Sept. 11, 1928. 1,683,755

F. M. BIGELOW

GLASS MOLD

Filed July 25, 1927 3 Sheets-Sheet 1

Fig. 1.

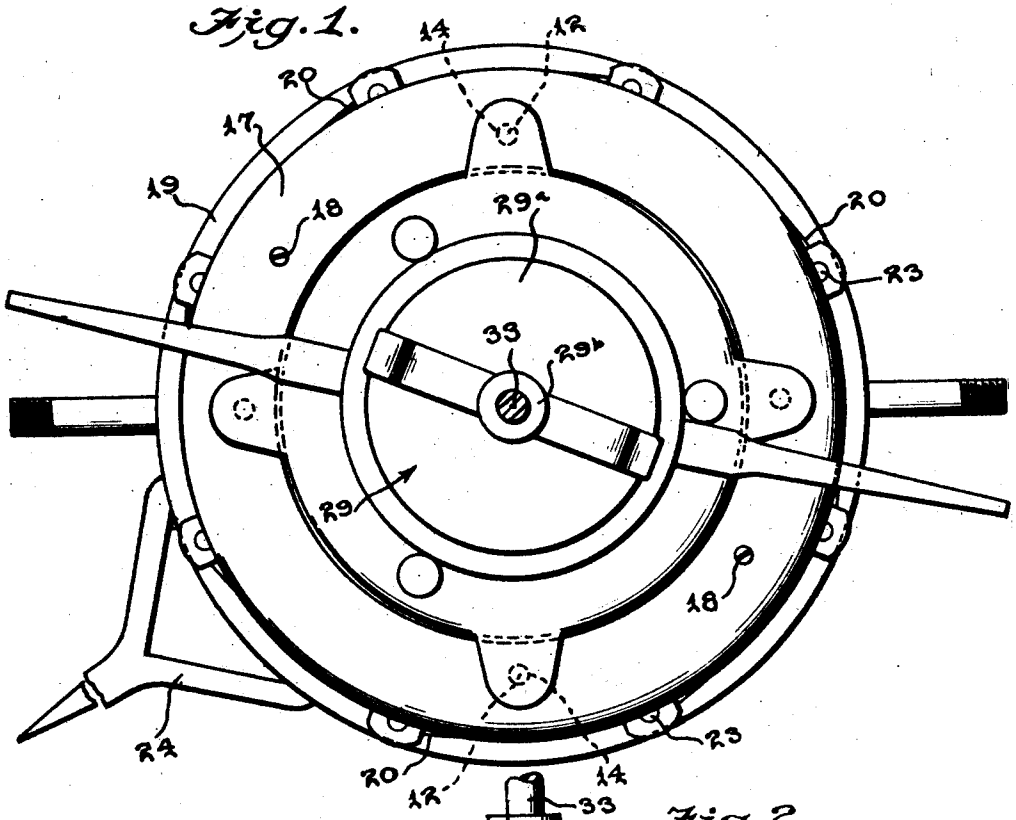

Fig. 2.

