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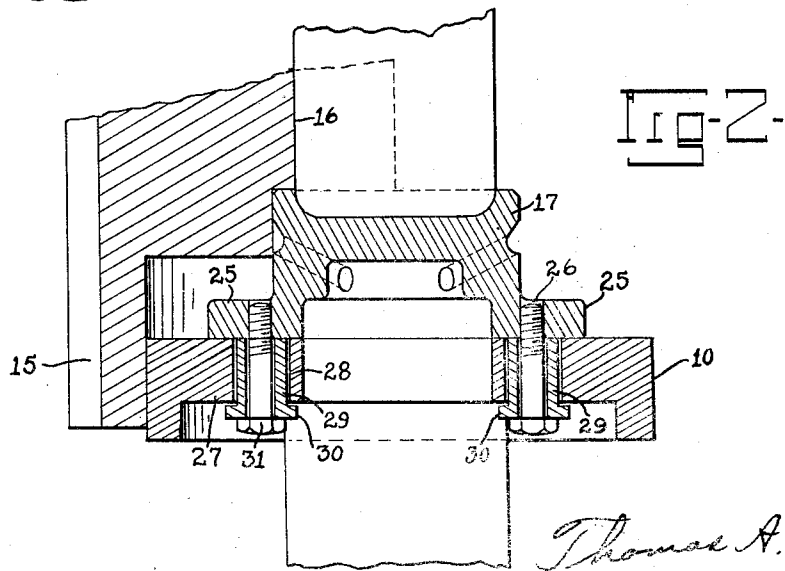
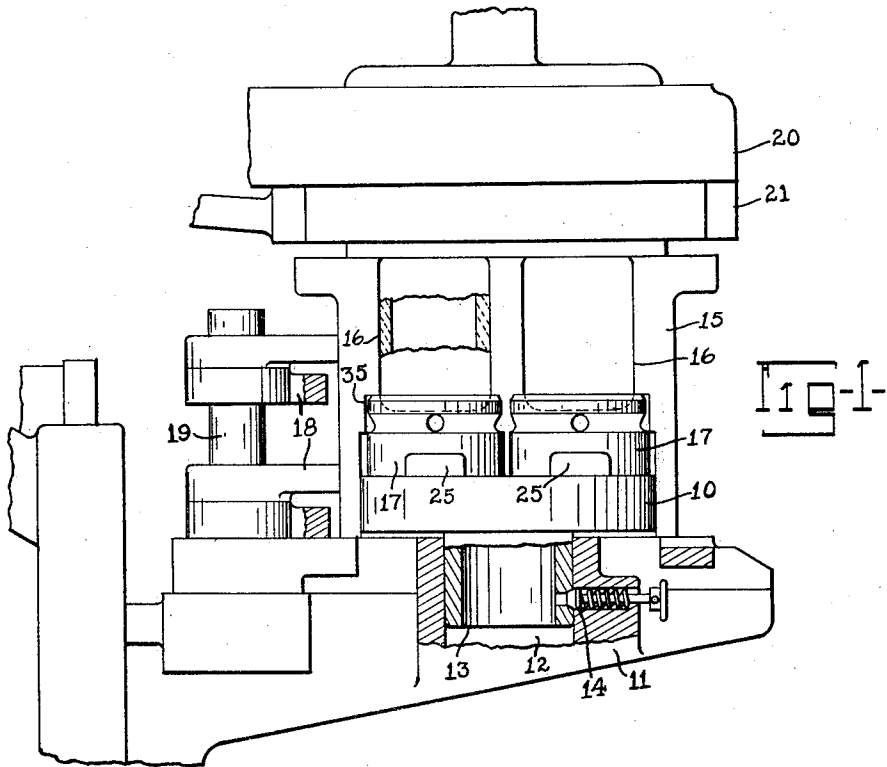
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1,885,409

