

F. H. HOWARD.
CASTING MACHINE.
APPLICATION FILED MAR. 3, 1909.

942,073.

Patented Dec. 7, 1909.

4 SHEETS—SHEET 1.

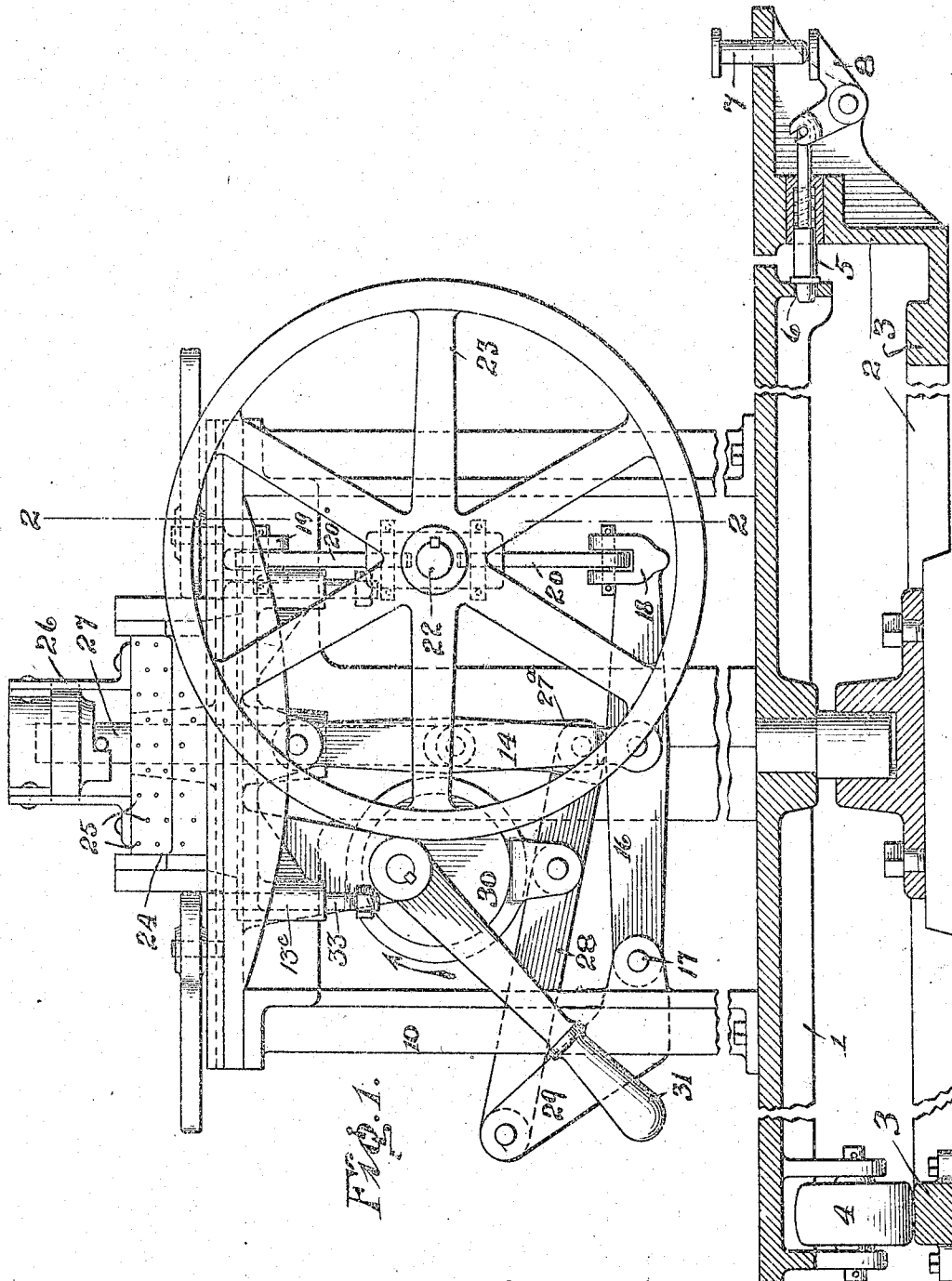


Fig. 1.

