H. A. MYERS.

GATHERING AND DISCHARGING MEANS FOR MOLTEN MATERIAL.

APPLICATION FILED JULY 9, 1920.

1,437,855. Patented Dec. 5, 1922.

Fig. 1.

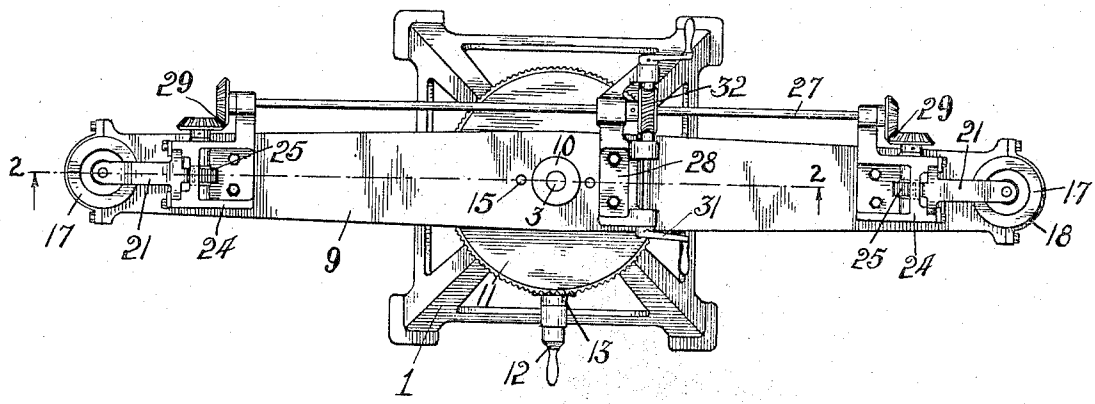
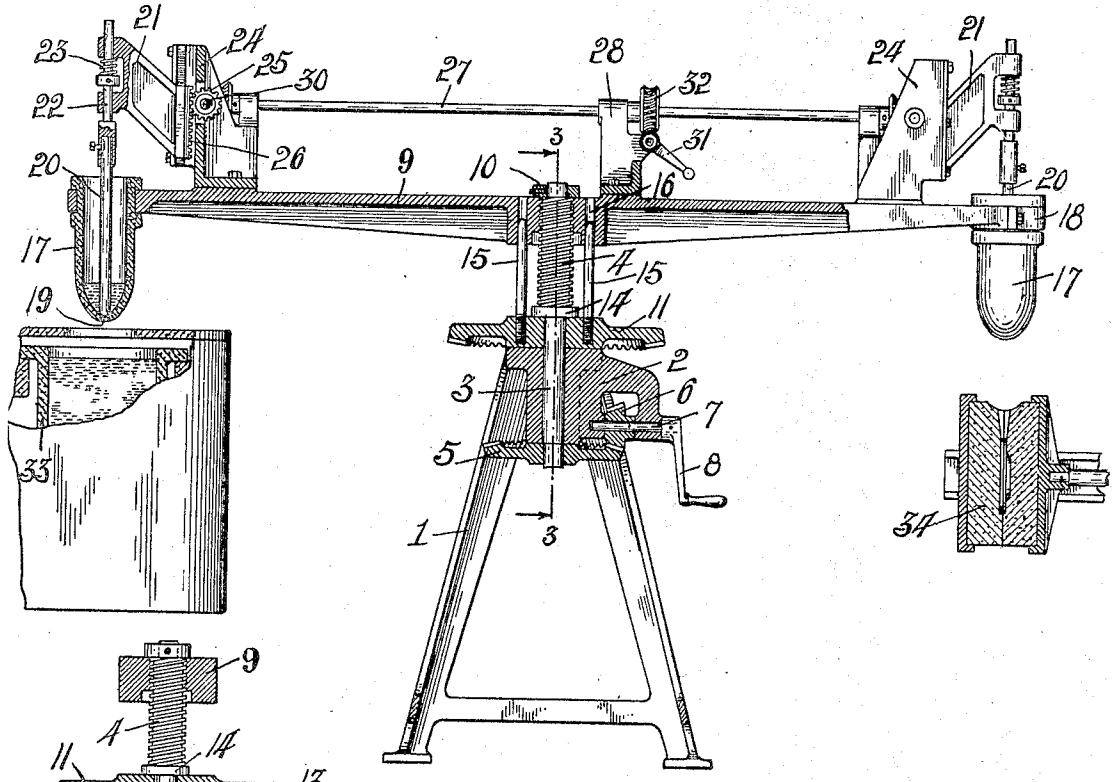


