Nov. 15, 1938. S. GATTUSO 2,136,432

APPARATUS FOR MOLDING

Filed March 4, 1935

Fig. 1

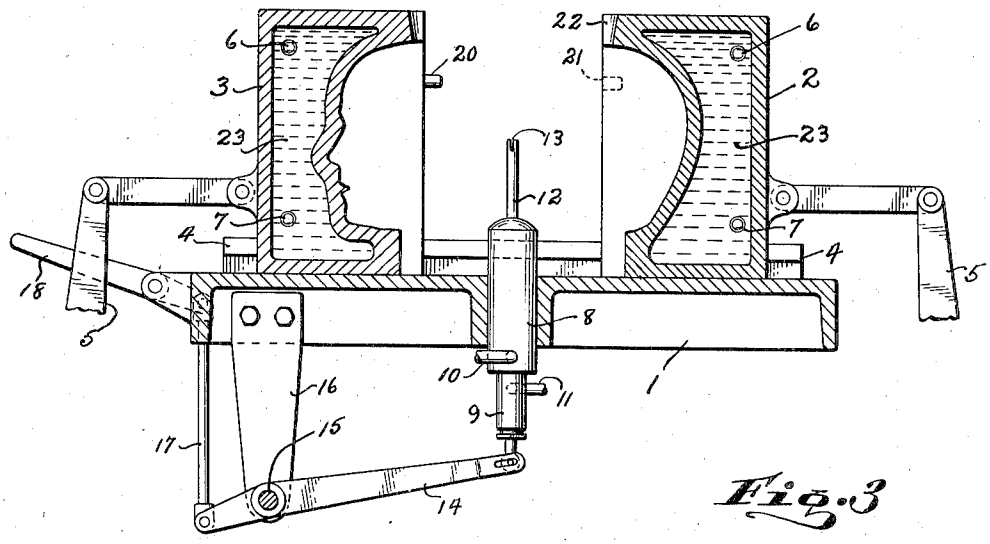


Fig. 3

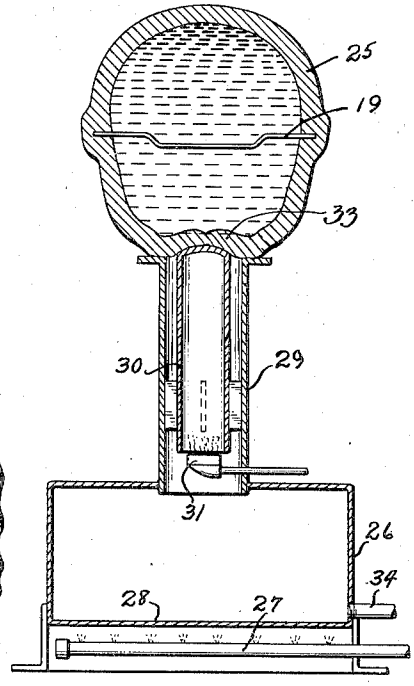
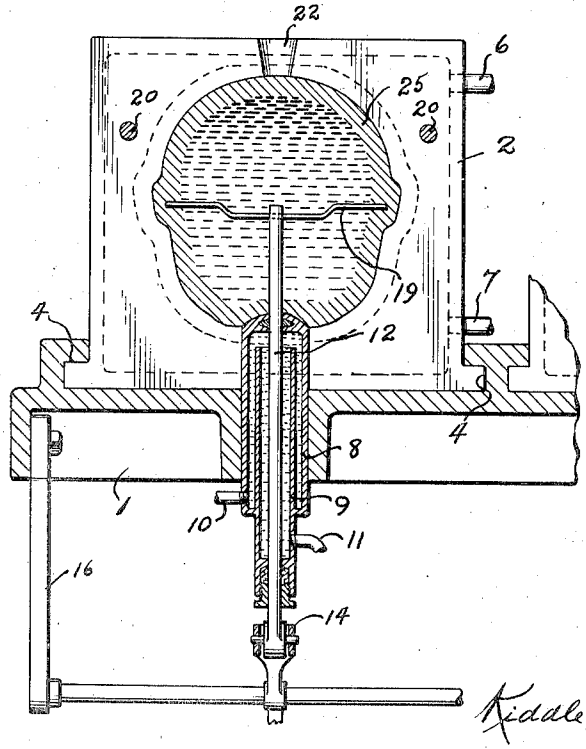


Fig. 2



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APPARATUS FOR MOLDING

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1 Claim. (Cl. 18—26)

This invention relates to improvements in the apparatus for molding and is particularly directed to an apparatus for manufacturing hollow articles, such as dolls' heads and the like.

An object of the invention is the provision of an improved apparatus which is inexpensive in construction and readily operated.

A further object of the invention is the provision of means for rapidly cooling the composition of matter from which the articles are made.

Still further objects of my invention will be manifest from the following description and the accompanying drawing, in which:

Fig. 1 is a sectional elevation of my improved mold and the support therefor;

Fig. 2 is a plan view partly in section of one half of the mold; and

Fig. 3 is a sectional view of the article showing the apparatus for carrying out another step in my method.