WITNESSES

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J. O'Reilly,

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INVENTOR

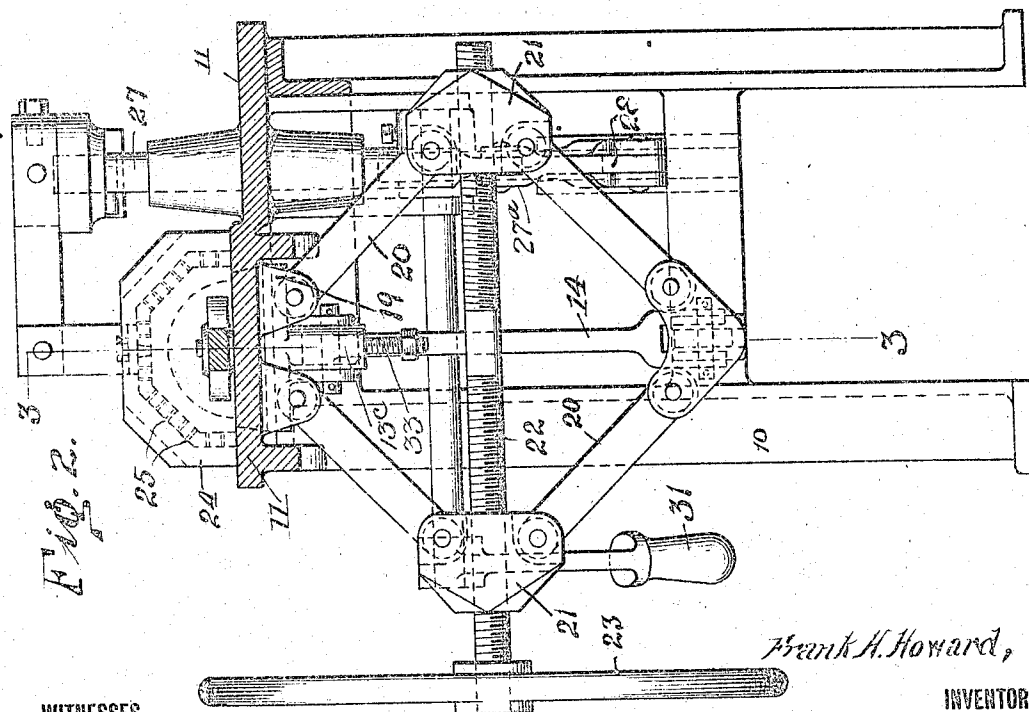
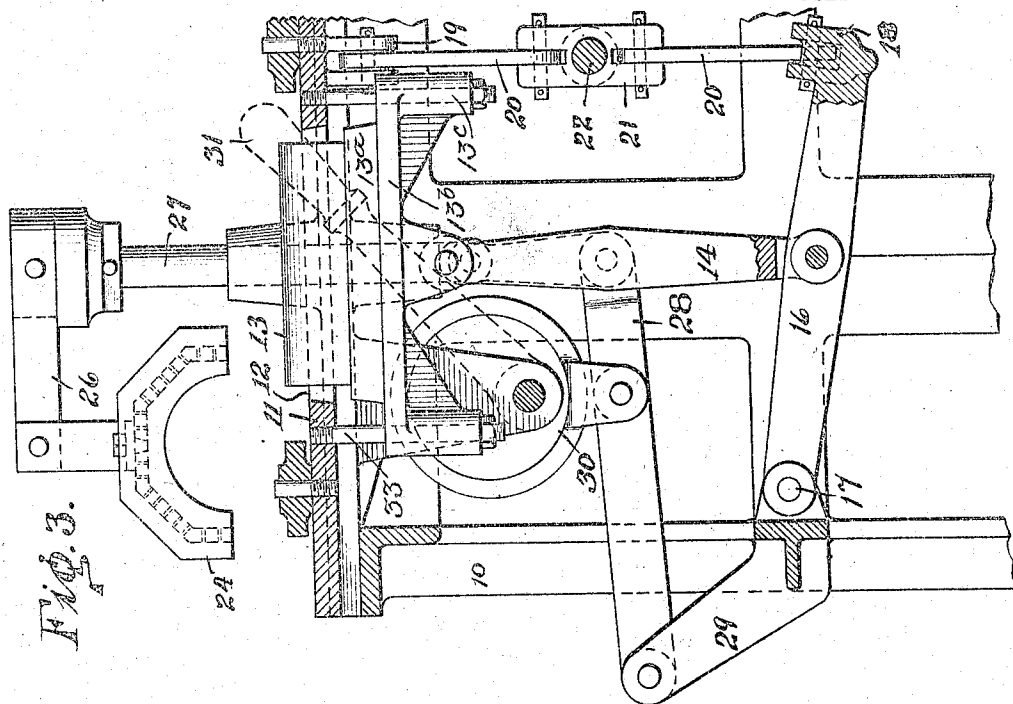
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4 SHEETS—SHEET 2.