GLASSWARE FORMING MACHINE

Filed March 26, 1928

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

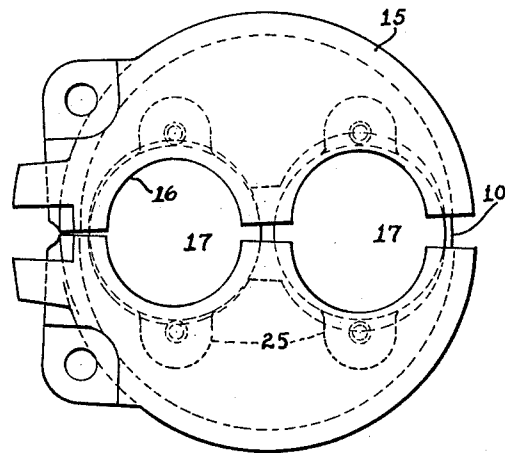
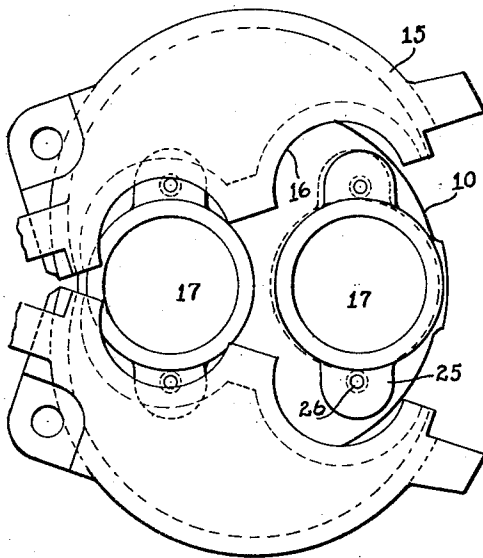


