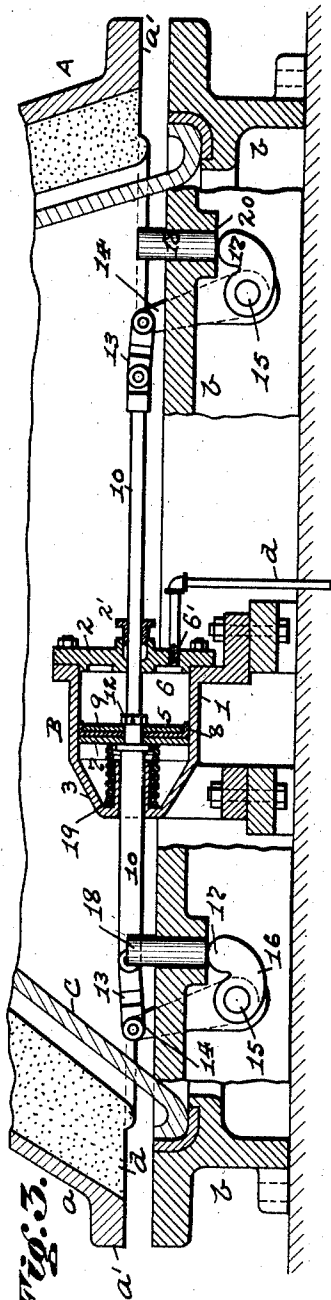
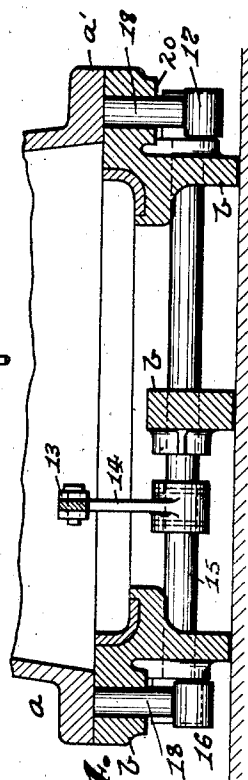


Fig. 4.



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UNITED STATES PATENT OFFICE.

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LIFTING DEVICE FOR BATHTUBS.

1,360,147.

Specification of Letters Patent.

Patented Nov. 23, 1920.

Application filed December 12, 1919. Serial No. 344,437.

To all whom it may concern:

Be it known that I, ROBERT F. RINGLE, a citizen of the United States, and a resident of Zelienville, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Lifting Devices for Bathtubs; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to lifting devices for sand molds and has special reference to pneumatic devices for use in lifting cope molds.

The object of my invention is to provide a cheap, simple and efficient lifting device for cope molds, which will lift the cope mold from the pattern easily and quickly, and will enable the stripping of such mold from the pattern without any liability of injuring such mold, especially in such molds in which large castings are made and such molds are compelled to be lifted by cranes.

To these ends my invention consists, generally stated, in the novel arrangement, construction and combination of parts, as hereinafter more specifically set forth and described and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use my improved lifting device for molds, I will describe the same more fully, referring to the accompanying sheets of drawings, in which:

Figure 1 is a plan view of a bath tub cope mold, with the cope flask removed and showing my invention applied thereto;

Fig. 2 is a sectional view on the line II—II Fig. 1, and showing the mold in position for being raised;

Fig. 3 is a like view showing the mold raised from the pattern; and

Fig. 4 is a cross-section on the line IV—IV Fig. 2, looking in the direction of the arrows.

Like symbols of reference herein indicate like parts in each of the figures of the drawings.

As illustrated in the drawings, my invention is shown in connection with a mold A for forming a bath tub, in which the cope flask *a* is adapted to rest on and be supported by the pattern stool *b*, while such stool also supports the pattern *c* which ex-

tends up within the flask *a* and is adapted to form a space or cavity between the same and such flask for the sand *d* in forming the mold.

