Nov. 13, 1962 H. I. RAPAPORT 3,063,109

ELECTRICALLY OPERATED TOY CASTING MACHINE

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Fig. 1.

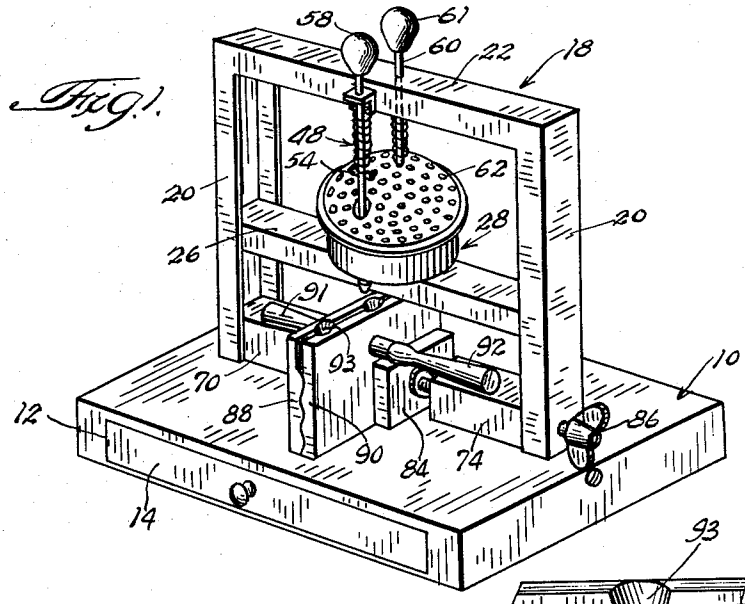


Fig. 5.

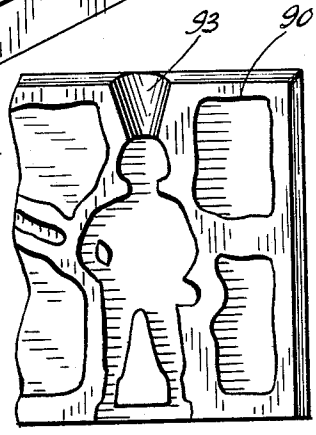


Fig. 4.

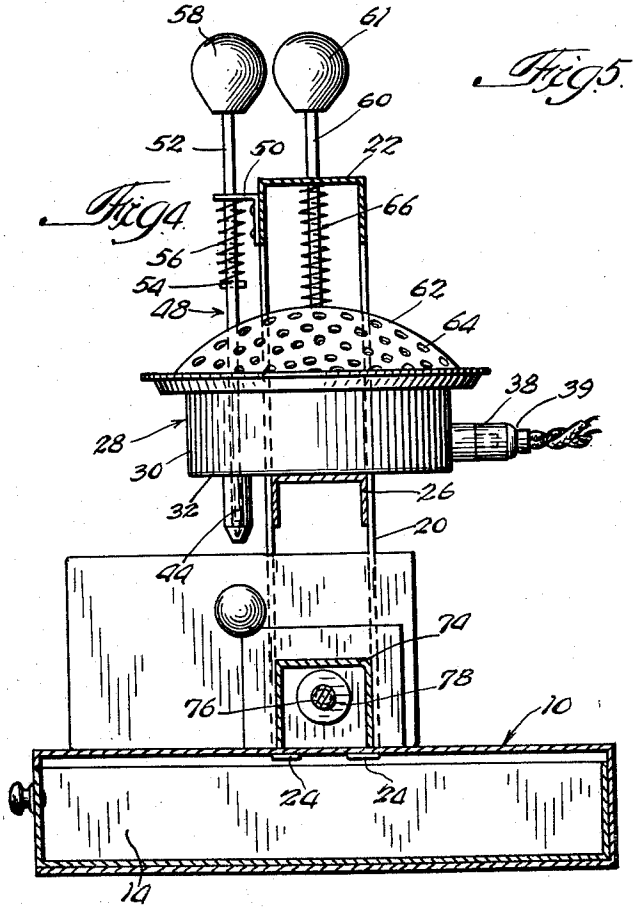
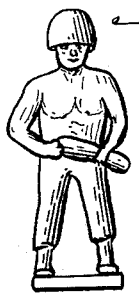


Fig. 6.



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Fig 2.