Fig. 2.



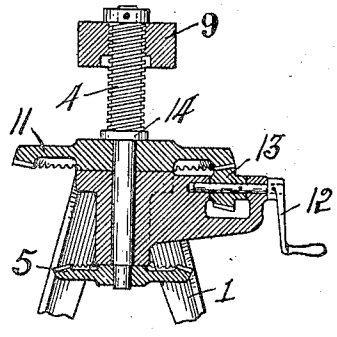


Fig. 3.

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UNITED STATES PATENT OFFICE.

HUBERT A. MYERS, OF TOLEDO, OHIO, ASSIGNOR TO THE HUBERT A. MYERS COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

GATHERING AND DISCHARGING MEANS FOR MOLTEN MATERIAL.

Application filed July 9, 1920. Serial No. 394,917.

To all whom it may concern:

Be it known that I, HUBERT A. MYERS, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have made an invention appertaining to Gathering and Discharging Means for Molten Material; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates particularly to the molding art, and has for its object the provision of simple and efficient means for gathering quantities of molten material, such as metal, glass, or the like, all of which may be referred to broadly by the term "metal", and delivering the gathered material to receiving molds.

The invention is fully described in the following specification, and while, in its broader aspect, it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which,—

Figure 1 is a top plan view of an apparatus embodying the invention. Fig. 2 is a side elevation thereof with a portion in section on the line 2—2 in Fig. 1 and with a crucible and a mold fragmentarily shown in connection therewith, and Fig. 3 is a section on the line 3—3 in Fig. 2.

Referring to the drawings, 1 designates a standard having a block or portion 2 at its top forming a bearing for a vertical shaft 3, the upper end of which is threaded to form a worm section 4. A bevel gear 5 is fixed to the lower end of the shaft 3 and is driven by a meshing pinion 6 fixed to a crank shaft 7. The shaft 7 is journaled horizontally in a portion of the block 2 and has a crank 8 at its outer end to facilitate a manual turning, in the present instance, of the shaft.

A cross-arm 9 is centrally threaded on the worm section 4, whereby a turning of such section relative to the cross-arm will impart raising or lowering movements to the cross-arms depending on the direction of turning of the worm. The worm is provided at its outer end with a collar 10 which limits the outward movement of the cross-arm thereon.

A bevel gear 11 is loosely journaled on the shaft 3 on the top of the block 2 on which it rests and has turning movements imparted thereto from a crank 12 (Fig. 3) the shaft of which is journaled in the block 2 and carries a pinion 13 in mesh with the gear. The shaft 3 has a collar 14 at the lower end of its worm section 4 for shouldering on the gear 11. One or more pins 15 project upward from the gear 11 and loosely enter holes 16 in the hub portion of the cross-arm 9 to permit vertical movements of the cross-arm relative to the pins and to cause the cross-arm to have rotary movements with the gear 11, as is apparent.

