Jan. 4, 1938. G. A. LONG 2,104,620

MACHINE FOR FORMING COIN GAUGES

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Fig. 1.

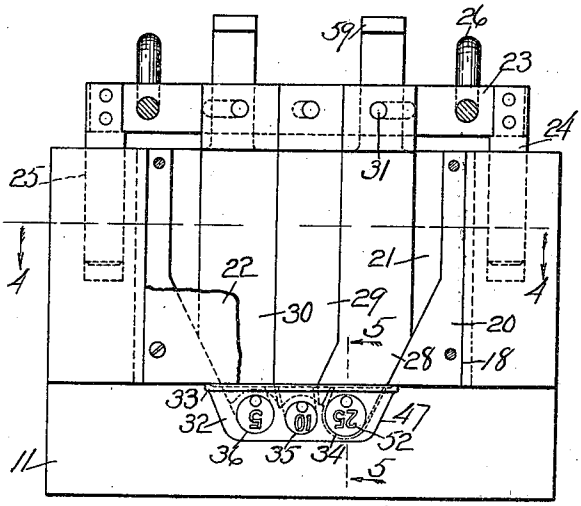


Fig. 2.

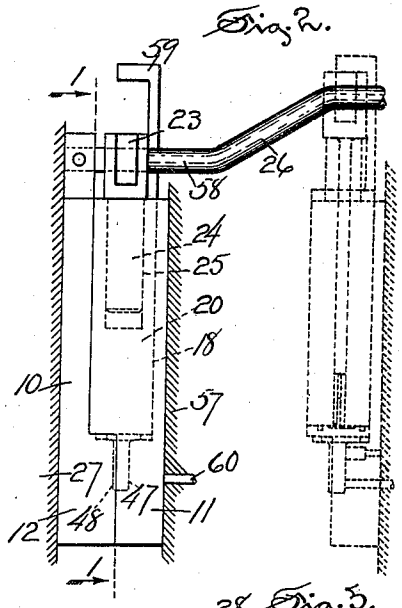


Fig. 3.

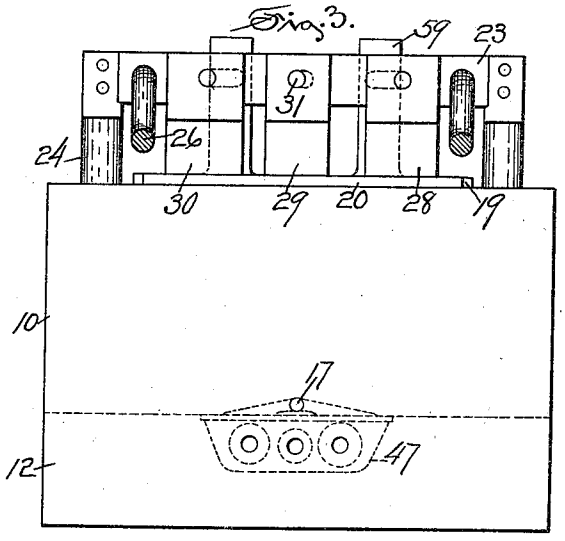


Fig. 5.

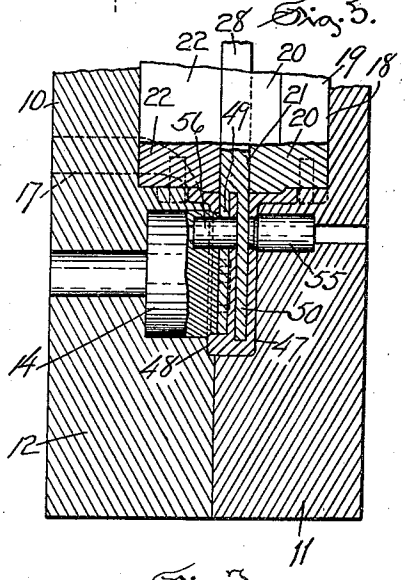


Fig. 4.

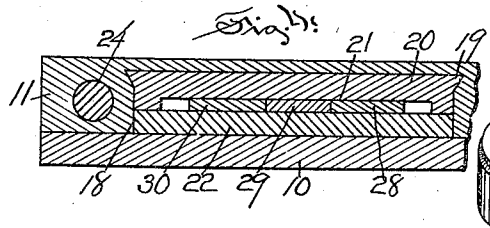


Fig. 6.