Within the mold A and supported on the floor or foundation carrying such mold is the lifting device B, which is on one side of such mold and is provided with a cylinder 1 having a cover head 2 removably secured to one end and provided with a stuffing box 2' thereon. The opposite end of the cylinder 1 is inclined inwardly, as at 3, and is provided with a sleeve portion 4 for extending into the cylinder. Within the cylinder 1 is the piston 5 which forms a chamber 6 between the same and the head 2 such piston comprises a piston head 7, a leather cup 8 and a follower plate 9 for confining said cup between the same and said head. A piston rod 10 passes through the piston 5 and through the stuffing box 2' and sleeve 4 and is provided with a collar 11 and a nut 12 thereon for securing such piston head 7, cup 8 and follower 9 to said rod by clamping the same between such collar and nut. At the outer end of such piston rod 10 is a link 13, which is pivoted to such end at one of its ends and its opposite end is pivoted to a lever 14. Extending across each end of the mold A and journaled in the pattern stool *b* is a rod or shaft 15, and these two shafts have a cam 16 mounted on each end of the same and provided with a cam face 17 thereon. At each of the four corners of the mold A is a pin 18, which pins are symmetrically arranged under the flask *a* for engaging with the rim *a'* on such flask and such pins are vertically and loosely mounted in the pattern stool *b* in order that the lower ends of the same can rest upon the cam faces 17 on each of the cams 16. A spiral spring 19 is interposed between the piston head 7 and cylinder end 3 and around the piston rod 10 for the purpose hereinafter described.

In the use and operation of my improved lifting device for sand molds, after the mold A has been formed, air under pressure and controlled by any suitable means, such as a three-way valve *e*, is permitted to flow through a line *d* into the chamber 6 in the cylinder 1 through a hole or opening 6' in the cylinder head 2, until sufficient pressure is obtained in said chamber to move the pis-

ton 5 therein, which will move the piston rods 10 forward with the same and turn the shafts 15 to the left by reason of the levers 14 on said shafts being connected up with said rods through the links 13 on said rods. By such movement of the shafts 15, the cam faces 17 of the cams 16 on said shafts will be thrown upward and engage the under faces of the pins 18, thereby lifting such pins and the upper faces on such pins thus engaging the rim *a'* of the flask *a* will lift the mold *A* composed of the flask *a* and sand *d* therein a short distance above and from the stool *b*, and allow the sand to clear the pattern *c*. This movement is continued until the cam faces 17 strike against the bearing faces 20 on the pattern stool *b*, and then the flask *a* and its sand *d* forming the mold *A* is lifted from over the stool *b* by any suitable means and the air in the chamber 6 of the cylinder 1 exhausted through the line *d*, which will allow the spring 19 to force back the piston 5 and thus lower the cam faces 17 and pins 18, turn the shafts 15 and levers 14 back to the right and move the links 13, piston rods 10 and piston 5 back, so that the device will then be ready for another lifting operation.

It will be obvious that if the pins 18 do not fall by gravity when the mold *A* is thus lifted from the pattern *c* and stool *b*, the next flask placed upon the pattern and stool will force them down and thus place them in position for operation by the cams 16 in the next lifting operation.

Various modifications and changes in the design and construction of my improved lifting device for sand molds may be resorted to without departing from the spirit of the invention, or sacrificing any of its advantages.

It will thus be seen that my improved lifting device for sand molds is positive and steady in its operation and the raising of the flask and sand mold from the pattern will be accomplished easily and quickly without the liability of any swaying of the flask and mold and the use of unreliable, cumbersome and heavy devices, thereby permitting the formation of clean and perfect molds at all times.

What I claim as my invention and desire to secure by Letters Patent is:

1. In combination with a pattern and a sand mold having a flask, of vertically movable pins engaging with said flask, mechanical means engaging with said pins, and power mechanism engaging with said means for raising the pins and said flask and mold above the pattern.

2. In combination with a pattern and a sand mold having a flask, of vertically movable pins engaging with said flask, mechanical means engaging with said pins, and a fluid operated mechanism connected to said means for raising said pins and said flask and mold above the pattern.

3. In combination with a pattern and a sand mold having a flask, of vertically movable pins engaging with said flask, mechanical means engaging with said pins, a fluid operated cylinder having a piston therein, and mechanism connected to said means and to said piston for raising said pins and said flask and mold above the pattern.

4. In combination with a pattern and a sand mold having a flask, of vertically movable pins engaging with said flask, means engaging with said pins, a fluid operated cylinder having a piston therein and a piston rod on each side of the same extending through the cylinder, and means connected to the outer ends of said rod and to said means for raising said pins and said flask and mold above the pattern.

5. In combination with a pattern and a sand mold having a flask, of vertically movable pins engaging with said flask, shafts, cams on said shafts for engaging with said pins, a fluid operated cylinder having a piston therein and a piston rod on each side of the same extending through the cylinder, and means connected to the outer ends of said rod and to said shafts for operating said cams to raise said pins and said flask and mold above the pattern.

In testimony whereof, I, the said ROBERT F. RINGLE, have hereunto set my hand.

ROBERT F. RINGLE.

Witnesses:

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