A gathering receptacle 17 is carried at each end of the cross-arm 9, being of any suitable heat resisting material and being removably held to the arm by removable clamps 18, or in any other suitable manner. These receptacles, in the present instance, are of cup-form and each is provided at its lower end with an aperture 19 through which molten metal may enter and be discharged from the receptacle. The aperture 19 of each mold is controlled by a respective valve 20, which is carried for vertical reciprocatory movements by a vertically movable bracket arm 21, which has cushioned coaction with the valve stem 22 through the medium of a compression spring 23. The bracket arm 21 is guided for vertical reciprocatory movements by a standard 24 projecting upward from the respective end of the cross-arm 9, and the vertical movements of the bracket arm are controlled by the turning of a pinion 25 in mesh with a vertical rack 26 on the inner end of the bracket arm. A shaft 27 is journaled at its central portion in a bearing 28 rising from the cross-arm 9 near its center and is journaled at its ends in the standards 24 lengthwise of the cross arm 9. This shaft has bevel gear connection 29 at each end with the shaft 30 of the respective pinion 25, so that a turning of the shaft 27 will impart uniform raising and lowering movements to the bracket arms 21 and valves 20 at each end of the cross-arm. The turning of the shaft 27 is controlled by a hand crank 31, the shaft of which is journaled in the standard 28 and has a worm in mesh with a worm wheel 32 on the shaft 27.

A crucible 33, or other suitable source of supply, for molten metal is disposed below a gathering receptacle 17 when the latter is in one position of its movement whereby the receptacle may be lowered into the crucible to receive a measured quantity of the metal therefrom and then raised above the crucible for the purpose of transferring to a point of delivery of the gathered metal to a mold 34, which, in the present instance, is disposed in diametrically opposed relation to the crucible so that when one gathering receptacle is in vertical register with the crucible the other is in vertical register with the mold. A number of crucibles 33 and molds 34 may be provided and successively moved into registering relation with the gathered position of the receptacles in one case and with the discharging position thereof in the other case.

In the operation of an apparatus embodying the invention, the cross-arm 9 being elevated, the operator turns the same by a turning of the crank 12 so as to place one gathering receptacle 17 in vertical register with a supply crucible 33 and with another gathering receptacle in vertical register with a mold 34. The crank 8 is then turned to effect a lowering of the cross-arm and a consequent lowering of the gathering receptacles to submerge the lower end of one a predetermined extent into the molten metal in the registering crucible. The crank 31 is then turned to raise the bracket arms 21 and move the valves 20 to uncover the apertures 19 in the bottoms of the gathering receptacles so that metal from the crucible will enter and seek its level in the receptacle which is gathering a supply of metal, while the metal in the other gathering receptacle will be permitted to discharge into the subjacent mold 34. The operator then turns the crank 31 in the reverse direction to lower the valves to close the apertures 19 and then operates the crank 8 to raise the cross-arm and gathering receptacles an extent sufficient to enable them to be swung so as to place the filled receptacle in register with a mold and the empty receptacle in register with a crucible. This being done, the previous operation of lowering the cross-arm and opening the valves is repeated.

It is evident that my apparatus provides for the gathering of a measured quantity of molten metal, which quantity may be varied depending on the depth of submergence of the receptacles in the metal and the size of the same, and also that while only two gathering receptacles are shown in the illustrated embodiment of the invention, any number of such receptacles may be employed and carried by means which is movable to transfer the receptacles from gathering to discharging position, and vice versa.

I wish it understood that my invention is not limited to any specific construction, arrangement, or form of the parts, as it is capable of numerous modifications and changes without departing from the spirit of the claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is,—

1. In an apparatus of the class described, a pair of gathering receptacles each having an opening in its bottom, a movable member carrying said receptacles, means operable to vertically move the member to lower the bottom portion of one receptacle into a subjacent molten bath and then to raise it therefrom and to raise and lower the other receptacle with respect to a subjacent mold, and means operable to simultaneously open and close the receptacle openings when the receptacles are respectively in gathering and discharging positions.

2. In an apparatus of the class described, a pair of gathering receptacles, each having an opening in its bottom, means carrying said receptacles for simultaneous uniform raising and lowering movements and for revoluble movements to reverse their positions, means operable to vertically move the carrying means to raise and lower the receptacles, and closure means for the receptacle openings operable to simultaneously open and close the openings.

In testimony whereof I have hereunto signed my name to this specification.

HUBERT A. MYERS.