

(No Model.)

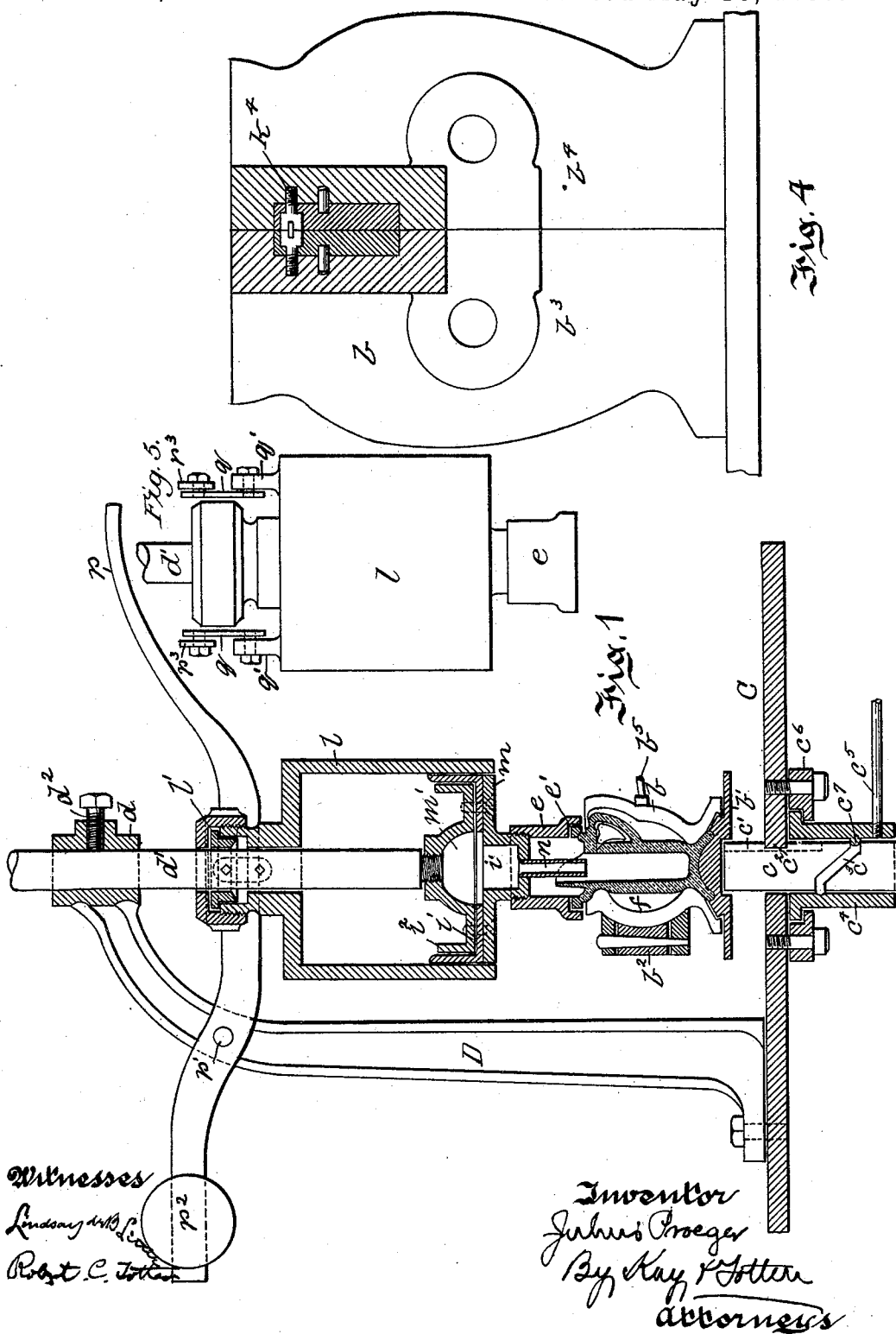
2 Sheets—Sheet 1.

J. PROEGER.

METHOD OF AND APPARATUS FOR FORMING GLASS ARTICLES.

No. 582,949.

Patented May 18, 1897.