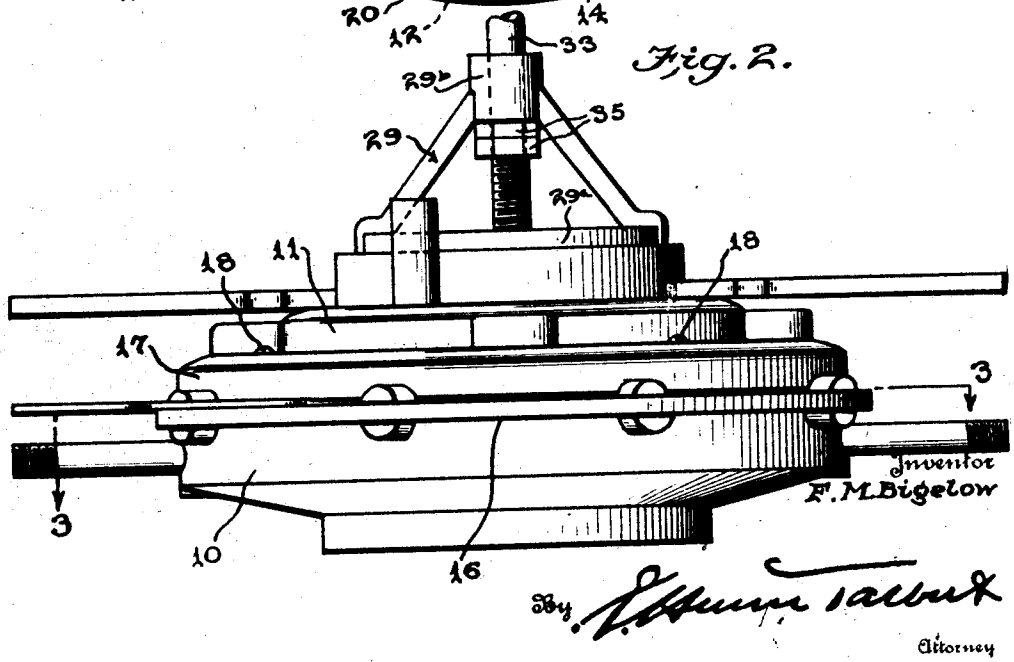

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Fig. 3.

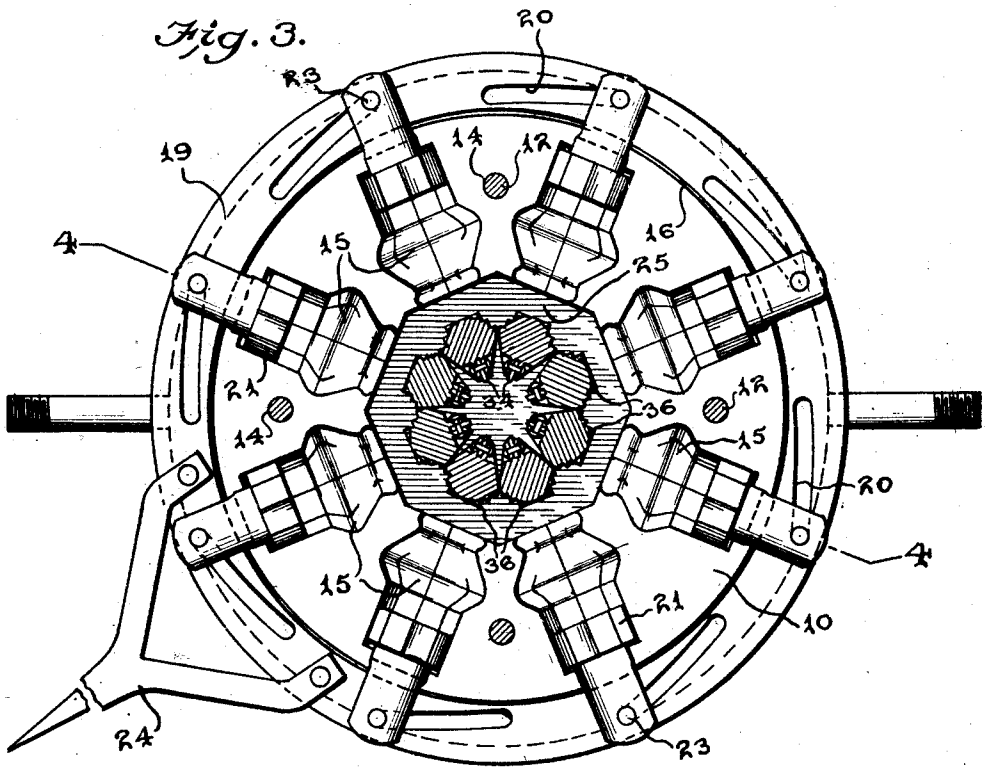

Fig. 4.

