No. 848,095. PATENTED MAR. 26, 1907.

A. FREDERIKSEN.

BOTTLE FORMING APPARATUS.

APPLICATION FILED MAR. 2, 1904.

Fig. 1.

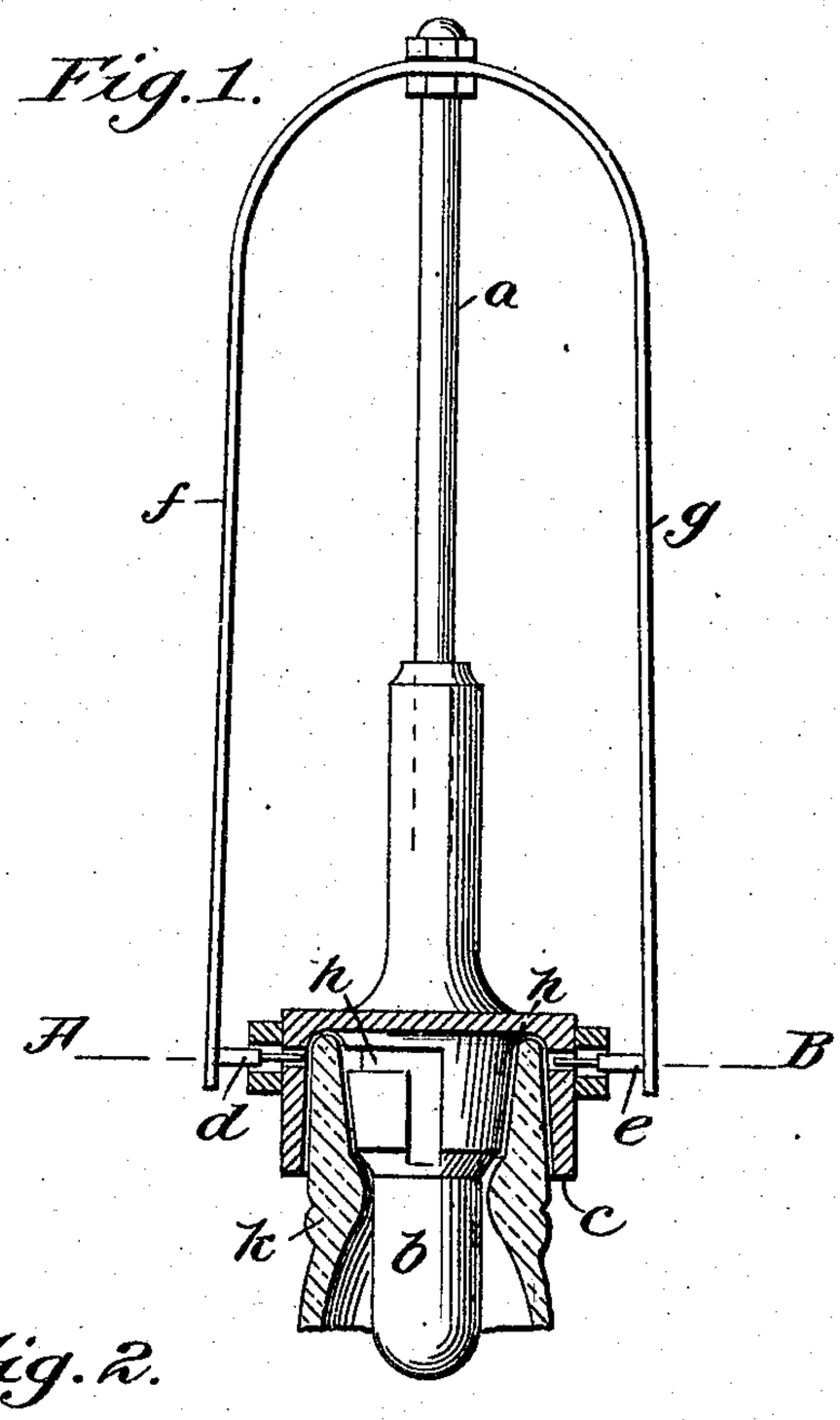


Fig. 2.

