Dec. 7, 1926. 1,609,708

B. C. GILLIGAN

METHOD OF MAKING GLASS MOLDS

Original Filed July 17, 1924

Fig. 1.

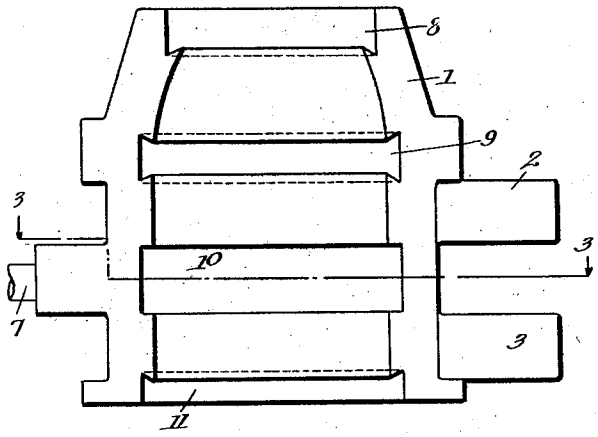


Fig. 2.

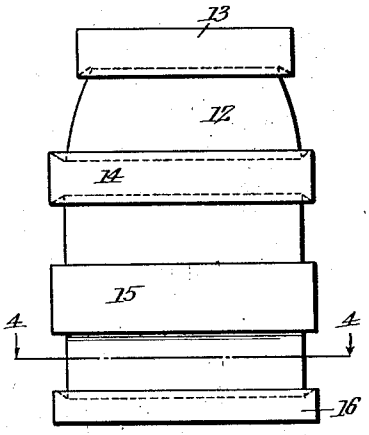


Fig. 3.

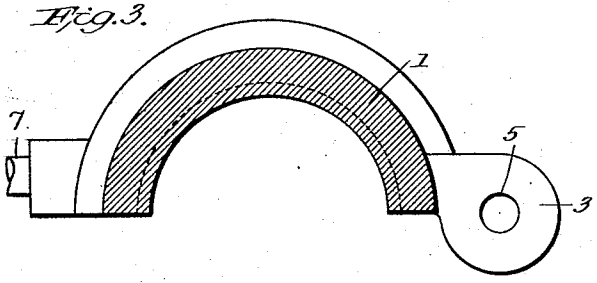


Fig. 4.

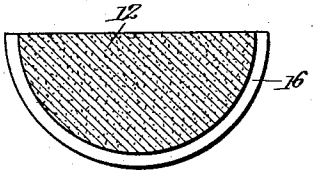


Fig. 5.

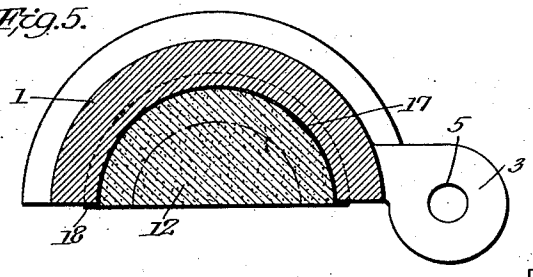


Fig. 6.

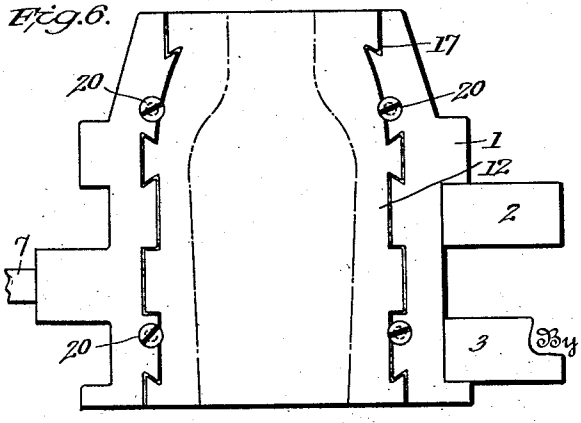
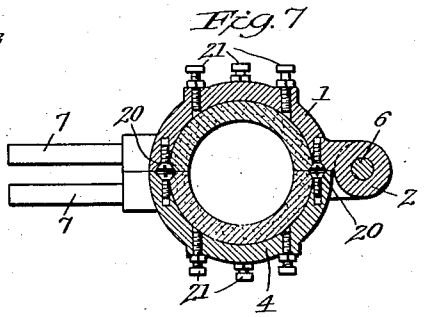


Fig. 7



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UNITED STATES PATENT OFFICE.