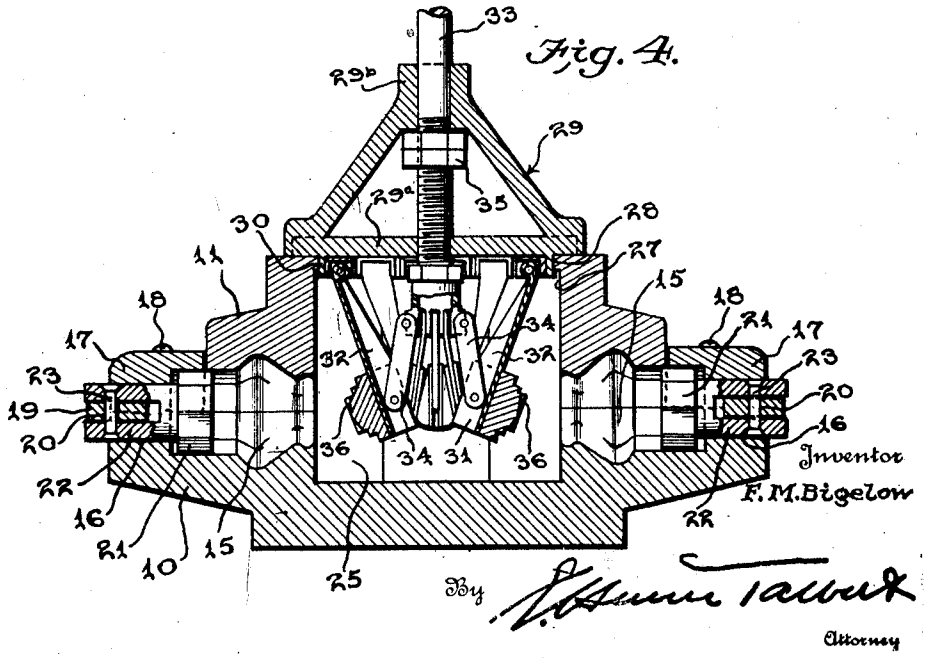

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Fig. 5.