Fig. 3-

Fig. 4-

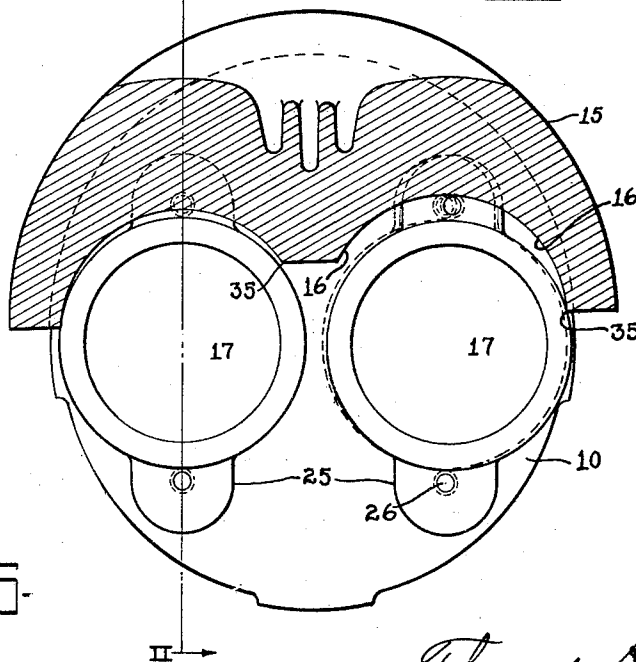


Fig. 5-

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3 Sheets-Sheet 3

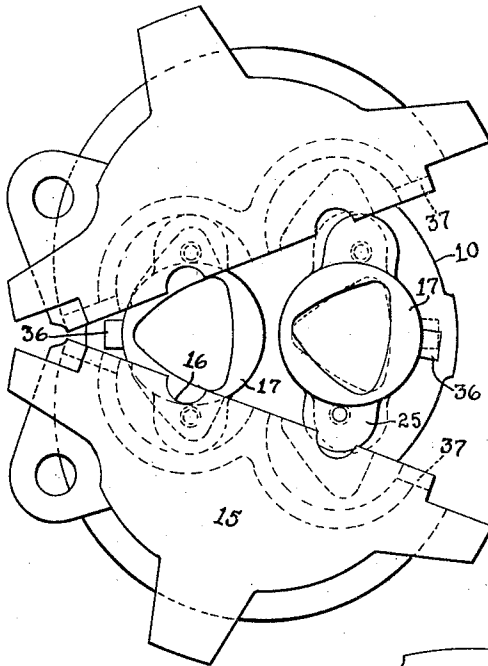


Fig. 6-

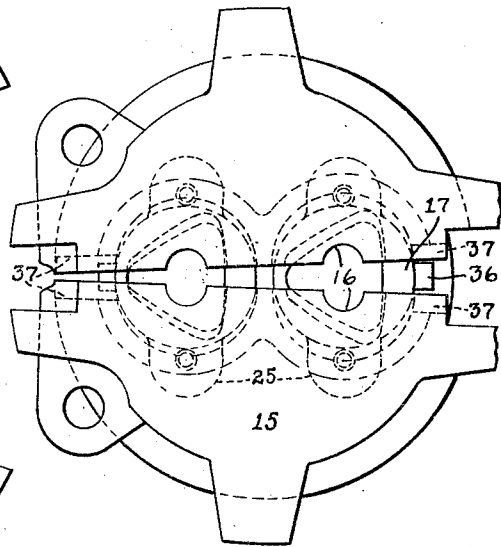


Fig. 7-

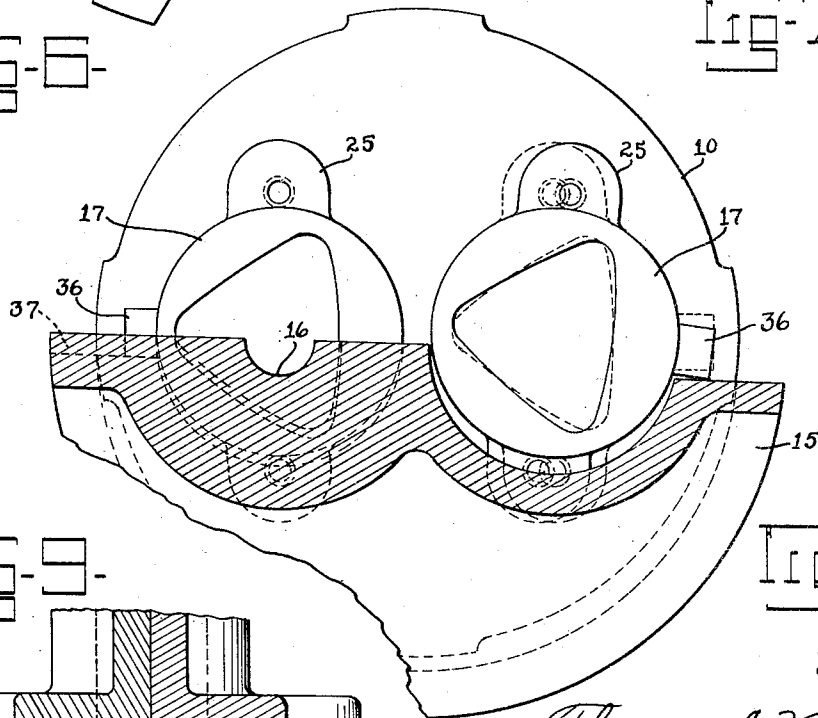
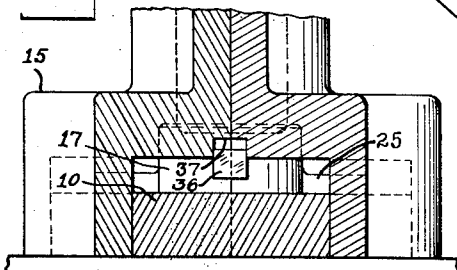


Fig. 8-

Fig. 9-



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UNITED STATES PATENT OFFICE

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GLASSWARE FORMING MACHINE

Application filed March 26, 1928. Serial No. 264,877.

The present invention relates to improvements in glassware forming machines, and more particularly to mold bottom construction.

5 In many commercial machines, the mold bottom plates are rigidly connected to the bottom plate holder. Because of this construction, it is not uncommon for the bottom plates and corresponding mold cavities to
10 assume such relative positions that proper alignment therebetween during the ware forming periods, cannot be obtained. This condition is detrimental to production of quality ware in that the bottoms of the ware
15 are frequently offset relative to the body portions, thereby presenting an unsightly appearance, as well as forming a more or less knife-like rib likely to injure persons handling the ware.

20 Where the ware being produced is of irregular cross sectional contour, triangular for example, a slight degree of rotation of the bottom plate relative to the corresponding mold cavity results in the formation of an
25 extremely pronounced and objectionable scar extending around the lower portions of the ware. As stated, these formations are detrimental to the production of quality ware and are more or less dangerous in that they are
30 likely to injure persons handling such ware.

35 An object of the present invention is to provide what may be termed "self-aligning bottom plates", which, if not already properly positioned just prior to closing of the body molds, will be automatically moved to their
40 normal positions under influence of the inwardly moving mold sections.

45 A further object is to provide a novel mounting for mold bottom plates permitting lateral, vertical or circular movement of said plates relative to the bottom plate holder and molds, such movement being controlled
50 directly by the inward or closing movement of the mold sections.

Other objects will be apparent hereinafter. In the accompanying drawings:

Fig. 1 is a sectional elevation of a double mold embodying the present invention.

Fig. 2 is a detail sectional view illustrating the connection between one of the mold bot-

tom plates and its holder whereby lateral, vertical or circular movement of the plate is possible.