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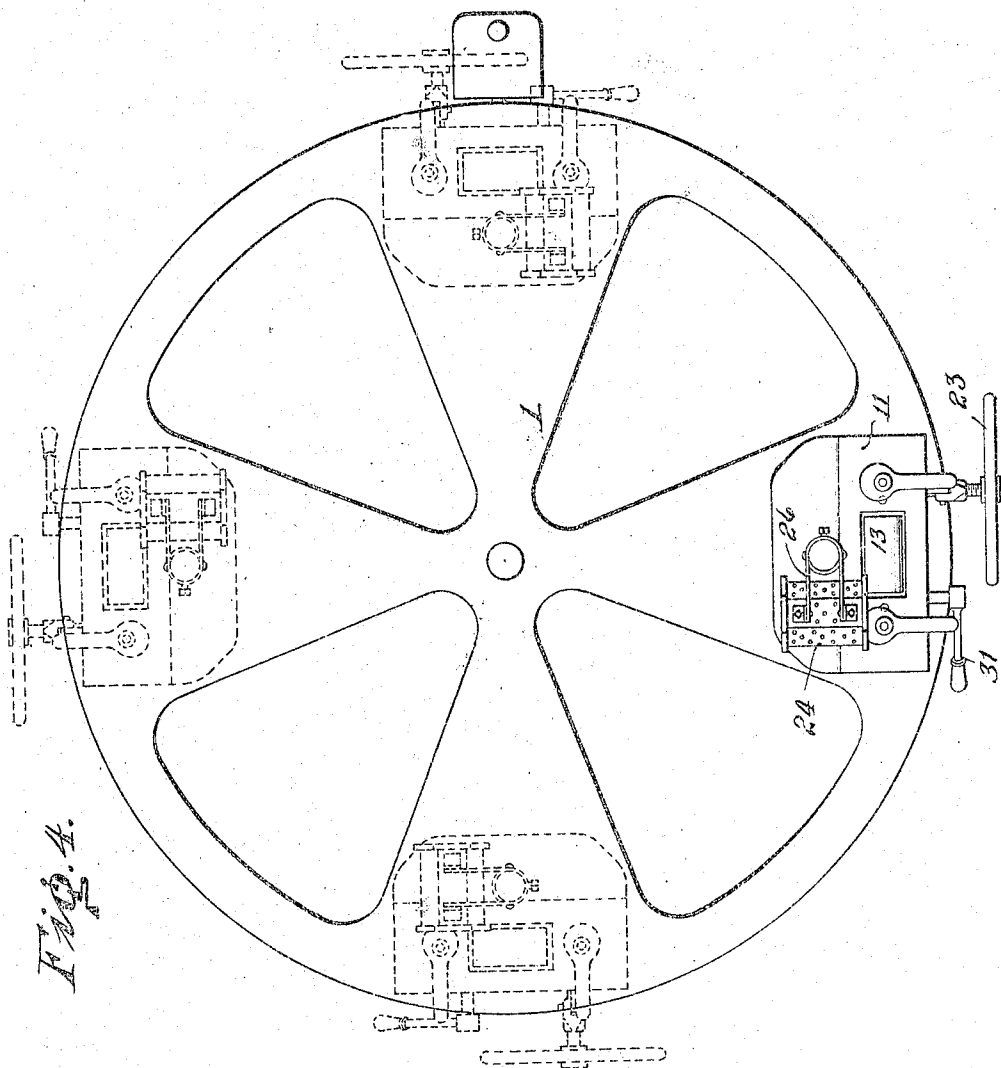


Fig. 4.