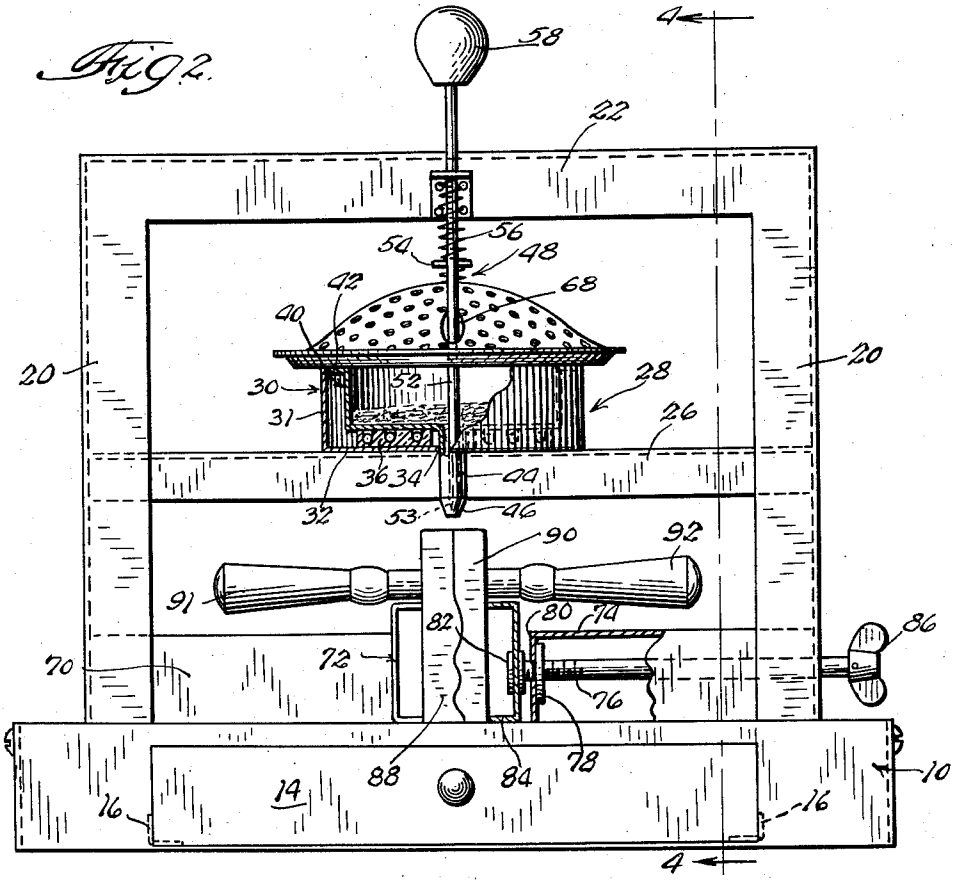
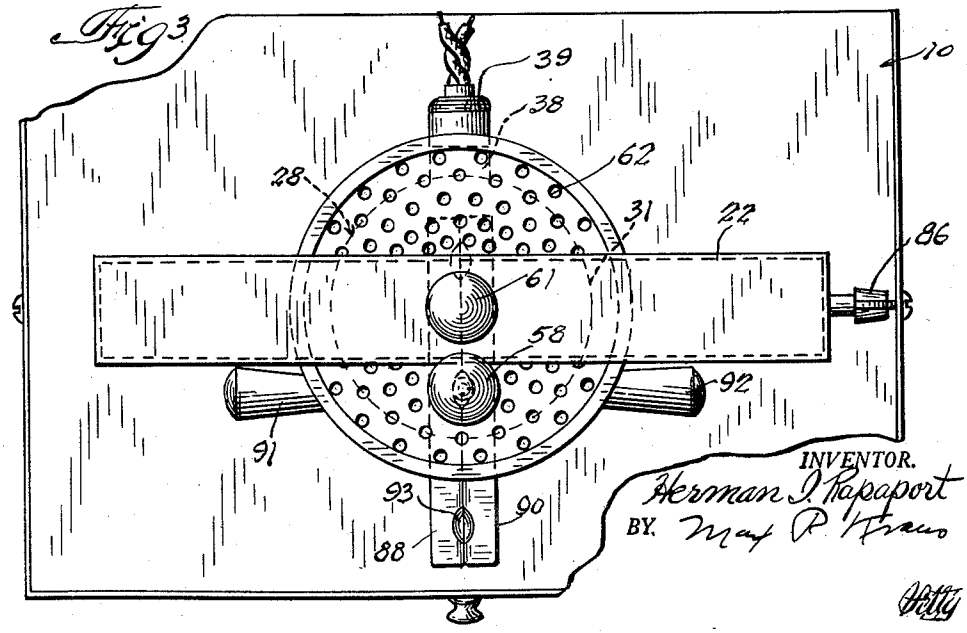


Fig 3



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United States Patent Office 3,063,109 Patented Nov. 13, 1962

3,063,109

ELECTRICALLY OPERATED TOY CASTING MACHINE

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Filed Mar. 3, 1960, Ser. No. 12,619
1 Claim. (Cl. 22—79)

This invention relates to an electrically operated toy casting machine.