Fig. 3 is a plan view showing one of the bottom plates in an abnormal position, the mold sections being shown in proximity to their closed position. 55

Fig. 4 is a view similar to Fig. 3, showing the mold sections almost closed, and the manner in which closing movement operates to return the bottom plates to their normal positions. 60

Fig. 5 is a detail sectional plan in which the mold section is in proximity to its innermost limit wherein it contacts with the bottom plates in a manner to insure proper alignment of the plates and corresponding mold cavities upon complete closing of the mold. 65

Fig. 6 is a view similar to Fig. 3, showing the mold construction to produce ware of triangular cross sectional contour, one of the bottom plates being in an abnormal position and somewhat exaggerated for illustrative purposes. 70

Fig. 7 is a plan view showing the mold sections substantially at their innermost limits in which they have caused the bottom plate to assume its normal position in register with the mold cavity. 75

Fig. 8 is a detail sectional elevation illustrating the manner in which closing of the body mold imparts a rotary movement to the bottom plates for the purpose specified. 80

Fig. 9 is a detail sectional elevation illustrating the key and slot connection between the bottom plates and mold sections. 85

In the drawings, the mold bottom plate holder 10 is removably carried by a tiltable frame 11 formed with a socket 12 in which a depending member 13 on the holder 10 fits. A spring pressed detent 14 (Fig. 1) separably interconnects the bottom plate holder 10 and the frame 11 and prevents relative rotation between said elements and between the holder and a partible body mold 15. 90

The body mold 15 in the present disclosure, is illustrated as including two mold cavities 16 which are adapted to cooperate with bot- 95 100

tom plates 17 carried by the holder 10. The body mold sections are formed with arms 18 through which they are connected to a vertical hinge pin 19 rising from the inner portion of the frame 11. A blow head 20 and neck mold 21 of conventional or any preferred form may be employed.

As stated above, an outstanding feature of the present invention resides in the mounting of the bottom plates in a fashion whereby they will automatically align themselves with the mold cavities as the mold sections are brought together. In providing for such automatic alignment of the bottom plates and corresponding mold cavities, each bottom plate is formed with a pair of diametrically opposed lateral ears 25 or lugs, each formed with a threaded opening 26 extending vertically therethrough. These ears 25 (Figs. 2 and 4) are positioned at opposite sides of the mold center line for reasons which are apparent. The upper portion 27 of the bottom plate holder 10 is formed with a pair of vertical openings 28 axially aligned with the threaded openings 26, the former openings being of materially greater diameter than the openings 26 and receiving collars 29 which are formed with radial flanges 30 at their lower ends. These collars 29 are of slightly greater length than the vertical openings 28 and slightly less diameter than said openings. Bolts 31 extend upwardly through these collars 29 and are threaded into the openings 26 in the ears 25 carried by the bottom plates 17, the heads of said bolts snugly engaging the flanged ends of the collars 29 so that the collars, bolts and bottom plate are free for a limited movement relative to the bottom plate holder 10. Because of this connection between the bottom plates 17 and the holder 10 (Figs. 2 and 5), it is evident that the bottom plates may be moved vertically, laterally and circumferentially relative to the holder 10.

Assuming that the mold is open and that the bottom plate holder has just returned to its horizontal position as shown in Fig. 1, it is possible that one of the bottom plates has shifted from its normal position to a position such as that shown in full lines in Figs. 3 and 5. Under these conditions, the mold sections are brought together to enclose a parison (not shown) in the usual or any preferred manner, the latter portion of the inward movement of the sections bringing the lower portions 35 of the mold sections into contact with the peripheries of the bottom plates 17. Thus, if the outer bottom plate 17 is out of line, as shown in Figs. 3 and 5, one of the meeting faces of the mold sections will contact with the outer peripheral portions of said bottom plate and as the mold continues to close, the bottom plate will be shifted laterally inward until it has reached its normal position wherein perfect align-

ment of the bottom plate and corresponding mold cavity will have been obtained. It is readily seen that the connection between the bottom plates 17 and the holder 10 is such that practically any necessary movement on the part of the bottom plates to align them with the corresponding mold cavities may be readily obtained.

In another form of the invention, shown in Figs. 6 to 9, inclusive, the mold cavities and bottom plates are shaped to produce ware which is triangular in cross section. The detrimental results of inaccurate positioning of the bottom plates in production of such ware are entirely obvious.