WITNESSES

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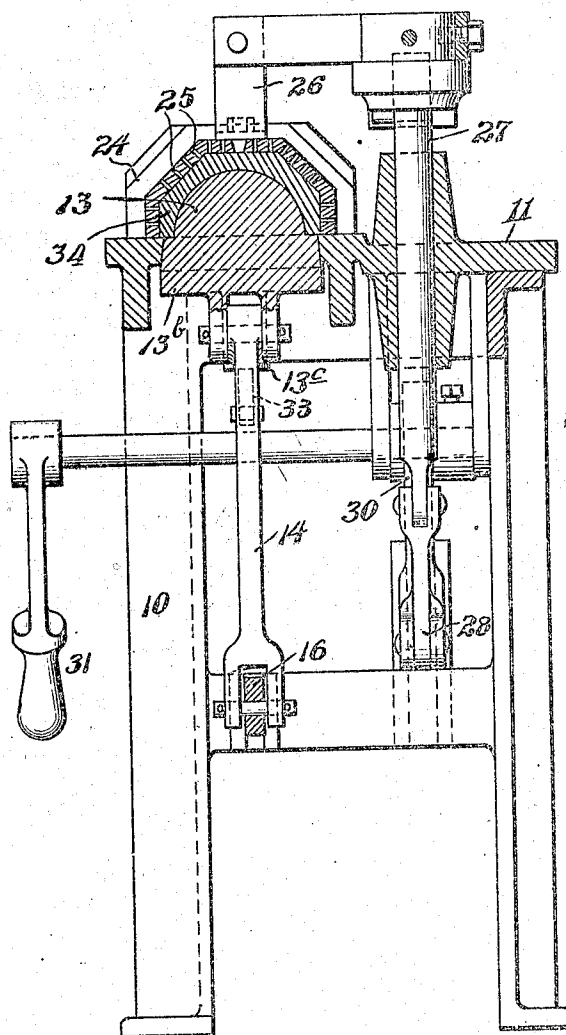
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4 SHEETS—SHEET 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANK H. HOWARD, OF BROOKSIDE, NEAR READING, PENNSYLVANIA.

CASTING-MACHINE.

942,073.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed March 3, 1909. Serial No. 481,119.

To all whom it may concern:

Be it known that I, FRANK H. HOWARD, a citizen of the United States, residing at Brookside, near Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Casting-Machines, of which the following is a specification.

This invention relates to improvements in casting machines and it is intended more particularly for casting journal bearings.

The invention consists of a revolving table on which are located a number of machines, each of which is capable of forming a casting in turn as the revolving table presents it to the operator. These machines are each provided with an attachment for lowering the mold from the platen and also an attachment for raising the cope therefrom when the mold has been poured, so that the bearing rests free to be lifted away from the machine when it reaches a point opposite the operator who pours it.

The object is to provide for the rapid and cheap casting of uniform bearings, without the necessity of first forming sand molds. With my device, the mold in one of the machines is poured and the table on which the casting machines are located is revolved. When the machine containing the casting reaches a point opposite the pouring operator, a second operator removes the bearing and by this means the operation of casting is continuous and rapid as there is no loss of time, the removal of one casting being accomplished while another is being poured.

Having thus described the invention in general, I will in the following specification set forth more fully the details of construction and operation, the construction being also fully and clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a front elevation, showing the table in section. Fig. 2 is a vertical sectional view, taken on line 2—2 of Fig. 1. Fig. 3 is a vertical sectional view, taken on line 3—3 of Fig. 2, but with the cope raised and turned at right angles, and with the drag lowered. Fig. 4 is a plan view of the table, showing one of the machines in position, the other three being indicated by dot-

ted lines. Fig. 5 is a central vertical sectional view, taken at right angles to the view shown in Fig. 3.

The numeral 1 designates the revolving table. 2 the base thereof. 3 an annular track and 4 the wheels secured to the under side of the table and which travel on said annular track.

At a point occupied by one of the operators, I provide a catch in the base, for securing the table and holding it while a casting is being poured. This catch comprises a spring-backed plunger 5 adapted to engage an opening 6 in the table. The plunger is operated by a foot pin 7 and an angled pivoted arm 8. When the table arrives at the point where the opening 6 registers with the plunger 5 it will snap into the opening and hold the table against moving until released by foot pressure on the pin 7. On this revolving table I secure a number (preferably four) of casting machines. These machines are identical in construction and each comprises in its make up a frame 10, a top piece or platen 11 provided with a central opening 12. A drag of the desired form for producing the casting 34, is arranged to move vertically in this opening. This drag is made up of an upper portion 13, a tapered portion 13^a at its base and a base plate 13^b, the three portions being formed integral and the base plate having formed thereon a sleeve 13^c at either end in which it travels and is guided vertically on rods 33 secured to the under side of the top or platen 11. This base plate is removably mounted on the top of a rod 14 which is secured pivotally at its lower extremity to a horizontal arm 16, at a point approximately its longitudinal center. This arm 16 is pivoted to the frame at one end, at a point 17, and its opposite end is formed with a jaw 18, set at right angles to the body of the arm. Directly above this jaw, and in vertical alinement therewith, I provide a second jaw piece 19, formed on the under side of the top piece 11 and in each of these jaw pieces is pivoted a pair of arms 20 and the opposite ends of these arms are in turn, pivoted, each to one of a pair of toggle nuts 21. These nuts are provided, one with a right-hand and the

other with a left hand thread and they are located on opposite ends of a rod 22, which is provided at one end with a right-hand thread and at the other with a left hand thread to accommodate the said toggle nuts. A hand wheel 23 is located on the end of said rod.