Witnesses

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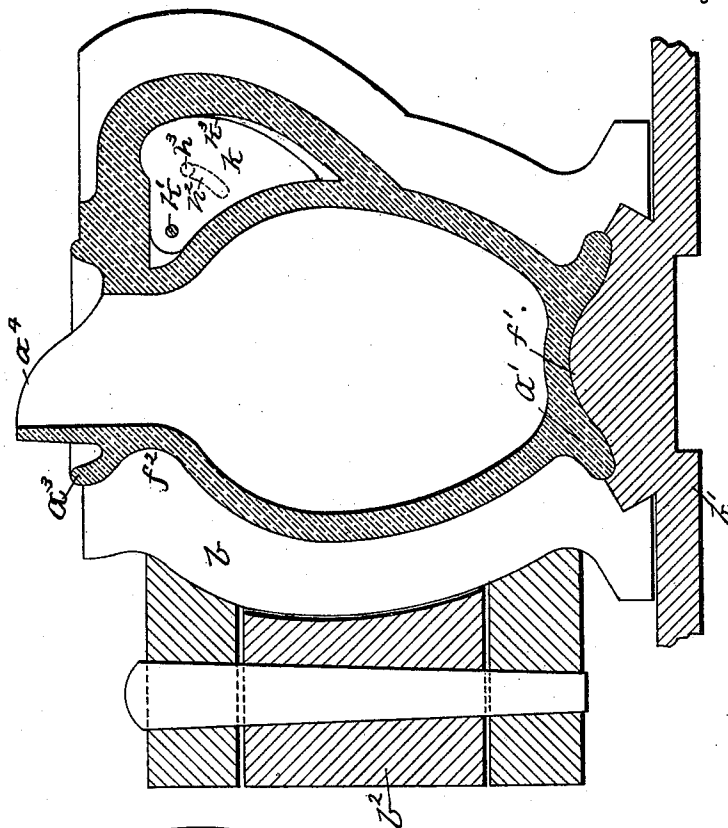


Fig. 3

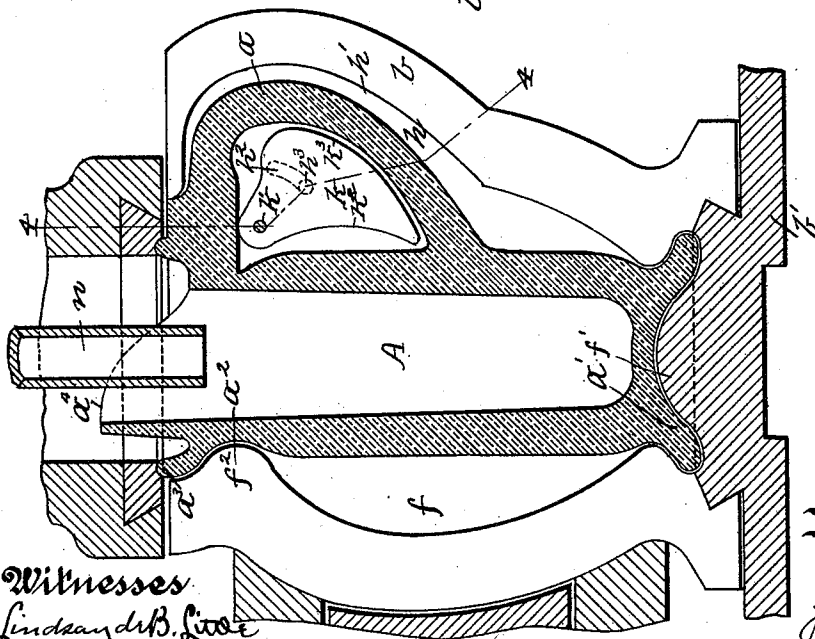


Fig. 2

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UNITED STATES PATENT OFFICE.

JULIUS PROEGER, OF GREENSBURG, PENNSYLVANIA.

METHOD OF AND APPARATUS FOR FORMING GLASS ARTICLES.

SPECIFICATION forming part of Letters Patent No. 582,949, dated May 18, 1897.

Application filed April 15, 1895. Serial No. 545,792. (No model.)