Referring to the drawing in detail, 1 designates a table or support for a slidable mold which comprises sections 2 and 3. These sections are slidable on the table 1 in guideways 4 and may be moved toward and away from each other in said guideways by any suitable means connected to the levers 5, such as by hydraulic pressure, compressed air, or by motive power. These sections of course may be moved manually if desired. The sections 2 and 3 are hollow and each is provided with an inlet 6 and an outlet 7 for cooling fluid which may be circulated therethrough in any desired manner for cooling the material from which the article is to be made as will be hereinafter pointed out.

The table 1 is provided with a bushing 8 containing a tube 9 which also has an intake 10 and an outlet 11 for the circulation of a cooling medium. A rod 12 extends upwardly through the tube 9 and is provided at its upper end with a fork 13 and is connected at its lower end to a lever 14 pivoted to a bracket 16 mounted on the housing. The other end of the lever 14 has pivotally attached thereto a rod 17 which in turn is pivotally attached to a hand lever 18. This hand lever, as will be obvious, upon operation will move the rod up and down in the tube 9. The purpose of the fork 13 in the rod 12 is to support a wire 19 which extends transversely of the mold when the two sections of the same are in closed position so that the ends of the wire will be molded in the article. This wire may be employed for mounting of the eyes in the case of a doll's head and also may function as an attachment for the doll's body or other members.

In carrying out my improved method and employing the mold above referred to, the sections 2 and 3 are moved together so that the dowel pins 20 in the section 3 will engage the depressions 21 in the section 2 to properly position the same. It will be understood, however, that the dowel pins 20 and depressions 21 need not necessarily be employed inasmuch as the tracks or guideways 4 will function to bring the two sections of the mold into proper position.

When the sections are in closed position the material to be molded may be poured into the mold through the opening 22 in the top thereof until the mold is completely filled. When the mold is filled, cooling fluid is immediately admitted into the sections of the casting through the pipes 6 and circulated through the cooling jackets 23 and out at pipe 7, cooling fluid at the same time being circulated through the bushing 8.

Any suitable material such, for example, as paraffin wax may be employed in the practice of my invention. As a further example I may mention the composition of matter constituting the subject matter of my Patent No. 2,036,574, dated April 7, 1936.

It will be understood, of course, that the molding material is solidified due to the cooling operation just mentioned, the extent of solidification depending upon the temperature of the cooling medium and the duration of the cooling operation. Consequently, if desired the cooling operation may be continued until the entire mass of molding material has solidified. It is my purpose, however, to continue the cooling operation only long enough to cause a crust or shell 25, approximately one-quarter of an inch in thickness, to form on the exterior of the molding material at the surface of the mold, leaving the rest of the molding material in molten condition.

In preparing my improved apparatus for operation, and before closing the mold sections, a wire 19 is placed in the fork 13 of the rod 12. Inasmuch as this wire extends transversely of the mold, it will be appreciated that the ends of the same will extend into the crust 25 and when the lever 18 is operated the rod 12 will be lowered so that the fork 13 will disengage the wire 19 leaving the same securely embedded in the article. It will be appreciated that on the lowering or withdrawal of the rod 12 the opening left in the crust 25 will close, so that on completion of the molding operation the base or neck portion of the article is closed and the liquid composition is enclosed in the shell or crust 25 as seen in Fig. 3.

The next step in the practice of my invention is

removal of the liquid from the shell or crust, and in that connection I provide a tank **26** heated by means of a gas line or the like **27** under the bottom wall **28** of the tank. The top of the tank is provided with a cylinder **29** which supports a tube **30** at the bottom of which is another gas burner **31**. This cylinder **30** is closed at the top. The hollow article with liquid molding material therein is removed from the mold and placed upon the top of cylinder **29**, whereupon the heat from the burner **31** will fuse or melt that portion of the shell designated **33** so that the liquid material in the shell or crust **25** will flow through the cylinder **29** into the tank **26** where it remains in liquid condition due to the heat from the burner **27** and flows outwardly of the tank through the pipe **34**. A valve may be provided in the pipe **34** if desired.

The table **1** may have any number of molds supported therein, as will be understood, a single mold having been shown by way of illustration only.

It will be seen from the foregoing that my improved method provides for the molding of hollow articles in one piece, by causing a crust to be formed at the surface of a body of liquid material enclosed in a mold.

It will be appreciated that changes may be made in the details of construction and arrangement of parts within the purview of my invention.

What I claim is:

A device of the class described comprising in combination a table, guideways on said table, two sections of a mold movable in said guideways toward and away from each other, chambers in each of said sections for the circulation of a cooling medium, a chamber supported by said table for the circulation of additional cooling medium, said last mentioned chamber extending vertically between the said mold sections, said mold sections being provided with an opening for the admission of a molding material into said mold, the surface of said molding material being chilled throughout by the cooling medium in the sections of the mold and in the additional cooling chamber, means for circulating the cooling medium in said chambers, a rod extending through said additional cooling chamber to temporarily support a wire transversely in said mold to be embedded in the molding material and means for withdrawing said rod.

SALVATORE GATTUSO.