H. E. ASBURY.

MEANS FOR PLACING WEIGHTS ON MOLDS.

APPLICATION FILED MAY 29, 1911.

1,051,663.

Patented Jan. 28, 1913.

2 SHEETS—SHEET 1.

Fig. 2

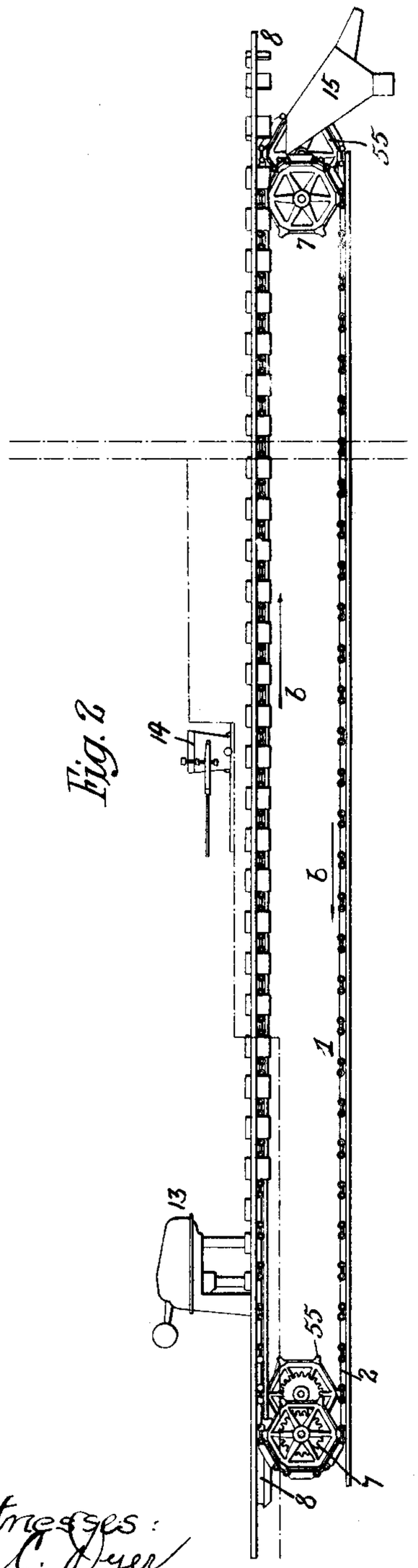
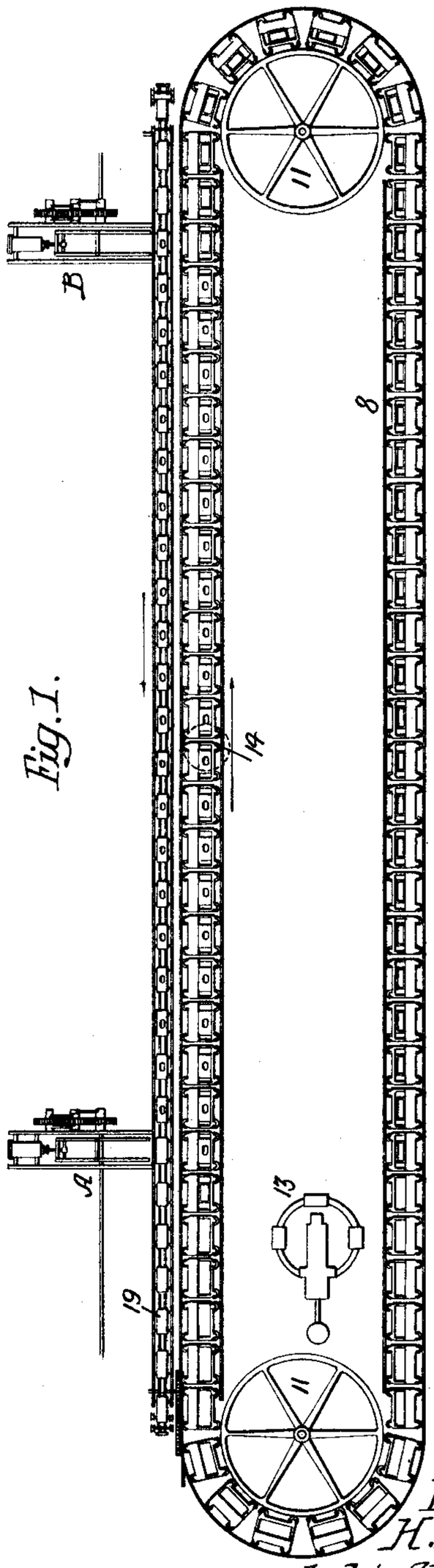


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 6.