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METHOD OF MAKING GLASS MOLDS.

Original application filed July 17, 1924, Serial No. 726,540. Divided and this application filed April 21, 1926. Serial No. 103,552.

The present invention relates to an improved method of making molds, such as are employed in the manufacture of blown glassware.

A mold constructed in accordance with the method hereinafter described and claimed forms the subject matter of an earlier application, Serial No. 726,540, of which the present case is a division.

The method is particularly intended for manufacturing molds which comprise a suitable body or shell, commonly of metal, having a composition lining whereby contact between the glass being blown and the metal shell or casing of the mold is prevented.

The compositions for lining such molds commonly include a considerable portion of graphite or similar material, and suitable compositions which may be employed in carrying out the improved method are described in my earlier Patents Nos. 892,589 of July 7, 1908; 1,165,003 of December 31, 1915, and 1,319,151 of October 21, 1919.

It is very important that the composition linings of molds of the character referred to be permanently secured to the metal shell or casing, and by the present invention, it is possible to provide a mold having a composition lining firmly connected to a metal shell or casing and its inner surface accurately shaped to the desired configuration.

As a means of facilitating a ready understanding of the improved method, reference is made to the accompanying drawing, in which:—

Fig. 1 is an elevation or inner face view of one section of a metal mold shell or casing.

Fig. 2 is an elevation of a block of composition adapted to form a lining for the mold section shown in Fig. 1, prior to such block being engaged with the mold.

Fig. 3 is a sectional view substantially on the line 3—3 of Fig. 1.

Fig. 4 is a sectional view substantially on the line 4—4 of Fig. 2.

Fig. 5 is a view similar to Fig. 3, showing the lining body or block in position within the mold shell.

Fig. 6 is an elevation of the parts shown in Fig. 5, and

Fig. 7 is a transverse sectional view through completed mold constructed in accordance with the method of the present invention.

Referring to the drawings, 1 designates the metal shell or casing of a mold section, which, as shown, is provided with ears 2, 3 adapted to receive between them the ear of a companion section 4, said ears being provided with aligned apertures 5 adapted to receive a pintle pin 6, thus constituting a hinge about which the mold sections may be relatively turned. Each mold section is provided with a suitable handle 7.

The metal shell or casing section 1 is provided with a composition lining, and according to the present invention, such lining is engaged with the metal shell by rib-like portions thereof engaging grooves 8, 9, 10 and 11 formed in the metal casing. As shown, the grooves may be undercut or made of dove-tail form in vertical cross section, and in connection with the additional securing means hereinafter referred to, these interlocking grooves and ribs form a very secure fastening of the composition lining to the metal shell, so that there can be no relative movement between them.

According to the present method, a suitable block 12 of the composition material which is to constitute the lining is formed, and this, by suitable tools, is shaped to a size and form which will permit of the block being fittted within the metal casing section 1. As shown, the block is formed with projecting ribs 13, 14, 15 and 16 adapted to severally be received in the grooves 8, 9, 10 and 11 of the metal casing member 1, and the dimensions of the block 12 are such that it can be engaged with the metal section 1, the several ribs fitting loosely in the grooves or channels formed in the casing section.

Preliminary to inserting the block of composition 12 in the casing section 1, the inner face of the latter and the walls of the grooves thereof, as well as the curved surface of the block 12, are coated with a suitable cement, which, by the subsequent action of heat, will harden, and serve as a means to connect the lining to the metal surface. Such cement coating is indicated at 17 in Figs. 5 and 6.