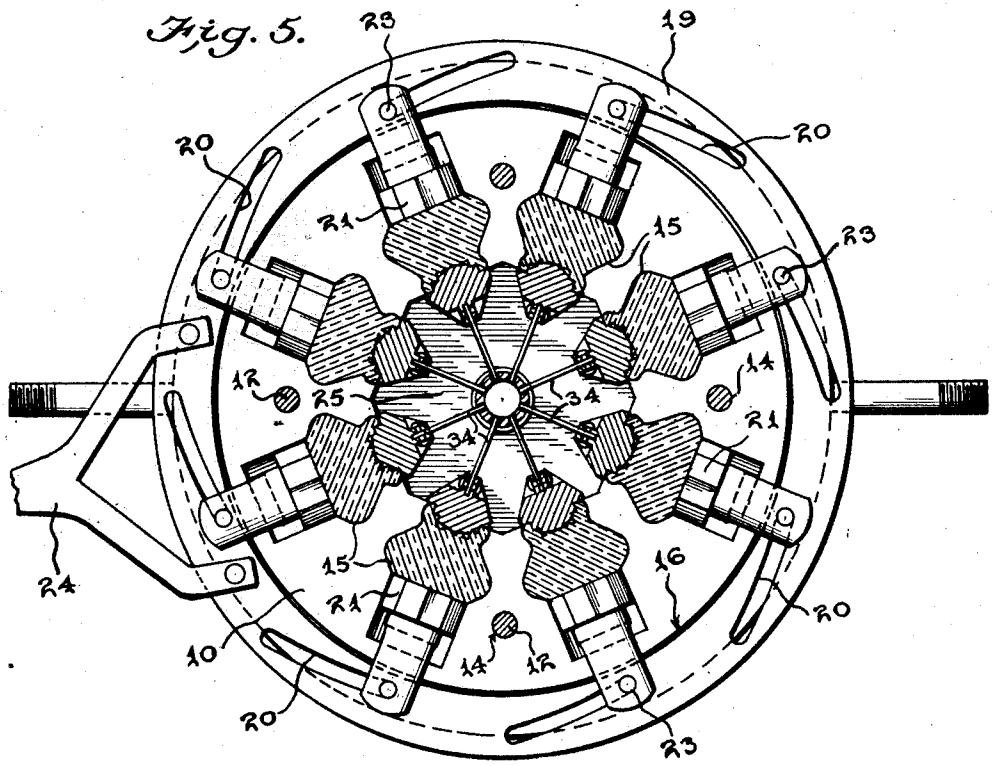
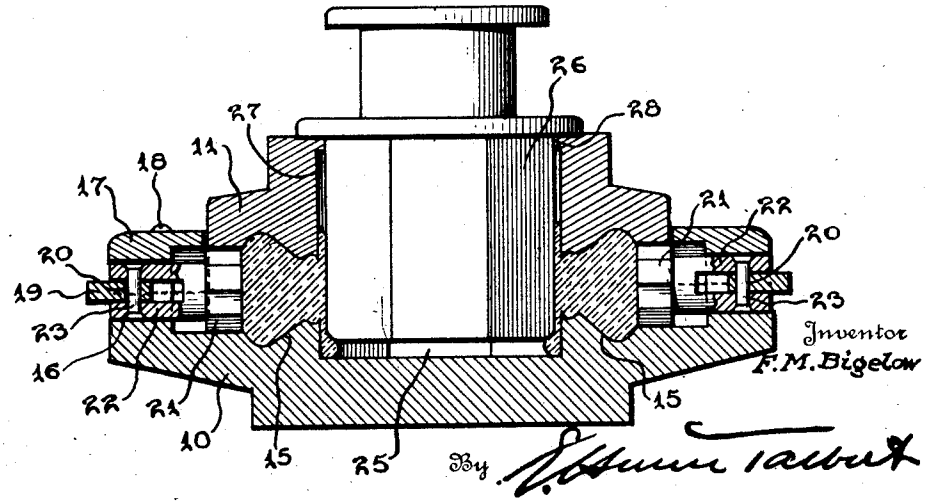


Fig. 6.



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Patented Sept. 11, 1928. 1,683,755

UNITED STATES PATENT OFFICE.

FRANK M. BIGELOW, OF JEANNETTE, PENNSYLVANIA.

GLASS MOLD.

Application filed July 25, 1927. Serial No. 208,298.

The object of the invention is primarily to provide a glass mold in which a plurality of glass articles may be simultaneously cut; to provide a construction of this character in which the articles are so formed that finishing after the casting operation is unnecessary or else reduced to a minimum if it has to be performed at all; to provide a construction in which the formed articles are effectively separated from the molten glass in the glass receptacle of the mold and the desired shaping of the articles at this end simultaneously performed; and to provide a construction in which the article cavities of the mold are provided with movable valves retractable after the articles are formed so that the latter may be readily removed.

With this object in view, the invention consists in a construction and combination of parts of which a preferred embodiment is illustrated in the accompanying drawings, wherein:

Figure 1 is a top elevational view of the mold embodying the invention.

Figure 2 is a side elevational view.

Figure 3 is a horizontal sectional view on the plane indicated by the line 3—3 of Figure 2.

Figure 4 is a vertical sectional view on the plane indicated by the line 4—4 of Figure 3.

Figure 5 is a view similar to Figure 3 but shows the feet of the finishing plunger in their final positions in the casting operation.

Figure 6 is a view similar to Figure 4 but shows the filler plunger in position.

The mold comprises the base and cap sections 10 and 11 which are preferably of circular form and complemental to each other, the cap section being provided with depending studs 12 engageable in sockets 14 of the base section so as to properly register the parts, both the cap and base sections being formed with depressions defining article receiving cavities 15.