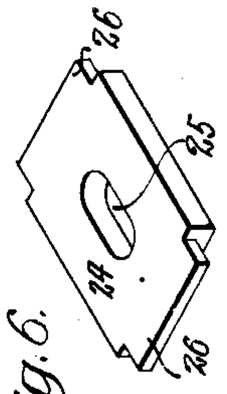


Fig. 5.

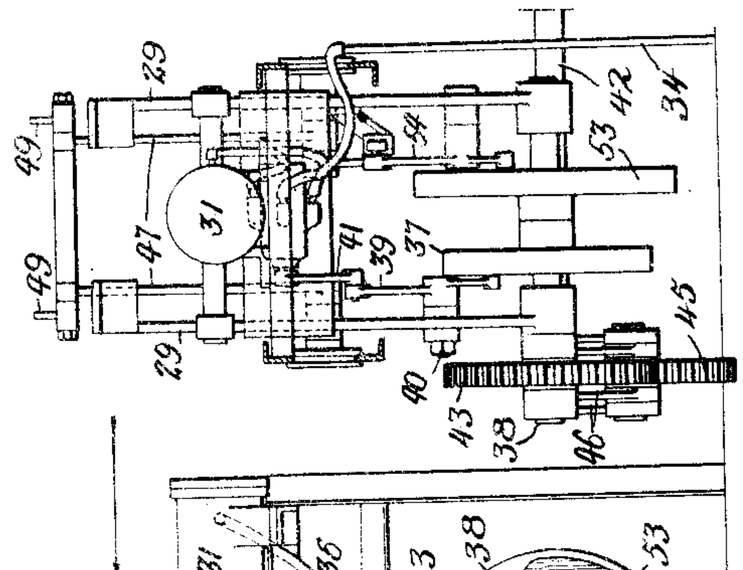


Fig. 3.