One of the objects of this invention is to provide an electrically operated toy casting machine provided with means for heating the casting material and for controlling the discharge of the casting material to the die plates wherein the objects are to be formed.

Another object of this invention is to provide a self-contained toy casting device which has safety features such that the child playing with said device is protected against injury, even though operating with heated molten material.

Another object of this invention is to provide a toy casting device in which any number of different casting die plates may be interchangeably used for the purpose of forming any number of different objects, depending upon the die plates selected.

Another object of this invention is to provide a toy casting device for use by young children in absolute safety.

Other objects will become apparent as this description progresses.

In the drawings:

FIGURE 1 is a perspective view of this invention.

FIGURE 2 is a side elevational view with a portion in section.

FIGURE 3 is a top plan view.

FIGURE 4 is a view taken on lines 4—4 of FIGURE 2.

FIGURE 5 is a fragmentary view of one of the die plates, and

FIGURE 6 is a view of the cast toy figure.

The unit includes a base member generally designated by the numeral 10, having a hollow interior. The front wall of the base has an elongated opening 12 for the purpose of slideably receiving a tray generally designated by the numeral 14. The interior of the base is provided with a pair of L-shaped rails 16 secured to the bottom of the base to serve as guide members for the removable tray 14.

Suitably secured to the top of the base member is a frame generally designated by the numeral 18, which is formed generally of channel shape in cross-section and comprises a pair of side members 20 and a top cross-member 22, all suitably joined together or integrally formed. The side members of said frame are suitably secured to the top of the base 10 by inwardly extending ears 24 (FIGURE 4) passing through suitable openings in the top of the base, although it will be understood that it may be secured in any other well-known manner.

Approximately intermediate the height of the frame member 18 is a cross-member generally designated by the numeral 26, which is channel shape in cross-section. Secured on said cross-member 26 centrally thereof is a melting chamber generally designated by the numeral 28, in which the casting material is adapted to be heated to form the molten metal.

The melting chamber 28 is formed of an outer shell 30 having a cylindrical wall 31 and a bottom 32, the bottom of which is permanently secured to the cross-member 26. The bottom 32 is provided with a circular opening 34 positioned forwardly of the cross-member 26.

Suitably supported and secured inside the bottom 32 of the outer shell is a conventional heating element generally designated by the numeral 36 which is electrically connected to a conventional male outlet 38 secured to and extending rearwardly of the outer shell. A conventional female plug 39 connected to a source of current supply is detachably secured in the outlet 38. The male outlet 38 may extend from the side of the outer shell instead of from the rear so as to be parallel and in alinement with the cross-member 26.

An inner shell 40 of substantially the shape of the outer shell but of smaller dimension is adapted to nest within the outer shell and provide a space therebetween. A flange 42 on the inner shell seals the space openings. The inner shell has a discharge opening at the bottom thereof to which is fixedly connected a discharge spout 44 which comprises a tubular member which terminates in a tapered end outlet 46. The tubular member forming the discharge spout 44 extends through the opening 34 in the bottom of the outer shell 30 and extends downwardly thereof.

To control the flow of the molten material from the melting chamber 28 there is provided a depressible plunger generally designated by the numeral 48.

Secured to the top cross-member 22 of the frame is an inverted L-shaped bracket 50 having a suitable opening through which extends the rod 52 of the depressible plunger 48. The lower portion of said rod extends into the interior of the discharge spout 44 and the terminal of said rod is tapered complementary to the taper of the discharge spout to form a valve 53 for closing the outlet end of the discharge spout. The rod 52 supports a pin 54 and a coil spring 56, which spring normally maintains the plunger 48 in depressed position so that the valve member 53 closes the outlet of the discharge spout 44. The upper end of the rod is provided with a handle member 58.

As is obvious, the valve member 53 is normally in its closed position to close the discharge outlet of the discharge spout 44. When it is desired to discharge the molten material from the melting chamber 28, the rod 52 is elevated against the compressed spring 56 so that the material will flow through the outlet end 46 of the spout and upon release of the rod the valve 53 will again close the discharge outlet to prevent any further discharge.

The top member 22 of the frame has an opening through which extends a rod 60. The rod is provided with a handle 61. Secured to the lower end of the rod is a dome-shaped cover 62 provided with a plurality of spaced openings 64 therein. The cover need not, however, have openings. A coil spring 66 surrounds the lower end of rod 60 and is positioned between the top cross-member 22 and the cover 62 for the purpose of normally maintaining the cover in closed position over the melting chamber 28. Thus, when the material is being heated and formed into molten material inside the melting chamber 28, the cover 62 is in closed position, as shown in the drawings, so as to prevent a child from inserting a finger into the melting chamber 28 and/or otherwise injuring himself.