To all whom it may concern:

Be it known that I, JULIUS PROEGER, a resident of Greensburg, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Methods of and Apparatus for Forming Glass Articles; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the manufacture of hollow glassware, and more particularly to that which is formed by successive pressing and blowing operations, its object being to improve the manufacture of such glassware, so as to make it applicable to the formation of lipped glassware or glassware having projections above the main body portion thereof, and of handled glassware, as well as to provide suitable molds for making the same and blowing apparatus for expanding the pressed blank within the mold.

A part of my invention consists in providing the blow-mold with a handled recess and a pivoted block adapted to enter within the handle of the blank and, when expanding the blank by blowing, forcing the pivoted block against the handled portion to shape it and to form the continuation of the contour of the article within the handle against which the body is blown.

It also consists in combining with the mold a blowing apparatus having a base-piece to fit over the mold and a cup or cylinder adapted to pass around the base-piece and to force the air through the base-piece into the mold. It also consists in certain other improvements in the construction of the blowing apparatus and in the construction of the blow-mold employed.

To enable others skilled in the art to make and practice my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a longitudinal section of the blowing apparatus, with the blow-mold, illustrating the construction of the parts and the means for forcing the air into the blow-mold and the blank therein. Fig. 2 is an enlarged sectional view of the blow-mold, showing a pressed blank therein in full lines. Fig. 3 is a like view showing the blank when blown; and Fig. 4 is a face view of the blow-mold with a section on the line 4 4, Fig. 2. Fig. 5 is an elevation of the blowing apparatus.

Like letters of reference indicate like parts in each of the views.

My invention is illustrated in the formation of molasses-jugs, to which it is particularly adapted, although it is of course to be understood that the invention can be employed in the making of other hollow glassware. The pressed blank A can be formed in any suitable form of press-mold, and it is not considered necessary to illustrate such mold. The apparatus for blowing the pressed blank is fully illustrated in Fig. 1 and the other figures shown in the drawings, consisting of a blow-mold B and the operating-table C, having a standard D extending up therefrom which supports the blowing apparatus proper, the construction of which will be hereinafter described.

The table or stand C has preferably arranged upon it the reciprocating block *c*, which supports the base-piece *b'* on the mold *b* and raises the same into contact with the mouthpiece *e* of the blowing apparatus. The construction of this reciprocating block is practically as follows: The block has a longitudinal groove *c'* in which a key *c²* in the table enters to prevent the block from turning. The block is cylindrical in form and below the table carries one or more pins *c³*, and fitting around the lower portion of the block is the sleeve *c⁴*, having a handle *c⁵*, said sleeve being mounted to turn around the block by means of the collar *c⁶*, secured to the lower face of the table, and one or more diagonal grooves *c⁷* on the sleeve *c⁴* receiving the pins *c³*, so that when the sleeve *c⁴* is turned around the block, as the block itself is held from turning by the key *c²*, the pins *c⁴* will travel in the diagonal grooves *c⁷* and impart a vertical motion to the block *c*, causing it to raise the base-piece *b'* of the blow-mold so as to bring the upper edge of the blow-mold or the glass blank held therein into contact with the mouthpiece *e* of the blowing apparatus. The diagonal grooves *c³* may, if desired, have horizontal portions at the upper and lower ends thereof, so that when the sleeve is turned around the block it will be locked in its upper or lower position.

The blow-mold B is partible and hinged at *b²*, and the two half-sections *b³* *b⁴* thereof are counterparts of each other and are operated by the handles *b⁵*. The cavity or matrix *f* of the mold corresponds to the outer shape of the finished article to be blown, and in the