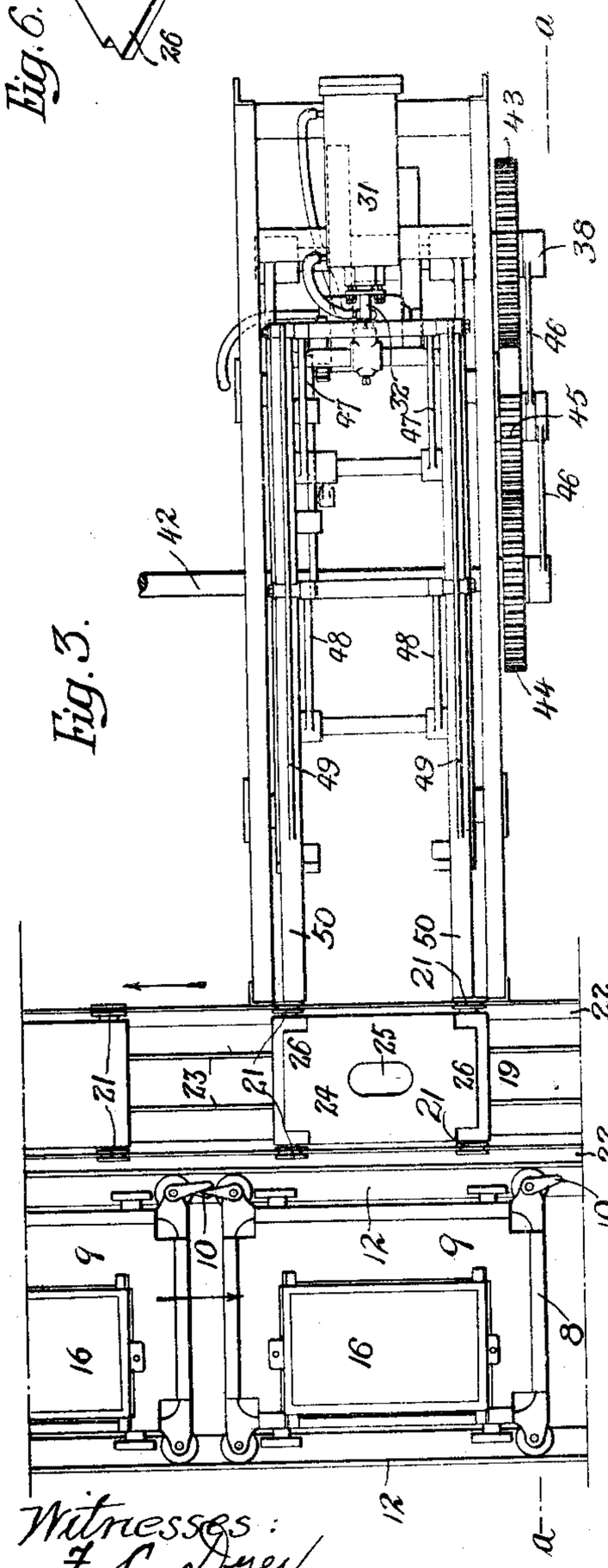
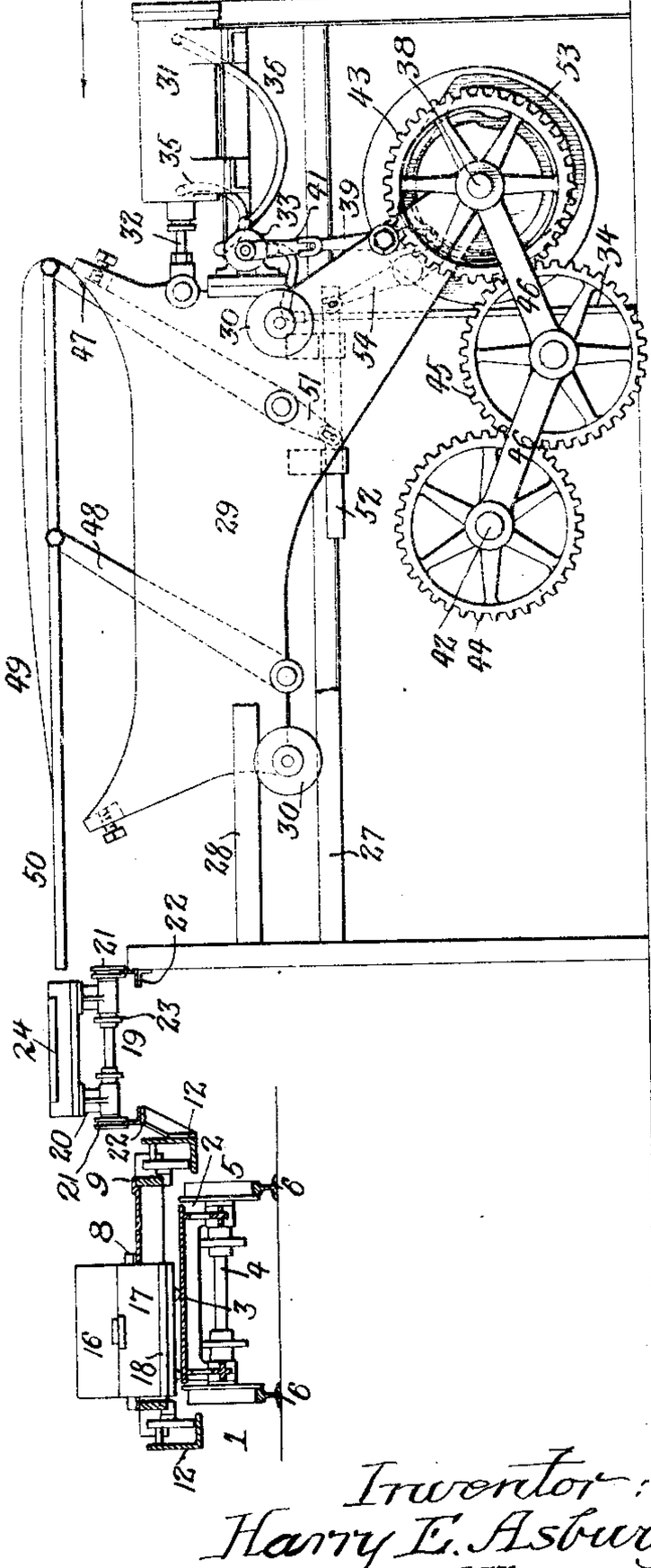


Fig. 4.