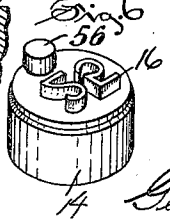
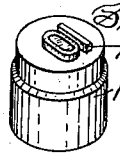


Fig. 7.



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Fig. 8.

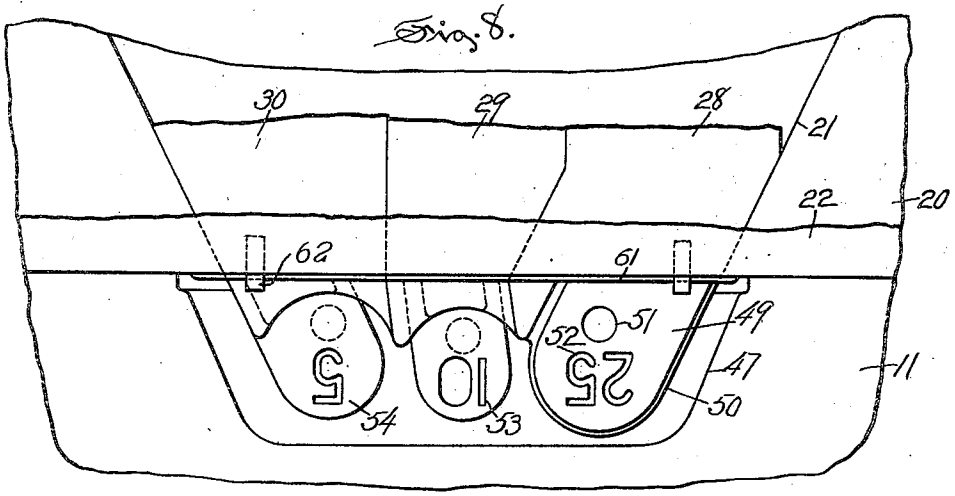


Fig. 9.

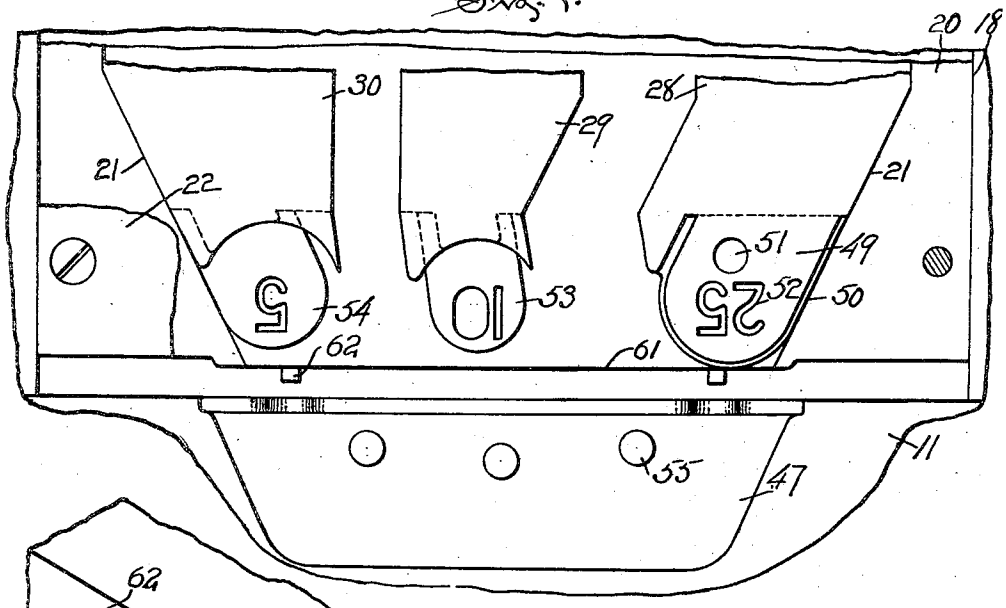
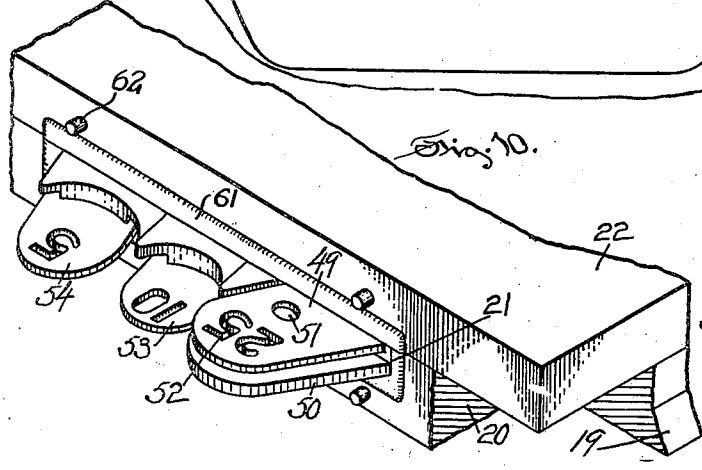