The base section is formed with a peripheral groove 16 of which the upper side wall is defined by a ring 17 secured to the base member by appropriate fasteners 18 such as screws. In the groove 16 is mounted a valve ring 19, the latter being formed with slots 20 disposed substantially tangentially of the ring. Disposed directly back of the article receiving cavities 15 are the valves 21 in the form of plungers movable in guideways formed jointly in the base member and ring 17. The stems 22 of the valves 21 are slotted and the slotted portions straddle the valve ring 19, pins 23 spanning the slots in the stems and extending through the slots 20 in the ring. The ring is loosely mounted in the guide groove 16 and is therefore susceptible of angular or turning movement through a distance equal to the length of one of the slots 20 and the latter being disposed tangentially, angular movement of the ring will impart radial movement to the valves 21. A tang 24 is carried by the valve ring 19 for the reception of a removable handle by means of which the valve ring and therefore the valves may be actuated.

Centrally of the mold there is formed the glass receptacle 25, the latter being polygonal in plan to provide as many sides as there are article receiving cavities 15 and the bottom of the glass receptacle is below the plane of the article receiving cavities which open into it through the several side walls.

With the cap member placed on the base member and the studs 12 of the former engaging the sockets in the latter and the valve ring moved to a position where the pins 23 are in those ends of the slots 20 nearest the center of the mold which places the valves 21 in positions where they constitute the outer side walls of the article receiving cavities 15, the mold is in condition for the reception of molten glass in the receptacle 25. The glass having been poured in the receptacle, the filler plunger 26 is introduced therein, this filler plunger being of a shape to conform to the receptacle 25. Depressing the filler plunger, forces the molten glass into the cavities 15 until the latter are filled. While the filler plunger conforms cross-sectionally to the glass receptacle, it is dimensioned slightly smaller than the latter, thus providing a small space 27 between it and the side walls of the glass receptacle into which space the excess glass may find its way. To provide, however, for the central disposition of the plunger 26 in the glass receptacle, the cap member at the open side of the glass receptacle is provided with an inwardly extended flange 28 which constitutes a guide for the plunger 26 as it does also for the finishing plunger which is inserted after the filler plunger is removed. The finishing plunger comprises a cross-head 29 which seats on top of the cap member 11 and whose depending flange 30 enters the guideway

defined by the flange 28. The finishing plunger aside from the cross-head comprises a plurality of feet 31 carried at the lower ends of swinging arms 32, the arms being supported by the cross-head and the feet being moved toward and away from the cavities 15 by the actuator rod 33 which is slidably mounted in the cross-head and at its lower extremity has link connections 34 with the feet. The cross-head comprises the plate 29^a and the yoke 29^b and the actuator rod has a bearing in both and is provided between the two with an adjustable collar 35 which limits its axial movement with respect to the cross-head.

When the finishing plunger is introduced, the depression of the actuator rod 33 after the plate 29^a rests upon the top of the mold, will result in swinging the feet 31 toward their respective article receiving cavities with the result that the articles will be separated from the glass remaining in the receptacle. If the articles being cast are door knobs, as shown in the illustrated embodiment of the invention, the inner faces of the feet may be formed with ribs 36 which result in the formation of radial ribs on the inner ends of the knobs so that the necessary anchoring means may be provided in the latter in the cement in which they are secured in their fittings.

The finishing plunger is introduced and withdrawn by means of the actuator rod 33, so that whenever the weight of the cross-head is not supported by other means, as by the mold itself, the plunger feet are in retracted position indicated in Figure 3 and the finishing plunger may thus be readily introduced into and withdrawn from the receptacle 25.

In the removal of the cast articles from the mold, the valves 21 are withdrawn by the actuation of the valve ring and the cap section 11 then lifted off, when the articles may be readily removed from the cavities in the base section.