For the purpose of inserting the solid pieces of material for melting, the cover 62 may be readily raised by lifting the rod 60. The cover is provided with an enlarged opening 68 through which the rod 52 passes. Thus, the rod 52 or the cover 62 may be operated without effecting each other.

Secured to the base 10 and extending inwardly of one side 20 of the frame member to closely adjacent the center of the frame is a hollow body 70, to the outer end of which is rigidly secured a stationary jaw member 72 which is a channel shaped member.

Secured to the base and extending inwardly from the other side of the frame member to approximately a distance closely adjacent the center of the frame member is another hollow body 74. Rotatably supported within the hollow body 74 is a threaded screw shaft 76, the inner end of which extends through a threaded bushing 78 secured adjacent the end wall 80 of the hollow body 74. The inner end of the screw shaft 76 extends through a suitable opening in the end wall 80 and has suitably attached to it by a fitting 82, a jaw 84 similar in shape to jaw 72. The outer end of screw shaft 76 extends through an opening in the side member 20 and has a wing nut 86 for manual engagement.

The two jaws 72 and 84 face each other. The jaw 84 is movable in relation to the stationary jaw by manual rotation of the screw shaft 76 through the wing nut 86 on the screw shaft 76. It will be seen that the discharge spout 44 is in vertical alinement between the two jaws.

The two matching die plates designated by the numerals 88 and 90 are positioned between the two jaw members and are adapted during the casting operation to be held in locked position by means of the two jaws. As illustrated, each of the die plates is provided with a laterally extending handle 91 and 92 respectivley, and the top of each of the plates has a semi-circular opening 93 and 94 respectivley, communicating with the interior of the die plate, so that when the plates 88 and 90 are together an enlarged entrance or inlet opening is provided at the top for the flow of the material therethrough into the interior cavity formed between the plates. As shown, the two matching die plates have three inlet openings at the top since the plates shown are adapted to form three different miniature figures; however, plates with a larger number of die cavities and a correspondingly larger number of openings for more figures can be used.

As the metal is heated in the melting chamber 28 and the molten material is discharged by operation of the depressible plunger 43, the material will flow into the cavity provided by the plates 88 and 90 through the inlet opening at the top thereof to form a toy figure like that shown in FIGURE 6. To form other toy figures in said plates, the adjustable jaw 90 is then adjusted to permit shifting of the two plates forwardly, like that shown in FIGURE 1, so that the spout 44 is in alinement with the second inlet opening of the matching die plates and the molten material is discharged into same. This is repeated with the third inlet opening so that three different figures are formed by the two matching plates as shown. After the material between the plates has hardened to form the miniature figures, the plates may then be removed from between the jaws and separated for the removal of the finished miniature toy figures.

By providing a large variety of different types of matching die plates like that shown, an unlimited number and variety of toy figures may be formed. It will of course be understood that the toy figure formed of the molten material may be again melted in the melting chamber 28. The tray 14 may be used for the purpose of storing the metal to be melted, as well as the die plates and coloring material which may be used for the purpose of coloring the figures.

This invention provides a great deal of play value for a child and is safe in that the melting chamber is covered during operation of the device and there are no heating elements which come into contact with the hands of the child. In conventional casting methods a pot or ladle of molten material is picked up and poured, whereas with the present invention the molten material is supported in a stationary machine and flows therefrom through a spout to die plates stationarily held by the machine. This is a very important feature and enables children to use this machine with perfect safety. Children who would not or could not use the conventional casting methods can now cast by using the present invention.

It will be understood that various changes and modifications may be made from the foregoing without departing from the spirit and scope of the appended claim.

I claim:

A self-contained portable toy casting machine comprising a base adapted to be removably positioned on a table or the like, said base having a substantially flat top surface, a frame supported on said base, an electrically operated melting chamber for receiving the material and for heating same to a molten condition, said melting chamber being supported on said frame above said base and in spaced relation to said base, a discharge outlet for said melting chamber, a discharge spout communicating with said discharge outlet and extending downwardly below the melting chamber, means for controlling the discharge of the material to said discharge spout, said means including a spring biased plunger supported on said frame to normally close said discharge spout, said plunger adapted to be manually raised to open the discharge spout to discharge the molten material, said electrically operated melting chamber provided with an electric outlet disposed so as not to interfere with said discharge spout, a cover on said melting chamber to normally cover the top of said melting chamber when said melting chamber is being heated, means engaging said cover and positioned so that it may be manually engaged remotely from said melting chamber to raise said cover and uncover said melting chamber, means for supporting die plates on the flat top surface of said base below said discharge spout so that the molten material may be received by the die plates directly from said discharge spout, a pair of clamping members for clamping said die plates while supported on the flat top surface of said base, and manual control means for operating at least one of said clamping members, said manual control means positioned away from said die plates.

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