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UNITED STATES PATENT OFFICE.

HARRY E. ASBURY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE ENTERPRISE MANUFACTURING COMPANY OF PENNSYLVANIA, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

MEANS FOR PLACING WEIGHTS ON MOLDS.

1,051,663. Specification of Letters Patent. Patented Jan. 28, 1913.

Application filed May 29, 1911. Serial No. 629,994.

To all whom it may concern:

Be it known that I, HARRY E. ASBURY, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Means for Placing Weights on Molds, of which the following is a specification.

My invention relates to certain improvements in casting apparatus in which the flasks travel from the molding machine to and past the pouring ladle. In the particular type of machine to which my invention relates the flasks are returned to the molding machine after the casting has been discharged.

The invention is particularly adapted for use in casting apparatus in which sand, or equivalent material, is used to form the mold and when material of this nature is used it is essential that the weights should be located upon the sand within the flasks during the pouring operation and the object of my invention is to provide mechanism for placing the weights on the sand in the flasks prior to the pouring operation and to provide means for removing the weights from the sand in the flasks after the metal has been poured and prior to the discharge of the sand and the casting from the flask.

In the accompanying drawings:—Figure 1, is a plan view of a casting apparatus illustrating my invention; Fig. 2, is a side view; Fig. 3, is a plan view, drawn to an enlarged scale, of part of the apparatus illustrated in Fig. 1; Fig. 4, is a transverse, sectional view on the line *a*—*a*, Fig. 3; Fig. 5, is an end view looking in the direction of the arrow, Fig. 4; and Fig. 6, is a perspective view of one of the flask weights.

Referring to the drawings, 1 is an endless conveyer made of a series of trucks 2 connected together by links. Each truck has a platform 3 which supports the bottom board of the flask. 4 are the axles, which are mounted in suitable bearings in each end of each truck and these axles are provided with wheels 5, which travel on rails 6, as illustrated in Fig. 4. These trucks travel only in a vertical plane and in the direction indicated by the arrow *b*, Fig. 2. The sole object of this conveyer is to support the flasks when filled with sand and during the process of casting. 8 is a horizontal conveyer, one run of which travels over the vertically arranged conveyer 1. These two conveyers are driven at the same speed and travel in unison. The horizontal conveyer 8 is made up of a series of flask-carrying rings 9, connected at one edge by links 10; the links being free to swivel so that they will readily pass around the curves at each end and will accommodate themselves to any unevenness in the supporting tracks. The flask-carrying rings, in the present instance, do not act until after the mold is poured and the bottom board dropped, prior to the discharge of the sand and castings; the flask, dropping into the carrying ring, is supported by said carrying-ring until its return to the molding machine. The conveyer 1 passes around sprocket wheels 7 and one of these sprocket wheels is the driving wheel. The conveyer 8 passes around the sprocket wheels 11 and one of these wheels is the driving wheel. The two driving wheels may be connected together in any suitable manner so that the two conveyers will travel in unison. The flask, in the present instance, is made of a cope 16, and a drag 17, and a bottom board 18. The rings of the horizontal conveyer have wheels which travel on rails 12 made of angle bars and the upright portions of these angle rails act as guides to hold the rings laterally in position.

13 is the molding machine, of any suitable type, and in the present instance it is located within the loop of the conveyer 8. The flasks are filled by the use of this molding machine and placed in the rings to be carried to the pouring point, as indicated in the present instance by the ladle 14, Fig. 2, and by the dotted circle, Fig. 1.

In order to properly hold the sand within the mold during the pouring operation, weights are provided which rest directly upon the sand in the mold and in each weight is an opening directly in line with the pouring opening of the mold so that when the conveyer reaches the ladle and is

stopped, the opening in the weight and the pouring opening will aline with the mouth of the ladle and the metal can be properly poured in the mold; the weight preventing the upward displacement of the sand during the pouring operation and insuring accuracy in the casting. After the metal has been poured, the weight is removed from the sand and when the metal has set sufficiently the sand, with the casting, is discharged from the mold into the screened hopper 15; the flask being returned to the molding machine.