The invention having been described, what is claimed as new and useful is:

1. A mold comprising base and cap sections jointly in which a plurality of glass receiving cavities are formed of the shape of articles to be cast, the mold having a glass receptacle in communication with said cavities, means for forcing the glass from the glass receptacle into said cavities, and means actuable subsequent to the first said means to separate the cavity contained glass from that in the receptacle and complete the formation of the glass articles.

2. A mold comprising base and cap sections jointly in which a plurality of glass receiving cavities are formed of the shape of articles to be cast, the mold having a glass receptacle in communication with said cavities and opening through the cap section, a filler plunger insertable through the cap section for ejecting the glass into said cavities, and a finishing plunger for insertion into the receptacle after the withdrawal of the filler plunger, the former having means for separating the cavity contained glass from that in the receptacle.

3. A mold comprising base and cap sections jointly in which a plurality of glass receiving cavities are formed of the shape of articles to be cast, the mold having a glass receptacle in communication with said cavities and opening through the cap section, a filler plunger insertable through the cap section for ejecting the glass into said cavities, and a finishing plunger for insertion into the receptacle after the withdrawal of the filler plunger, the former having a plurality of feet corresponding in number to the number of cavities and said feet being movable toward and away from the openings of communication between the cavities and the receptacle.

4. A mold comprising base and cap sections jointly in which a plurality of glass receiving cavities are formed of the shape of article to be cast, the mold having a glass receptacle in communication with said cavities and opening through the cap section, a filler plunger insertable through the cap section for ejecting the glass into said cavities, and a finishing plunger for insertion into the receptacle after the withdrawal of the filler plunger, the former comprising a cross-head and a plurality of swingingly mounted feet corresponding in number to the number of cavities, and means for moving said feet toward and away from the openings of communication between said cavities and said receptacle.

5. A mold comprising base and cap sections jointly in which a plurality of glass receiving cavities are formed of the shape of articles to be cast, the mold having a glass receptacle in communication with said cavities and opening through the cap section, a filler plunger insertable through the cap section for ejecting the glass into said cavities, and a finishing plunger for insertion into the receptacle after the withdrawal of the filler plunger, the former comprising a cross-head and a plurality of swingingly mounted feet corresponding in number to the number of cavities, and means for moving said feet toward and away from the openings of communication between said cavities and said receptacle, said means comprising an actuator rod slidably mounted in the cross-head and having terminal link connections with said feet.

6. A mold comprising base and cap sections jointly in which a plurality of glass receiving cavities are formed of the shape of articles to be cast, plunger valves radially movable of the base member and defining

the outer walls of said cavities, the mold having a glass receptacle in communication with the cavities and opening through the cap member, and filling and finishing plungers successively insertable in said receptacle, the former for ejecting the glass from said receptacle into said cavities and the latter for separating the cavity contained glass from the receptacle contained glass.

7. A mold comprising base and cap sections jointly in which a plurality of glass receiving cavities are formed of the shape of articles to be cast, plunger valves radially movable of the base member and defining the outer walls of said cavities, the mold having a glass receptacle in communication with the cavities and opening through the cap member, and filling and finishing plungers successively insertable in said receptacle, the former for ejecting the glass from said receptacle into said cavities and the latter for separating the cavity contained glass from the receptacle contained glass, and a valve actuating ring mounted on the base member for angular or turning movement thereon and operatively connected with said valves for imparting radial movement to the same.

8. A mold comprising base and cap sections jointly in which a plurality of glass receiving cavities are formed of the shape of articles to be cast, plunger valves radially movable of the base member and defining the outer walls of said cavities, the mold having a glass receptacle in communication with the cavities and opening through the cap member, and filling and finishing plungers successively insertable in said receptacle, the former for ejecting the glass from said receptacle into said cavities and the latter for separating the cavity contained glass from the receptacle contained glass, and a valve actuating ring mounted on the base member for angular or turning movement thereon and operatively connected with said valves for imparting radial movement to the same, the base member having a ring detachably secured to it and the valve ring being mounted in the groove formed jointly in said ring and said base member, the valves having stems movable in guides formed jointly in said ring and said base member.

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