Oct. 9, 1928. 1,686,624

W. H. MILLSPAUGH

APPARATUS FOR CASTING

Filed Sept. 26, 1922 2 Sheets-Sheet 1

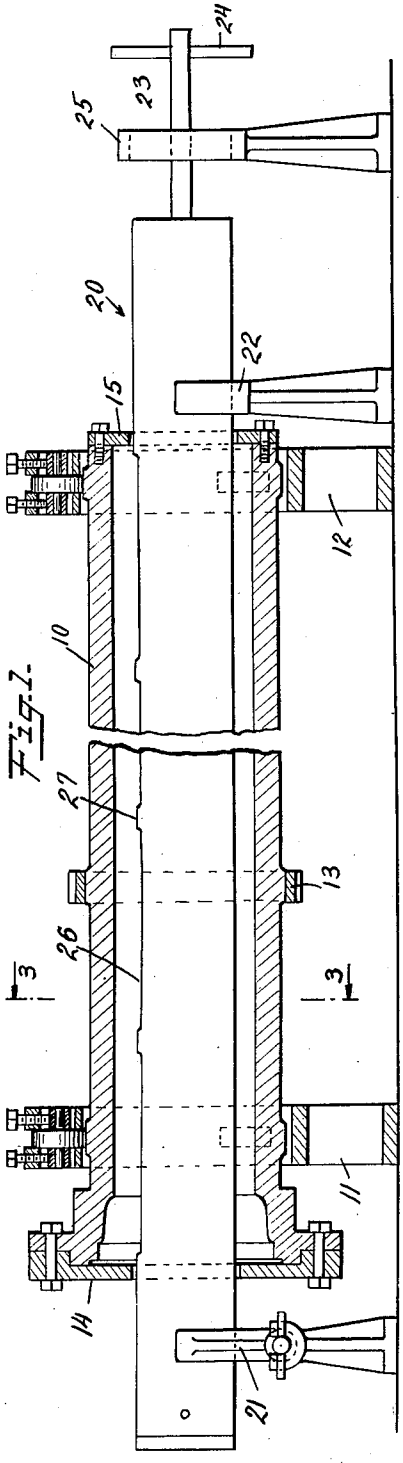


Fig. 1.

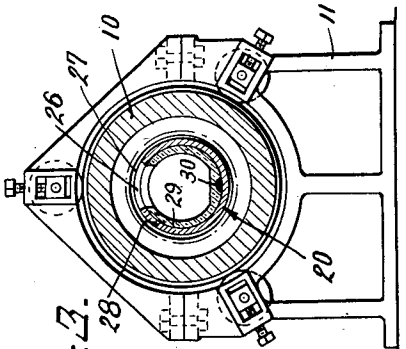


Fig. 3.

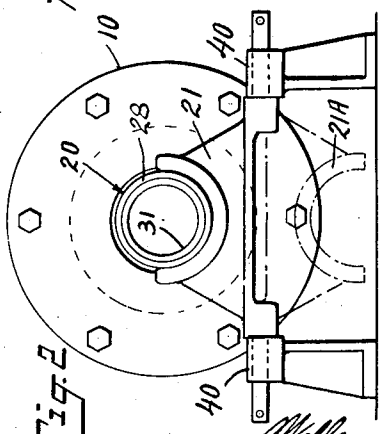


Fig. 2

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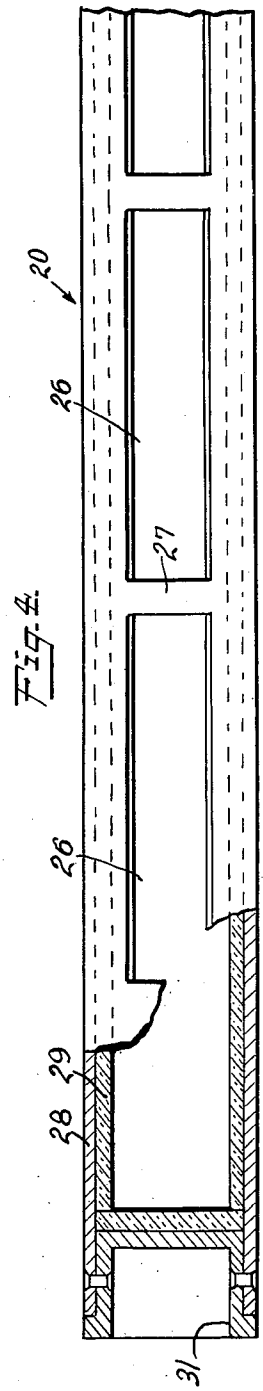


Fig. 4.