The connection between the bottom plates 17 and the bottom plate holder 10 in this form is identical with that employed in the preceding form so that said bottom plates are subject to multi-directional movement as required to properly align the bottom plates and corresponding mold cavities. In addition to the novel connection between the plates and holder 10, each bottom plate is provided with a key or lug 36 (Figs. 6 and 8), extending radially outward toward the periphery of the body mold 15 and beyond the periphery of the bottom plate 17. These lugs or keys are disposed at right angles to the ears 25 and are intended to normally extend longitudinally of and to coincide with the mold center line. These lugs or keys 36 (Figs. 8 and 9) are disposed below the upper surface of the corresponding bottom plate 17 and when the mold sections are brought together, said keys fit into keyways or recesses 37, provided in the meeting faces of said mold sections. The opposed walls of these keyways or recesses 37 contact with the outer longitudinal side walls of the keys or lugs 36, and thereby impart a circumferential movement to the plate or plates 17 to return them to normal positions in which said plates and their corresponding mold cavities will be accurately aligned. Thus, it is apparent that with use of these self-aligning bottom plates, ware produced will not have offset bottoms which constitute a more or less serious detriment as stated above.

Modifications may be resorted to within the spirit and scope of the appended claims.

What I claim is:

1. In combination, a bottom plate holder, a plurality of bottom plates thereon, connection between the bottom plates and holder whereby the plates are free for limited lateral and vertical movement independently of each other on said holder, keys projecting radially from said plates, and a partible mold closable about said plates and formed with ways to receive said keys, said plates being movable at times by closing of the mold.

2. In combination, a partible plural cavity mold, a bottom plate holder, bottom plates on the holder individual to the mold cavities, a

key projecting radially from each bottom plate substantially at the mold center line, and means interconnecting the holder and bottom plates whereby the latter are free for oscillative movement relative to the holder, said plates being movable at times by engagement between said keys and the mold during closing of the latter.

3. In combination, a partible plural cavity mold, a bottom plate holder, bottom plates on the holder individual to the mold cavities, a key projecting radially from each bottom plate substantially at the mold center line, and means interconnecting the holder and bottom plates whereby the latter are free for oscillative movement relative to the holder, said plates being movable at times by engagement between said keys and the mold during closing of the latter, said mold formed with ways in its meeting faces to receive said keys.

4. In combination, a bottom plate holder, a plurality of bottom plates thereon, connection between the bottom plates and holder whereby the plates are free for limited lateral movement independently of each other on said holder, keys projecting radially from said plates, and a partible mold closeable about said plates and formed with ways to receive said keys, said plates being movable at times by closing of the mold.

5. In combination, a partible plural cavity mold, a bottom plate holder, bottom plates on the holder individual to the mold cavities, said bottom plates being free for rotative and lateral movement relative to said holder, means operable by the closing of the mold for rotatively adjusting the bottom plates, and means operable by the closing of the mold for bodily moving the bottom plates laterally relative to the holder to an adjusted position.

6. The combination of a mold comprising separable body sections, a bottom plate holder, a bottom plate for the mold mounted on said holder and free for rotative and lateral movement bodily on the holder, means actuated by the closing of the mold for rotatively adjusting the bottom plate, and separate means for bodily moving the bottom plate laterally to an adjusted position.

7. The combination of a mold comprising separable body sections, a bottom plate holder, a bottom plate for the mold mounted on said holder and free for rotative and lateral movement bodily on the holder, said bottom plate and body mold sections being relatively shaped to cause the bottom plate to be centered by the mold as the latter closes, and means operable by the closing of the mold to rotate the bottom plate about its axis to an adjusted position.

8. In combination, a partible plural cavity mold, a bottom plate holder associated therewith, bottom plates on the holder individual to the cavities, means whereby the bottom plates may be moved individually relative to

the holder by closing of the mold, said means including bolts fixed to and depending from the lower side of the bottom plates, collars carried by and held against movement relative to the bolts, and radial flanges at the lower ends of the collars, said holder having vertical openings of less length and greater diameter than the collars to loosely receive them.

9. The combination of a mold, comprising separable sections, a bottom plate holder, a bottom plate, connecting pins at opposite sides of and depending from the bottom plate, means cooperating with said pins to form loose connection between said plate and holder permitting relative lateral movement of said plate and holder, said means including collars carried by and held against movement relative to the pins, and outwardly directed flanges at the lower ends of said collars, said holder having vertical openings of greater diameter and less length than the collar to loosely receive them.

Signed at Toledo, in the county of Lucas and State of Ohio, this 22d day of March, 1928.

THOMAS A. BRAGG.

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