It is clear that the turning of the hand wheel will move the toggle nuts either toward or away from each other, thus raising or lowering the free end of the horizontal arm 16, and with it the rod 14 which carries on its top the drag. It is also clear that with this construction the movement of the drag will be in a perfectly vertical line and that it is rapid and easy, due to the double toggle device just described.

On the top of each machine, and immediately over the drag, I have shown the cope 24 through which the metal is poured. This cope is provided with a series of very small and irregularly arranged perforations 25, for the purpose of venting. The cope is secured to an oscillating arm 26 which arm is removably mounted on the top of the vertical rod 27. This rod passes through the top of the machine and its lower end has a link 27^a pivoted thereon at one of its ends and whose opposite end is pivoted to an arm 28 whose opposite extremity is pivoted to a lug 29 on the machine frame. At a point between the two extremities of this arm a pivotal connection is made with an eccentric strap 31, which surrounds an eccentric 30 and to this eccentric I secure a hand lever 31 for turning it.

When the lever 31 is moved, it will, through the eccentric, raise the arm 28 on its pivotal connection to the frame and consequently raise the rod 27, thus lifting the cope 24 free from the drag. When thus raised, the cope may be swung on its arm 26 with a circular movement, out of the way (Fig. 3 shows it thus raised and turned) and the casting may be raised from the machine, the drag having first been lowered as above described and the opening in the top or platen being such that the ends of the casting will engage it sufficiently, during its expanded condition, to prevent its falling. When the hand lever 31 is moved as just described, the eccentric will keep it in the position placed, that is, when it is moved as indicated by the arrow (Fig. 1) until it has turned the eccentric past the center (as shown in Fig. 3) it will remain there until the lever is again operated in the opposite direction, to lower it.

The operation of the machine is both simple and rapid. The pouring operator stands at one point of the table and pours the castings. The foot pin is operated to release the table and it is revolved until the next machine arrives at the operator's position when the

catch will automatically engage and hold the table. As each machine arrives at a point opposite the pouring operator, a second operator removes the casting therefrom.

The cope and drag are both removable, so that castings of different size or form may be made on the same machine. To remove the cope, it is lifted, together with its carrying arm 26, from the top of the rod 27 and another cope provided with a like arm, is placed in position on the rod. To remove the drag, the nuts on the lower ends of the guide rods 33 are removed as is also the pin by means of which it is secured to the top of the rod 14, when it may be readily removed and replaced by another of the desired form or size.

Having thus fully described my invention and its operation, what I claim and desire to secure by Letters Patent is:—

1. In a metal casting machine, a revolving table, a base, an annular track, wheels adapted to travel on said track, means for engaging and holding said table against movement, a plurality of casting devices located on said table each device comprising in its make up a frame; a drag; means comprising a double toggle, a vertical rod and a horizontal pivoted lever, for lowering and raising said drag; a perforated cope; an oscillating arm on which said cope is mounted, and means comprising a vertical rod, an arm pivoted to the frame and an eccentric, for raising and lowering the cope.

2. In a casting machine a frame having an opening in its top, a drag, means for raising and lowering said drag, a perforated cope, an oscillating arm on which said cope is mounted and means for raising and lowering said cope.

3. In a casting machine, a frame, a drag, a depending rod secured to said drag, a lever secured to said rod, a double toggle connected to and adapted to operate said lever to raise and lower the drag, a perforated cope, an oscillating arm on which said cope is mounted, a vertical rod to the top of which said arm is movably secured and means for raising and lowering said vertical rod.

4. In a casting machine, a frame, a drag, a depending rod secured to said drag, a lever secured to said rod, a double toggle connected to and adapted to operate said lever to raise and lower the drag, a perforated cope, an oscillating arm on which said cope is mounted, a vertical rod to the top of which said arm is movably secured, an eccentric connected to said rod, a hand lever adapted to operate said eccentric, and an arm pivotally secured to said eccentric and to the machine frame whereby said rod may be raised and lowered.

5. A journal bearing casting machine com-

prising a frame having an opening in its top, a drag, means for moving said drag vertically, a cope and means for moving said cope vertically and horizontally.

5 6. In a journal bearing casting machine comprising a frame having an opening in its top, a drag, means comprising a double toggle and a pivoted arm for giving vertical movement to said drag, a perforated cope

and means for giving both vertical and horizontal movement to said cope. 10

In testimony whereof I affix my signature, in presence of two witnesses.

FRANK H. HOWARD.

Witnesses:

J. FRANK LANNING,
ED. A. KELLY.