Fig. 10.



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Fig. 11.

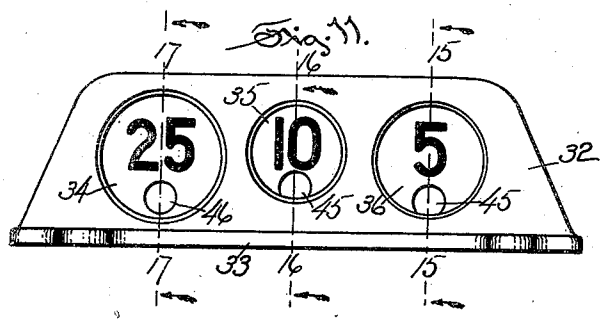


Fig. 12.

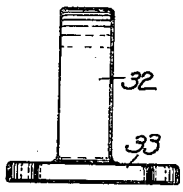


Fig. 13.

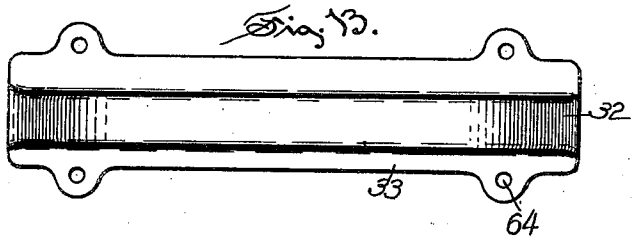


Fig. 15.

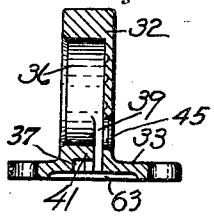


Fig. 14.

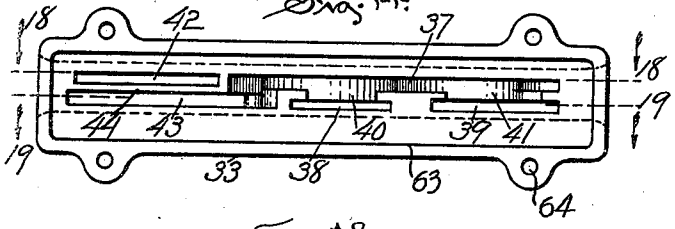


Fig. 16.

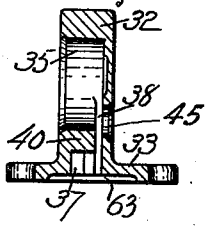


Fig. 18.

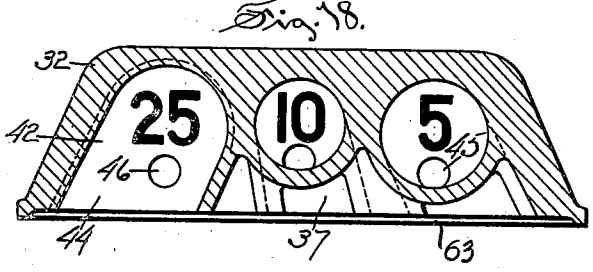


Fig. 17.

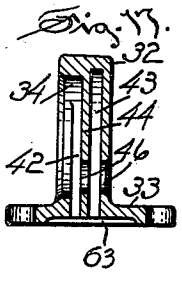
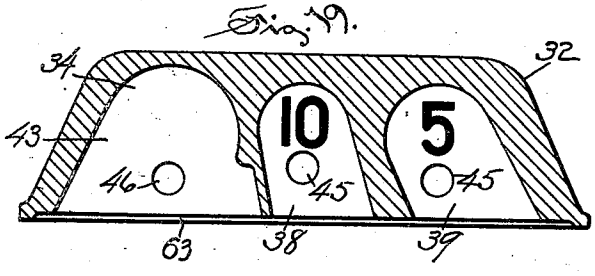


Fig. 19.