Certain of the above described mechanism is illustrated and claimed in an application for patent filed by John W. Brown, Jr., Serial No. 559,291, filed May 4, 1910.

By my invention I provide a series of flask weights which are placed, by suitable means, on the sand of the mold; and these flask weights are carried by the conveyer past the pouring point and then lifted off of the mold on to a weight conveyer, which returns the weights to the original point, where they are again placed on the sand within a flask.

It will be understood that the flask carrying mechanism is moved intermittently so as to allow for the pouring of the metal into the mold and while the mechanism is at rest a weight is placed on the sand in the flask in advance of the pouring point; while another weight is removed from a flask after the flask has reached a given point.

19 is an endless belt conveyer, which is located at one side of the carrying run of the conveyer 1, as clearly shown in Figs. 3 and 4, and this conveyer consists of a series of carriages 20, having wheels 21, which are mounted on rails 22 and these carriages are connected by links 23 and are adapted to carry independent and unattached weights 24. The conveyer 19 passes around sprocket wheels 55. One of these sprocket wheels is the driven wheel and in some instances the conveyer 19 may be driven from the shaft of the conveyer 1, as clearly illustrated in Fig. 2. The gearing can be such that while the flasks travel in one direction the weight conveyer travels in the opposite direction and at a speed so as to bring the several carriages of the weight conveyer into proper alinement with the flasks of the main conveyer. The flask weights 24 are preferably made, as illustrated in Fig. 6, with a pouring opening 25 and wings 26, by which they are engaged by the placing mechanism, but it will be understood that the form of the weights may be modified as their shape will depend upon the mechanism by which they are handled.

The mechanism for handling the weights is made in the following manner: 27 are rails on which is mounted a carriage 29. The carriage is held in proper position by upper rails 28 and the wheels 30 of the carriage are located between these two sets of rails. 31 is a cylinder in which is a piston having a piston rod 32, which is connected to the rear end of the carriage 29. 33 is a valve, which controls the admission and exhaust of fluid to and from the cylinder. This valve is connected to a fluid pipe 34 and is also connected to the cylinders by flexible pipes 35 and 36, as the valve, in this instance, is located on the carriage 29. This valve is actuated by a cam 37 on a cam shaft 38, mounted in bearings on the carriage 29. The lever 39, pivoted at 40, has a roller which travels in the groove of the cam and this lever is forked at its upper end and engages an arm 41 on the valve stem so that, as the cam is rotated, the valve will be turned to admit fluid to either end of the cylinder or to exhaust therefrom in order to reciprocate the carriage 29. The shaft 38, in the present instance, is geared to a main driving shaft 42, mounted in outside bearings, and on the shaft 38 is a gear wheel 43, which is geared to a gear wheel 44, on the shaft 42, through an intermediate gear wheel 45, carried by links 46, hung on the two shafts 38 and 42, so that the carriage is free to move without disarranging the driving mechanism. The shaft 42 can be so geared to the pouring mechanism of the conveyers that the carriage will move in time with the pouring mechanism of the conveyers and a weight can be placed on the sand in the flask at the proper time and another weight removed from the flask until all the metal has been poured. 47 and 48 are two pairs of arms pivoted at one end to the carriage and at the opposite end to a frame 49 having two arms 50, which engage the flask weight 24 and move it from one position to another. One of the arms 47 has a slotted extension 51 and adapted to slide in bearings on the carriage 29 is a bar 52 having a pin which enters the slot in the extension 51. This bar 52 is reciprocated in its bearings by a cam 53, through the medium of a lever 54. One arm of this lever is a roller, which travels in the end of the cam, while the other arm is forked and engages a pin on the bar 52 so that the action is as follows:

When the parts are in the position illustrated in Figs. 3 and 4, the weight transferring mechanism is clear of the weights and the conveyers are free to move and when they have moved to the position illustrated in Fig. 3, where the weight 24 is opposite to the flask 16, the cams are in such position as to first actuate the valve so that the carriage 29 will move toward the conveyer 19 and the arms 50 of the frame 49 will pass under the wings 26 of the weight