If preferred, the composition lining may be applied to the inner surface of the mold

section 1 while in a plastic condition, the face of the mold being coated with a suitable cement, as above stated.

As shown in Fig. 5, the body of the composition lining may initially project slightly beyond the face of the metal casing section 1, as indicated at 18, such projecting portion being subsequently trimmed off so that the face edges of the lining will be flush with the adjacent surface of the metal shell and the two portions of the mold can be accurately closed upon each other for use.

After the metal shell member 1 has been provided with a body of composition lining material, as described, a series of sockets are drilled in the face of the metal body and the lining material, into which are screwed screws 20, the enlarged heads of which are received in countersunk recesses formed partially in the metal shell and partially in the adjacent composition lining. Said screws 20 constitute an additional means for securing the lining to the metal shell, and a series of said screws 21 are provided in the metal body of the mold section and adapted to exert pressure on the lining in opposition to the pressure exerted by the screws 20.

After the lining material has thus been firmly secured to the metal shell, the inner face thereof is, by the use of suitable tools, such as drills and reamers, given the required shape.

In preparing the lining for a mold of the particular form illustrated, the projecting portions 18 of the lining body would be carefully removed, after the screws 20, 21 had been properly applied, and then the two mold sections being brought into the close relation illustrated in Fig. 7, the boring or reaming tools can be caused to co-operate to provide the mold chamber of the exact dimensions and form required for the article to be blown therein.

The invention is not limited, of course, to manufacture of molds having an opening at the top and bottom, as shown, but may be carried out with molds closed at one end, it merely being necessary to make the body of the mold casing or shell of sectional form and secure, as described, to each such section, a suitable body of the composition lining material, such body being subsequently shaped, as described, by suitable tools.

Preferably, the mold sections will be subjected to heat to set the cement, before referred to, after the fastening screws 20, 21 have been applied, and before the inner surface of the composition lining is given its final shape.

Having thus described the invention, what is claimed is:—

1. The herein described method of constructing molds for glass articles comprising affixing a composition lining to the inner surface of a metal shell, and then shaping the lining to conform to the contour of the article to be molded.

2. The herein described method of providing a metal glass mold with a composition lining, comprising initially externally shaping a suitable composition body to adapt it to conform to the inner surface of a wall of a metal mold, securing said shaped body to the mold wall to prevent relative movement between them, and shaping the inner surface of the lining to the contour of the article to be molded.

3. The herein described method of providing a metal glass mold with a composition lining, comprising initially externally shaping a suitable composition body to adapt it to conform to the inner surface of a wall of a metal mold, interposing a binding medium between the metal shell and composition body, applying heat to render the binding medium effective to secure the lining to the shell, and shaping the inner surface of the lining to conform to the contour of the article to be molded.

4. The herein described method of providing a metal glass mold with a composition lining, comprising initially externally shaping a suitable composition body to adapt it to conform to the inner surface of a wall of a metal mold, securing said body to the wall of the mold by an interposed binding medium and mechanical fastenings, whereby relative movement between the mold wall and lining is prevented, and shaping the inner surface of the lining to the contour of the article to be molded.

5. The herein described method of providing a metal glass mold with a composition lining, comprising initially externally shaping a suitable composition body to adapt it to conform to the inner surface of a wall of a metal mold, securing said body to the wall of the mold by an interposed cement and mechanical fastenings having threaded engagement with the mold wall, and shaping the inner surface of the lining to the contour of the article to be molded.

6. The herein described method of constructing molds for glass articles, comprising affixing to the inner surface of each of a plurality of sections, adapted to collectively form a metal mold shell, a body of composition lining material, securing the bodies of lining material to the respective mold sections to prevent relative movement between each mold section and the associated body of lining material, thereafter assembling the several composition faced mold sections, and shaping the lining to the contour of the article to be molded.

In testimony whereof I have hereunto set my hand.

BERNARD C. GILLIGAN.