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Patented Jan. 4, 1938 2,104,620

UNITED STATES PATENT OFFICE

2,104,620

MACHINE FOR FORMING COIN GAUGES

George A. Long, Hartford, Conn., assignor to The Gray Telephone Pay Station Company, Hartford, Conn., a corporation of Connecticut

Application May 27, 1935, Serial No. 23,724

6 Claims. (Cl. 22—93)

My invention relates to a method for forming coin gauges adapted for use with coin operated apparatus, and particularly in connection with telephone toll apparatus, the invention also comprising means for practicing such method.

One form of a device embodying my invention and in the use of which the method of forming coin gauges may be effected and the objects hereinabove set out may be attained is illustrated in the accompanying drawings in which—

Figure 1 is a face view of one section of a mold embodying my invention and as denoted by dotted lines 1—1 of Fig. 2.

Figure 2 is a diagrammatic view presenting an edge of said mold, the mold members separated being shown in dotted lines and a section of the cover being broken away.

Figure 3 is a face view of the mold with the guides broken off, the parts being in the dotted line positions of Figure 2.

Figure 4 is a view in section on a plane denoted by the dotted line 4—4 of Fig. 1.

Figure 5 is a view in section, scale enlarged, on a plane denoted by the dotted line 5—5 of Fig. 1.

Figure 6 is a perspective isometric view of a bottom forming die for a coin opening.

Figure 7 is a similar view of a die for another coin opening.

Figure 8 is a detail view, scale enlarged, showing the positions of the plungers in the operation of casting a coin gauge, the ends of the plungers being located in the gauge cavity.

Figure 9 is a similar view but illustrating the positions of the plungers withdrawn from said cavity.

Figure 10 is a perspective isometric view illustrating the construction of the plunger slide.

Figure 11 is a face view of a coin gauge formed in the molding operation.

Figure 12 is an end view of the same.

Figure 13 is a top view.

Figure 14 is a bottom view.

Figure 15 is a view in cross section on a plane denoted by the dotted line 15—15 of Fig. 11.

Figure 16 is a similar view on a plane denoted by the dotted line 16—16 of Fig. 11.

Figure 17 is another similar view on a plane denoted by the dotted line 17—17 of Fig. 11.

Figure 18 is a view in section on a plane denoted by the dotted line 18—18 of Fig. 14.

Figure 19 is a similar view on a plane denoted by the dotted line 19—19 of Fig. 14.

In the accompanying drawings the numerals 10—11 denote mold members that are composed of any suitable metal, in the arrangement herein shown the member 10 being fixed and the member 11 being movably mounted. The member 10 is increased in thickness at one end, as at 12, this portion having recesses in which bottom forming dies 13 and 14 appurtenant to coin openings in a gauge plate are located, the die 14 for the twenty-five cent coin opening being shown in Fig. 5. A hole 17 comprising an ingate is formed through the thinner part of the member 10 for the introduction of molten metal to the mold. The mold member 11 has a recess 18 formed in that side facing the member 10, this recess being undercut at opposite edges to receive lips 19 of a dove-tailed shaped slide 20 movably mounted in said recess. The slide has a recess 21 which is closed by a cover 22 as shown in Figs. 1, 4 and 5 of the drawings. An actuating bar 23 is located at the top of the mold opposite the opening to the recess 21, said bar being engaged at its opposite ends with guide posts 24 extending into guide holes 25 in the edge of the mold member 11 and slidable therein, and as shown in Figs. 1 and 4 of the drawings. Actuating rods 26 are secured to the mold member 10, projecting therefrom across the edge of the mold member 11, and as shown in Fig. 2 of the drawings. The mold member 10 is secured to and supported by a foundation 27 which in fact is the stationary plate of a mold casting machine, and the opposite ends of the rods 26 are rigidly secured to a stationary part of the frame of the mold casting machine, such frame not being shown herein.