24, after which the cam 53 will move the rod 52 so as to cause the parallel arms 47 and 48 to turn on their pivots and move the frame 49 forward, which movement will cause the arms of the frame to engage and lift the weight from the conveyer 19 and place it on the sand in the flask 16, as the arms will first raise the weight and then as the arms 47 and 48 pass over their centers, the frame will be lowered to such position that the weight will rest upon the sand and the arms will clear the wings of the weight, after which the valve will be moved to a position to retract the carriage and when the arms 50 clear the wings of the weight, the cam 53 will return the frame 49 to its original position, as indicated in Fig. 4. When the conveyers are again moved the weight is carried with the flask and another weight is brought in line with the above described mechanism. This mechanism is indicated at A, Fig. 1, and is for the purpose of placing a weight on the sand of the flask before the metal is poured into the mold and a duplicate of this mechanism is indicated at B, Fig. 1, for removing the weight from the sand of the flask after the metal is poured. In this latter mechanism the weights are so shaped that the action of the parts is such that when the conveyers are at rest the mechanism will lift a weight from the sand of the flask and will deposit it upon the weight conveyer 19 and as this conveyer travels in a reverse direction from the flask conveyer, as indicated by arrows, Fig. 1, this weight will be eventually returned to the mechanism A (Fig. 1), which will place the weight upon the sand of another flask.

Thus it will be seen by the above described mechanism that while the flask conveyer is at rest and while the metal is being poured into a mold a weight is removed from the weight conveyer and placed in position on the sand in one of the flasks and at the same time a weight is removed from the sand of a flask, which has been poured and placed on the weight conveyer, so that the weights are repeatedly used as the operation progresses.

While I have illustrated a flask conveyer for returning the flasks to the mechanism for placing the flasks on the sand of the molds, it will be understood that this conveyer may be dispensed with and the flasks returned by hand, or another type of conveyer from that shown in the drawings may be employed for returning the flasks to the first position.

I claim:

1. The combination in a casting apparatus, of a series of flasks; means for conveying said flasks; independent and unattached weights for the flasks; mechanism for placing said weights on the sand of the flasks before pouring; and mechanism for removing the weights from the flasks after pouring.

2. The combination in a casing apparatus, of a flask conveyer; a weight conveyer; weights adapted to be placed upon the sand in the flask; means for transferring a weight from the weight conveyer to the flask conveyer; and means for transferring a weight after the metal has been poured into the flask from the flask to the weight conveyer.

3. The combination in a casting apparatus, of a series of flasks; mechanism for conveying the flasks; weights adapted to be located on the sand of the flasks; a carriage at one side of the casting apparatus having arms arranged to engage the weights; and mechanism for moving the carriage and actuating the arms, whereby a weight is engaged and placed upon, or removed, from the sand in the flask.

4. The combination in a casting apparatus, of a series of flasks; with means for conveying the flasks; a weight adapted to be located on the sand of a flask; a carriage at one side of the apparatus; arms on the carriage; means for reciprocating the carriage; and means for lifting the arms, whereby said arms will engage a weight, lifting and moving it into and out of position.

5. The combination in a casting apparatus, of a series of flasks; a conveyer carrying the flasks; independent weights arranged to be located on the sand of a flask; a carriage at one side of the conveyer; means for reciprocating the carriage: two sets of arms adapted to the carriage; a frame on said arms; said frame having arms for engaging a weight; with a cam for moving the frame-carrying arms; and means for controlling the movement of the carriage, whereby a weight can be lifted into or out of position in respect to the sand of the flask.

6. The combination in a casting apparatus, of a series of flasks; an intermittently moving conveyer carrying the flasks in one direction; a series of independent weights; a conveyer for carrying said weights; means for moving the weight conveyer in a direction opposite to the direction of movement of the flask conveyer; means for transferring a weight from the weight conveyer and for placing it on the sand in a flask; and means for removing the weight from the sand in the flask, after the pouring operation, and transferring it onto the weight conveyer.

7. The combination in a casting apparatus, of a flask conveyer; a series of flasks carried thereby; means for intermittently moving the flask conveyer; a series of independent weights; a weight conveyer located at one side of the flask conveyer; means for moving the weight conveyer in a direction

opposite to that of the flask conveyer; each of said weights having wings; with mechanism having arms arranged to engage the wings, whereby a weight can be lifted from the weight conveyer and properly located on the sand of the flask conveyer.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HARRY F. ASBURY.

Witnesses:
WM. E. SHUPE,
WM. A. BARR.