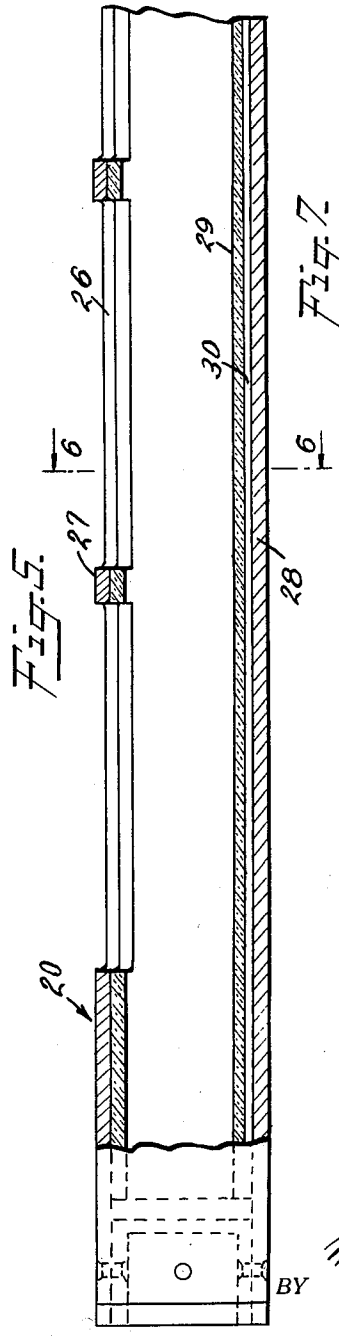


Fig. 5.

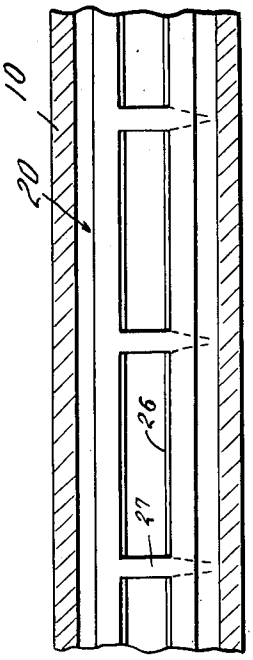


Fig. 7.

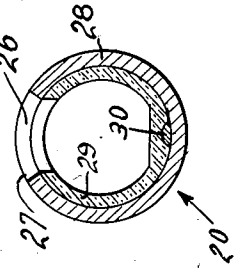


Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM H. MILLSPAUGH, OF SANDUSKY, OHIO, ASSIGNOR TO THE PAPER AND TEXTILE MACHINERY COMPANY, OF SANDUSKY, OHIO, A CORPORATION OF OHIO.

APPARATUS FOR CASTING.

Application filed September 26, 1922. Serial No. 590,602.

This invention relates to new and useful improvements in methods of and apparatus for casting and its object is to provide ways and means for making better castings. More specifically, its object is to provide an improved method of introducing molten metal or other material in fluid condition into the mold of a centrifugal casting machine so that it may be dumped or poured in rapidly without trapping any air or other gases. In connection with this new method, I have invented a novel form of filling trough which not only provides a simple device for carrying out the method herein described but also provides a simple way of strengthening troughs of this character and provides greater rigidity especially for such troughs as have considerable length.

These and other objects of this invention will appear in the following specification in which I will describe my invention and the novel features of which will be set forth in appended claims.

Referring to the drawings:

Fig. 1 is a sectional longitudinal elevation of a casting machine and filling device therefor which are made according to and embody my invention.

Fig. 2 is an end view of the apparatus shown in Fig. 1.

Fig. 3 is a sectional transverse elevation of the same device, the section being taken on the line 3—3 of Fig. 1.

Fig. 4 is a plan view partly in section of the novel form of filling trough which I have invented.

Fig. 5 is a vertical sectional elevation of the filling trough.

Fig. 6 is a transverse section of the filling trough, the section being taken on the line 6—6 of Fig. 5.

Fig. 7 is a longitudinal sectional view of parts of the apparatus showing the filling trough tilted and illustrating the manner in which molten metal or other fluid material escapes therefrom into the rotating mold.

Like characters of reference designate corresponding parts in all the figures of the drawings.

10 designates a rotating mold which is supported in suitable bearings 11 and 12 and which may be driven by any suitable means such, for example, as a motor driven chain connected to a gear 13. The ends of this mold are closed by end plates 14 and 15 removably secured thereto. These end plates are each provided with a circular opening concentric with the axis of rotation of the mold.