Plungers 28—29—30 are located in the recess 21 and are connected with the bar 23 by means of slots in the plungers in which the bar is located, pins 31 in each of the plungers projecting through slots in the bar, as shown in Fig. 1 of the drawings to permit lateral movement of the plungers within the recess 21.

For an understanding of the use of the plungers the article to be produced by the molding mechanism is illustrated in Figs. 11 to 17 of the drawings, such article being a coin gauge comprising a body 32 having flanges 33 and also having coin openings 34—35—36 through the front face of the gauge for the reception, respectively, of twenty-five cent, ten cent, and five cent coins. The openings 35—36 terminate in coin slots 38—39 with ledges 40—41 extending from the opening in the face of the gauge to the coin slot. The opening 34 extends into a slot 42 located nearer the face of the gauge than are

the slots 38—39. A chamber 37 opens from the bottom of the gauge inwardly around the ledges 40—41 and said chamber terminates lengthwise in a chamber extension 43 located back of and divided from the slot 42 by a back wall 44, and as shown in Figs. 14 and 17 of the drawings. A hole 45 extends from each of the openings 35—36 through the back of the gauge and a similar hole 46 extends from the opening 34 through the back wall 44 and through the back of the gauge, as shown in Fig. 17 of the drawings, these holes being for the insertion of an instrument as a lead pencil for removal of a defective or mutilated coin that will not pass down the coin slot. The bottoms of the coin openings 34—35—36 display characters, as numerals 25, 10 and 5, to denote the amount of the coin to be used in connection with each opening.

A cavity 47 of the general shape of the coin gauge is formed in the lower portion of the mold member 11, as shown in Figs. 1 and 5 of the drawings, this cavity opening at its upper end into the slide recess 21, the mouth of the cavity being adapted to be closed by the slide 20 and its cover 22 as shown in Fig. 5. A shallow counterpart 48 of the cavity is formed in the mold member 10, the bottom forming dies including the die 14 extending into this counterpart.

The plunger 28 appurtenant to the twenty-five cent coin opening has two lips 49—50 spaced apart as shown in Figure 10 with holes 51 extending through the lips and the lip 49 having openings in the form of characters 52 to receive characters 16 of like form on the end of the forming die 14 and which project slightly beyond the surface of the lip to create a depression in the wall 44 of the coin gauge when the casting takes place. The plungers 29—30 have lips 53—54 with the character openings as 10 and 5 therethrough to receive characters 15 on the ends of the bottom forming dies 13 appurtenant to the coin openings 35 and 36 in the coin gauge and as shown in Fig. 7 illustrating the die for the ten cent opening. These characters 15 project slightly beyond the back surface of the lips 53—54 to create depressions, as in the form of numerals 10 and 5 in the bottoms of said openings. The lips 53—54 create the slots 38—39 in the coin gauge, and the lips 49—50 on the plunger 28 create the slot 42 and the chamber extension 43, respectively.

The holes 45—46 in the back wall of the gauge are each formed by means of a plug as 55, shown in Fig. 5 in connection with the forming die 14, extending from the mold member 11 into the cavity 47 at a point back of the several lips 50—53—54 where the plugs project into the cavity. For the formation of the hole 46 in the wall 44 a plug 56 projects from the bottom forming die 14, and as shown in Fig. 5 of the drawings, this plug being located in line with the plug 55 to be located back of the lip 50 when the latter is in position for casting.

The operation of casting a coin gauge is as follows. As the movable plate 57 of the mold casting machine is moved toward the stationary plate 27 the plungers traveling down the inclined portion of the rods 26 are shifted so that their lower ends enter the cavity 47, this entry of the lower ends of the plungers into the cavity being completed before the mold parts are pressed into contact with each other. In this inward movement of the plungers contact with the tapered sides of the recess 21 causes the plungers to be moved laterally into contact, and as shown in Fig. 8. In this movement of the plungers each of the lips 50—53—54 are located opposite and against the ends of the plugs 55. Further movement of the mold member 11 toward the member 10 causes the plungers to pass along the straight portions 58 of the actuating rods 26 and in this movement the hole 51 in the lip 49 receives the plug 56 on the die 14, and the parts being pressed together the mold is formed.

Molten metal is now introduced through the hole or ingate 17, preferably under pressure, and in a manner that will be readily understood by those skilled in the art, such metal entirely filling the cavity 47 and flowing around the ends of the several plungers and plugs projecting into the cavity.