formation of jugs such as shown in the drawings the matrix is enlarged at the base and in connection with the base b' forms a seat f' to receive the base-flange a' of the glass blank A. The upper end of the blow-mold corresponds in shape to that portion of the glass blank, its neck f^2 fitting around the neck a^2 of the glass blank, the glass blank having the upper edge or flange a^3 , with which, in the preferred method of working, the mouthpiece e of the blowing apparatus contacts, said mouthpiece either fitting onto the mold or forming a joint with the flange a^3 . At the side of the main matrix is the handle-recess h , the outer edge of which corresponds to the outer edge h' of the handle when the article is blown to shape. This recess h extends out from the main matrix f , so as to receive the handle of the pressed blank, as shown in Fig. 2, and pivoted within such recess is the block k , which enters within the handle of the pressed blank, being pivoted at k' by means of the screw-bolt k^1 , and in its normal position the inner edge k^2 thereof swinging into the main matrix f . In the face of the recess or handle-matrix h is the curved groove k^3 , which is formed on an arc from the pivoted bolt k' , and a pin h^3 on the block k travels in such recess, which is of such length as to permit movement of the pivoted block in its lowest position, swinging into the main mold-cavity f and in its highest position on the inner edge k^3 conforming to the outline of the main mold-cavity, as shown in Fig. 3, these two positions of the block being controlled by the curved groove h^3 in the handle-recess h . The inner edge k^2 of the blank conforms to the shape of the main mold-cavity, and its outer face k^3 corresponds to the inner shape of the handle a of the glass article when the same is expanded within the mold, and as the air expands the blank the handle portion a of the blank is forced outwardly in the handle-recess h , and the body of the blank presses against the block k and forces it against the handle portion a of the blank and enables it to press against said handle portion and shape it in the handle-recess, while the inner face k^2 of the block shapes the body of the blank within the handle portion of the blank. I prefer to employ two such blocks, one hinged to each mold-section, as more fully shown in Fig. 4.

I will now describe the preferred form of the blowing apparatus, stating, however, that any suitable blowing apparatus may be employed, that illustrated having the advantage that the air-pressure necessary to expand the blank is generated by hand-power in each machine, and the necessity of a separate air-compressing plant is overcome. The standard D has at its upper end a socket or guide d , and passing through the same is the shaft d' , which carries the hollow piston i at the base thereof, the shaft d' being held at any desired position in the socket d by set-screws d^2 . Fitting around the piston is the

cup or cylinder l , which has at the upper end thereof the stuffing-box l' , which forms an air-tight joint with the shaft d' , so confining the air when the cup is brought down around the piston. This piston carries the mouthpiece e , fitting down onto the blow-mold b , and to form an air-tight joint with the glass blank A therein I employ a yielding non-combustible packing-ring e' , formed of suitable material, such as asbestos, which forms an air-tight joint with the blow-mold or the top edge of the blank. This mouthpiece e is secured to the base-plate e^2 of the hollow piston i , which fits within the cup or cylinder l and has the central passage i' and above the same the skeleton bracket i^2 , secured directly to the shaft d' and connected by bolts to the base-plate e^2 , so as to permit the passage of air through the skeleton bracket and central passage i' , and thence into the article to be blown. The packing-ring m is clamped between the base-plate e^2 and the bracket i^2 and has a cup portion m' , forming a tight joint with the cylinder l . For the blowing of articles having the upwardly-extending portions or lips within the outer edges or flange, such as the lip a' of the glass blank shown, I employ a tube n , depending from the plate e^2 within the mouthpiece e and passing down into the blank below the upwardly-extending portion or lip a' of the article, so as to carry the air down below said lip and prevent it from acting directly on same or disturbing the same in the blowing operation.

Any suitable mechanism for forcing down the cylinder l may be employed, that shown in the drawings being the hand-lever p , mounted on the standard D at p' and carrying the weight p^2 at its inner end to counterbalance the lever and the cylinder carried thereby. The hand-lever is bifurcated so as to pass around the stuffing-box l' , and the two arms p^3 thereof carry links q , which engage with lugs q' on the upper end of the cylinder l , the links being connected to the hand-lever and said lugs by pivoted joints to permit of the swinging of the lever on its pivot and provide for the direct vertical movement of the cylinder or cup l on the shaft d' .

In practicing my invention with the apparatus above described and in forming a molasses-pitcher or like article, such as illustrated in the drawings, the operation is as follows: The blank A is first pressed to shape by the usual pressing operation, the blank, such as shown in Fig. 2 of the drawings, being formed, and that blank while still in a plastic condition is then removed from the mold and placed upon a base b' in the blow-mold, and the blow-mold is closed thereon, the blow-mold fitting around the flange or foot a' of the blank and around the neck a^2 thereof and the pivoted block k entering within the handle a thereof. By turning the sleeve e' the blow-mold is then raised by the reciprocating block e and is forced into contact with the mouthpiece e of the blowing apparatus,

