April 21, 1931. S. JUNGHANS 1,801,922

CASTING APPARATUS

Filed Jan. 16, 1928

Fig. 1.

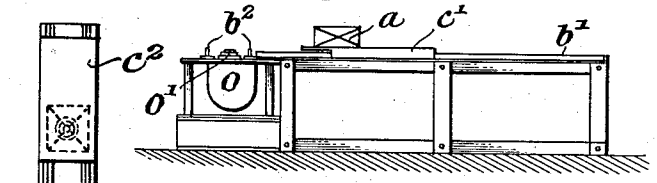


Fig. 2.

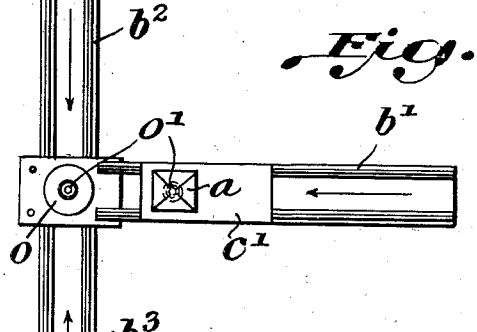


Fig. 4.

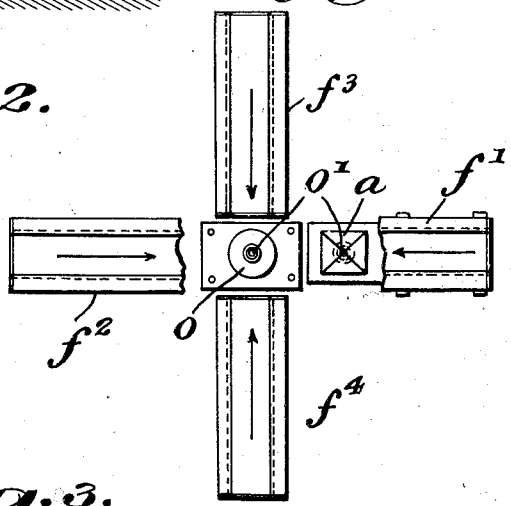
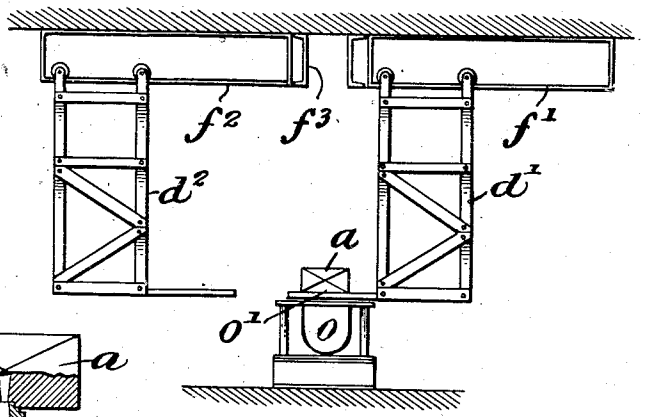


Fig. 3.



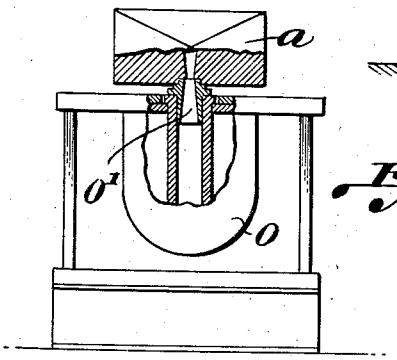


Fig. 5.

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UNITED STATES PATENT OFFICE

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CASTING APPARATUS

Application filed January 16, 1928, Serial No. 247,248, and in Germany January 26, 1927.

The present invention relates to the art of casting under pressure and more particularly to an improved machine for casting under pressure in which the molds are arranged and operated in a new manner with a view to ensuring an efficiency which could not be hitherto obtained.

In machines for casting under pressure, as hitherto constructed, a plurality of molds is usually employed which are singly attended to and dressed or made ready for the successive casting operations of the whole set. To this end the molds of the known machines (and melting furnaces) are mounted on a single conveyor such as a rotary disc or the like so as to be adapted to revolve and to move in unison when the disc or the like is rotated, in order to be conveyed to the casting orifice or spout in succession, that is to say, one after the other, so that all of the molds will move simultaneously and in a predetermined series or sequence, since they are interconnected by and necesarily must move simultaneously with the conveyor on which they are mounted. When liquid metal has been poured from the casting orifice or spout into a mold and the latter is completely filled, the means employed for locking the mold system are released or unlocked, whereupon the conveyor again starts and all of the molds are placed in motion thereby, that is to say, the mold just filled is moved away from the casting orifice and the other molds of the system are moved towards the same. The order of succession is always the same and invariable on account of the fact that the several molds are assembled and fixed on a single conveyor.