After the metal is hardened the mold member 11 is moved away from the member 10, in the first part of the movement the plungers passing along the straight portions 58 of the actuating rods 26, thereby removing the plug 56 from the hole 51 in the lip 49 of the plunger 28. The plungers are now free to be withdrawn by the action of the inclined portions of the rods 26, the bar 23 traveling upwardly until it encounters lifters 59 attached to and projecting from the mold member 11 as a means for lifting said bar, and as shown in Figs. 1 and 2 of the drawings. This contact with said lifters causes the slide 20 to be lifted slightly from the position shown in Fig. 8 to the position shown in Fig. 9. As the plungers are withdrawn the inclined portions on opposite sides of the recess 21 in its lower part permit the plungers to be separated for removal from inclined openings in the casting.

As the mold member 11 moves backwardly several ejectors 60 loosely mounted in the mold member and with their ends in the bottom of the cavity 47 encountering a fixed member are caused to move inwardly, thereby ejecting the coin gauge 32 from the cavity.

The slide 20 has a boss 61 formed on its lower end and pins 62 also project from the lower end of said slide at one side of said boss, the latter being for the purpose of forming a depression 63 in the edge of the body of the article being cast, and as shown in Figs. 14 and 18 of the drawings and the pins 62 create holes 64 in the flanges 33 of said article. The sliding arrangement of the slide 20 provides for the removal of said boss and pins from said opening and holes in order to permit removal of the cast article from the cavity 47 in the mold member 11.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention, together with the device which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative and that the invention may be carried out by other means and applied to uses other than those above set out.

I claim:

1. A casting machine including mold members separably mounted and having a cavity between them, a slide mounted on a mold member to close the mouth of said cavity, a plunger movable with said slide and also independently thereof into said cavity to form a core, said members including a bottom forming die projecting into said cavity to create an opening in the wall of an article cast therein, and means for withdrawing said plunger and said slide from said cavity.

2. A casting machine including mold members

separably mounted and having a cavity between them, a slide movably mounted on a mold member to close the mouth of said cavity and having a recess with tapered walls, a plurality of plungers mounted in said recess in contact with said tapered walls to move the plungers laterally, means for imparting longitudinal movement to said plungers to enter them into said cavity to form a core therein, said members including bottom forming dies appurtenant to each plunger to create openings in the wall of an article cast in said cavity, and means for withdrawing said plungers as the mold members are separated.

3. A casting machine including mold members separably mounted and having a cavity between them, a slide moveably mounted on a mold member to close said cavity and having a recess with tapered walls, plungers movably mounted in said recess in contact with said walls to impart lateral movement to the plungers, means for imparting longitudinal movement to said plungers to enter them into said cavity to form a core therein, stops projecting from said slide to receive said plunger moving means to impart movement to said slide to uncover said cavity, and means to permit separation of said plungers to withdraw them from said cavity as the mold members are separated.

4. A casting machine including mold members separably mounted and having a cavity between them, a slide movably mounted on one of said mold members and having a recess with inclined walls, plungers longitudinally movable in said recess for projection into said cavity and engageable with said inclined walls to impart lateral movement to said plungers, an actuating bar operatively engaged with said plungers, actuating rods engaged with said bar and having inclined portions to impart longitudinal movement to said plungers, and lifters supported by said slide and engageable with said bar for imparting movement to said slide to uncover said cavity.

5. A casting machine including mold members separably mounted, a slide carried by a mold member and having a recess, said mold members and said slide cooperating to form a casting cavity between them, said recess having an inclined wall, a laterally movable plunger mounted for movement with the one of said mold members carrying the slide and having an inclined end corresponding to the inclined wall of said recess to effect lateral movement of said plunger by contact with said inclined wall, and means for withdrawing said plunger from said cavity, said recess being of a width to permit said lateral movement of the plunger as it is withdrawn from the inclined opening in said casting.

6. A casting machine including mold members separably mounted and having a cavity between them, a slide movably mounted on a mold member to close the mouth of said cavity and having a recess with a tapered wall, a plurality of plungers mounted in said recess one of which is in contact with said tapered wall to permit lateral movement of a plunger, means for imparting longitudinal movement to said plungers to enter them into said cavity to form a core therein, and means for withdrawing said plungers as the mold members are separated.

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