so as to form a tight joint between the mouthpiece and the mold or the upper edge of the pressed blank, preferably with the upper edge of the pressed blank, and by the means of the non-combustible packing-ring e' . In this operation the tube n enters within the blank, below the lip a^4 thereof. The operator then grasps the hand-lever p' and forces down the cup or cylinder l around the piston i , which compresses the air within the said cylinder and forces it through the bracket i' and central passage i' and through the tube n into the pressed blank, carrying the air below the lip a^4 of the pressed blank, so that it is not affected by the blowing operation. The air under compression expands and forces the blank outwardly, so as to conform it to the shape of the main matrix of the blow-mold, and in so doing the portion of the blank within the handle is also forced outwardly and brought into contact with the pivoted block or blocks k , causing the said blocks to swing on their pivots and forcing the same against the handle portion a of the blank, so as to press the same against the outer edge h' of the handle-recess h and so cause the handle to conform to the outer edge of said recess, while the inner edges of the blocks form the continuation of the main matrix f within the handle portion and so act to mold the portion of the main body of the blank within said handle and bring the same to the desired shape, so finishing the article. By means of the block c the blow-mold is then lowered from the blowing apparatus and is opened and the finished blown article is withdrawn. The cylinder l is then raised to its highest position and the apparatus is ready for another like operation. Instead of forcing down the cylinder l it is of course to be understood that it can be held stationary, and by suitable means the blow-mold can be raised so as to force the piston i upward within the same and cause the necessary compression of air, and this is included within my invention. In this way I am enabled to produce combined compressed and blown articles having pressed lips or upwardly-extending portions above the main body portion thereof. I am also enabled to form such articles with handles on them and to provide for the positive forming of the handle and the molding of the portion of the body within the handle, so as to produce a much more perfect blown article. I am also enabled to generate the necessary air-pressure for blowing the articles by hand, overcoming the necessity of maintaining a separate air-compressing plant, and I am also enabled to generate the proper pressure for expanding the article and regulating the same by hand, and therefore within the control of the operator, overcoming one of the most serious difficulties in the blowing of such articles by compressed air.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The herein-described improvement in the manufacture of hollow glassware, consisting in pressing a hollow blank with a handle portion thereon, and inserting the same within a separate blow-mold having a pivoted block within the handle portion of the blank and expanding the blank by blowing, and in so doing forcing the pivoted block against the handle portion to shape it, substantially as set forth.

2. The combination with a partible blow-mold having a recess therein to receive the handle of the pressed glass blank, and a pivoted block entering within the handle of the blank and adapted to swing as the blank is expanded, substantially as set forth.

3. The combination with a partible blow-mold having a recess therein to receive the handle of the pressed glass blank, and a pivoted block entering within the handle of the blank and adapted to swing as the blank is expanded, the inner edge of said block conforming in shape to the main matrix of the mold, substantially as set forth.

4. The combination with a partible blow-mold having a recess therein to receive the handle of the pressed glass blank, and a pivoted block entering within the handle of the blank and adapted to swing as the blank is expanded, the outer edge of said pivoted block conforming in shape to the inner face of the handle when the block is expanded, substantially as set forth.

5. The combination with a partible blow-mold having a recess therein to receive the handle of the pressed glass blank, a pivoted block entering within the handle of the blank and adapted to swing as the block is expanded, and a guiding-lug entering a guiding-groove controlling the position of the pivoted block within the mold, substantially as set forth.

6. The combination with a partible blow-mold having in each section thereof a recess to receive the handle of the pressed blank, and a block pivoted in each such recess and adapted to enter within the handle of the blank and swing as the block is expanded, substantially as set forth.

7. In combination with an operating-table, a blowing apparatus having a mouthpiece, a blow-mold, and a vertically-reciprocating block mounted on the table and adapted to force the blow-mold into contact with the mouthpiece of the blowing apparatus, said block being held from turning by a key, and a rotatable sleeve fitting around the block and adapted to raise and lower the same by an inclined groove and pin between the block and sleeve, substantially as set forth.

In testimony whereof I, the said JULIUS PROEGER, have hereunto set my hand.

JULIUS PROEGER.

Witnesses:

JAMES I. KAY,
ROBERT C. TOTTEN.