The chief object of the present invention is to dispense with this casting method and to substitute for the old mechanism and arrangement improvements according to which the individual molds are adapted to be moved singly or independently of each other and the casting operation for filling the one or the other mold will not depend upon the movement or location of a conveyor common to all of the molds. With this object in view it is possible, according to the present invention, to remove the filled mold from the casting orifice or spout independently of the other molds of the system or, in other words, without moving the latter, and to selectively move at once any other previously dressed mold towards and to the orifice or spout for the reception of molten metal. Thus the remaining molds may remain idle at the dressing or working places they just occupy at the time, and may be dressed or worked and subsequently moved towards the orifice or spout in any desired or preferred succession.

Accordingly, a plurality of conveying devices, which are entirely independent of each other, is provided in connection with the melting furnaces and molds adapted to be placed separately from each other, the said conveying devices being constructed and arranged for mounting thereon and for conveying single molds, and adapted to be moved independently of each other, so that selectively, as required, the one or any other conveying device can be put in motion for conveying single dressed or prepared molds towards the melting furnace and to the casting orifice or spout, while the other conveying devices remain at rest until further molds, to be conveyed by said devices, have been duly prepared or dressed so as to be in readiness for the travel towards the casting orifice or spout.

It will be seen that in a casting plant or method as above described in general the various preparatory manipulations or actions may require or consume any length of time without interfering with the continuous sequence or succession of the single casting operations or the various preparatory operations and without retarding the total cycle of operations. The arrangement may be such that even a mold may be withdrawn from the working circulation for a considerable length of time without thereby interfering with the operations of the other molds, and it will be seen, that in this way the casting plant will possess a high degree of adaptability and efficiency which could not be obtained heretofore in the old ar-

rangement of a conveying device common to all of the molds.

I shall now proceed to describe the invention more in detail in connection with the embodiments thereof illustrated somewhat diagrammatically on the annexed drawings, it being intended and understood that the invention, which is of a wide and general application, is illustrated by, but not limited to the embodiments thereof so illustrated and described.

Referring to the drawings forming a part of this specification and wherein similar characters of reference designate corresponding parts throughout the several views:—

Figure 1 is an elevation;

Figure 2 is a plan view of one form of apparatus for carrying the invention into effect;

Figures 3 and 4 are corresponding views showing, respectively, a modification thereof and

Figure 5 is an enlarged side view, partly in section, of a melting furnace and a mold.

In the embodiment shown in Figures 1 and 2, the molds are mounted and adapted to move on rails $b1$, $b2$ and $b3$ and sliding carriages $c1$, $c2$ and $c3$ are provided on the rails, respectively, the latter being located radially with relation to the casting orifice or spout o'. As will be seen in Figures 1 and 2, the properly prepared mold is shown in readiness for or while being shifted towards the melting furnace by means of the conveying device (comprising rails and a carriage in each case).

In the modification shown in Figures 3 and 4, a suspension railway is provided comprising four radial tracks with four suspended carriages for the molds. The rails or tracks $f1$, $f2$, $f3$ and $f4$ are fixed to the ceiling of the foundry so that the meeting point or center thereof lies in vertical alinement with the casting furnace. As shown, the properly prepared or dressed mold a has been moved by the carriage $d1$ towards the furnace o so as to occupy the casting position above the latter, while the opposite carriage $d2$ occupies its idle position farthest remote from the furnace. The other two carriages belonging to the set and cooperating with the two railways $f3$ and $f4$, respectively, are of the same construction and arrangement as the carriages $d1$ and $d2$, but they are not shown for clearness sake.

The number of the radial railways and carriages and the construction thereof is not limited to the illustrative instances and may be varied or modified in accordance with actual requirements. Nor have I attempted to explain all of the minute details of the construction of the casting plant and molds, for the invention will be understood by those to whom this specification is addressed without requiring any details to be illustrated which are universally known. The construction and number of the molds and the manner in which the same are moved, are also not limited to the example shown as they may be modified in any suitable way in order to comply with the requirements of actual cases, the essential point or feature, however, residing in all cases in the fact that the construction and arrangement of the conveying means and the molds are such that the molds can be conveyed towards the casting furnace selectively and the movement of a mold is independent of the movements of the other molds and of the casting operation.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A machine for casting under pressure, comprising a melting furnace having a casting spout, casting molds adapted to be placed upon said spout and moved independently of each other, and a plurality of independent mold conveying devices each adapted for the reception and conveyance of single molds, and capable of being moved independently of each other, so that selectively or alternately any one of the said devices can be caused to individually move single duly prepared molds towards the casting spout of the melting furnace, while the other conveying devices may remain at rest until further molds have been prepared or dressed and are ready to be moved by the other devices towards the casting spout of the furnace.

2. A casting machine comprising a melting furnace having a casting spout, a plurality of rails converging toward the furnace and a plurality of independent mold conveying devices each adapted for the reception and conveyance of single molds, and capable of being moved independently of each other, so that selectively or alternately any one of the said devices can be caused to individually move single duly prepared molds towards the casting spout of the melting furnace, while the other conveying devices may remain at rest until further molds have been prepared or dressed and are ready to be moved by the other devices towards the casting spout of the furnace.

In testimony whereof I affix my signature.

SIEGFRIED JUNGHANS.