20 designates a filling trough which is of cylindrical form and which is supported in bearings 21, 22 in such a manner that it may be moved longitudinally and also rotated. A shaft 23 projects from one end of this trough which is provided with a handle 24 by means of which the trough may be manipulated.

The trough may be pulled back out of the mold and into a ring bearing 25 and when in this position can be filled with the material which is to be cast. After it has been filled it may be pushed back again into the position in which it is shown in Fig. 1 and then tipped up-side down to cause the material which is contained in it to be dumped into the rotating mold. The operation thus described is more fully pointed out in my Patent No. 1,058,250 of April 8, 1913.

I have found that in making castings with a machine of this character, it is desirable to dump the metal into the rotating mold as rapidly as possible. When this is done, however, some of the air or the gas contained within the rotating mold is sometimes caught underneath the metal and this forms bubbles, blisters and sometimes actual pin-holes through the metal. In order to overcome this difficulty I have constructed a filling trough in the manner shown in the drawings. This is made from a hollow cylindrical casting such as a pipe along one longitudinal line of which I have cut the metal away as shown at 26, 26, leaving between such openings the transverse bar 27. These transverse bars not only strengthen the trough itself but permit the additional function of separating the fluid material as it is dumped out of the trough as is shown clearly in Fig. 7. Because of this, the air and gas contained in the mold has a chance to escape and thereby the character of the casting is greatly improved.

By referring to Figs. 4, 5 and 6 the specific construction of the filling trough may be seen in which figures the cylindrical metallic pipe is designated by 28 and a lining within this pipe of refractory material is designated by 29. In order to hold this lining in proper position I have secured to the inside of the pipe

opposite its openings 26 a longitudinal rib 30. The end of the trough is closed by suitable end caps 31 (Fig. 4).

Referring back to Fig. 1, I will describe the operation of this device. After the trough has been filled, the metal poured from it as described, a casting will be formed on the inside of the mold 10 which in the specific instance illustrated will be a pipe having a bell-flange at one end. This operation is performed very quickly and as soon as the metal has been set the end plate 14 may be removed, the trough 20 pulled back into the ring bearing 25 and the yoke 21 which supports the opposite end of the trough during the pouring operation may be dropped down out of the way in the bearings 40 on which it is supported in the position shown at 21A. Then the molded pipe can be removed from the mold 10, the end plate 14 replaced and the process repeated.

For illustrative purposes I have shown one specific structure for separating the fluid material as it leaves the trough, but it is within the scope of this invention to utilize any other suitable structure for accomplishing this result.

What I claim is:

1. A filling device for casting machines which consists of a rotatively supported trough arranged to hold material in a fluid condition, said trough being constructed to form a plurality of spaced openings through which the material may be poured when the trough is turned on its axis of rotation.

2. A filling device for casting machines which consists of a rotatively supported cylindrical trough arranged to hold material in a fluid condition, said trough being constructed to form a plurality of spaced openings in longitudinal alinement through which the material may be poured when the trough is turned on its axis of rotation.

3. A filling device for casting machines which consists of a rotatively supported trough arranged to hold material in a fluid condition, said trough being constructed to form a pouring opening in alinement with its rotation and having a strengthening bar passing transversely across said opening.

4. A filling device for casting machines which consists of a rotatively supported trough arranged to hold material in a fluid condition, said trough being constructed to form a pouring opening in alinement with its rotation and having a plurality of spaced strengthening bars passing transversely across said opening.

5. A filling device for casting machines which consists of a rotatively supported cylindrical trough arranged to hold material in a fluid condition, said trough being constructed to form a pouring opening in alinement with its axis of rotation and having a plurality of strengthening bars passing across said opening, said bars forming a continuation of the cylindrical form of the trough.

6. A centrifugal casting machine comprising a rotary mold, an end plate therefor, constructed with a circular opening concentric with the axis of rotation of the mold and a cylindrical filling trough arranged to hold material in a fluid condition projecting through said opening into the mold and having a plurality of spaced openings through which the material may be poured when the trough is turned on its axis of rotation.

7. A centrifugal casting machine comprising a cylindrical rotary mold, an end plate therefor constructed with a circular opening concentric with the axis of rotation, combined with a rotatively supported cylindrical filling trough arranged to hold material in a fluid condition, projecting through said opening into the mold, said trough being constructed to form a discharge slot in alinement with the axis of rotation, and having a plurality of strengthening bars across said slot, said bars forming a continuation of the cylindrical form of the trough.

In witness whereof, I have hereunto set my hand this 25th day of September, 1922.

WILLIAM H. MILLSPAUGH.