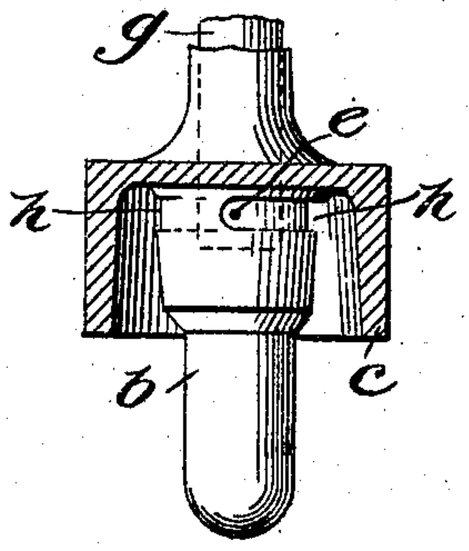


Fig. 3

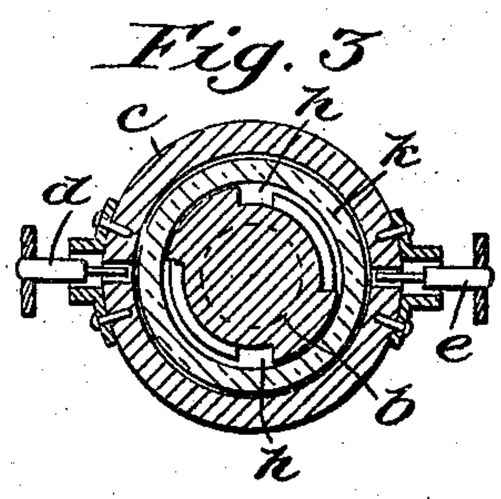
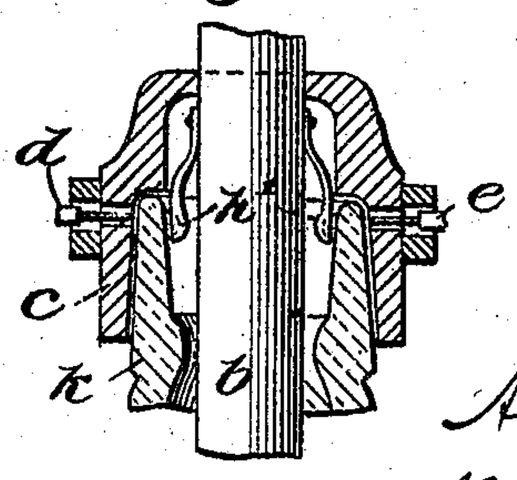


Fig. 4.



Witnesses:
W. Brown
Walter H. Harris

Inventor:
Anton Frederiksen,
By Wm A. de Vos
Attorney.

UNITED STATES PATENT OFFICE.

ANTON FREDERIKSEN, OF COPENHAGEN, DENMARK.

BOTTLE-FORMING APPARATUS.

No. 848,095. Specification of Letters Patent. Patented March 26, 1907.

Application filed March 2, 1904. Serial No. 196,174.

To all whom it may concern:

Be it known that I, ANTON FREDERIKSEN, a citizen of Copenhagen, in the Kingdom of Denmark, have invented certain new and useful Improvements in Bottle-Forming Apparatus, of which the following is a specification, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide a new and improved form of device for forming inwardly-projecting radial points or knobs upon the interior peripheral wall of the orifices of bottles, jars, &c., which will assist in keeping the stopper of the bottle in place against interior pressure and prevent all accidental displacement thereof.

Said invention is fully shown and described in the following specification, of which the accompanying drawings form a part, wherein the same reference-letters designate like or equivalent parts wherever found throughout the several views, and in which—

Figure 1 is a side view of my invention, a portion thereof being shown in central vertical section. Fig. 2 is a view of the lower portion of the apparatus looking from the side of Fig. 1. Fig. 3 is a view of such device from the top in horizontal section on the line A B of Fig. 1; and Fig. 4 is a view in detail, showing a modified form of the inner portion of the mechanism.

Referring to the drawing, the handle portion of the apparatus consists of a central standard *a*, to which is fixed a spring-bow, the branches *f* and *g* of which carry at their bottom end the studs or pins *d* and *e*, which are the formers of the internal projections to be made.

Fixed to the part *c* is the punch *b*, on the two opposite sides of which is formed an angle-shaped groove *h*, that registers with the pins *d* and *e* when the latter are pressed inwardly. After the bottle-head has been turned off and while in the plastic state the apparatus is inserted therein. The pins *d* and *e* having been pressed inwardly in the bottle-head *k* and again released, so that they go back into their sockets, the apparatus is turned in the bottle-neck so that the vertical parts of the grooves *h* register with the formed projections, and the device is then removed from the bottle, this motion forming or finishing the narrow projections of the bottle-neck.

In the modified form of the device shown in Fig. 4 the grooves *h* are omitted, and in place thereof are provided two springs *h'*, having cavities in the lower ends to act as forcing-molds for the projections when the glass to form the same is forced in these molds by the pins *d* and *e*. These springs *h'* are secured at the upper end of the punch *b* and are sufficiently flexible to yield and be drawn out over the projections when the device is withdrawn from the bottle-neck.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a device of the class described, a punch or inner forcing member having angle-shaped grooves formed in the periphery, and means located adjacent to the grooves for forcing the plastic glass of the bottle-neck into a portion of the grooves from the exterior.

2. In a device of the class described, an interior former having angle-shaped grooves formed in the periphery, an exterior former the peripheral wall of which curtains the grooves of the interior former, pins reciprocating through the curtain of the exterior former in registry with a portion of the slots of the interior former and means for normally keeping the reciprocating pins retracted within the curtain-wall of the exterior former.

3. In a device of the class described, an interior former having angle-shaped grooves formed in the periphery, an exterior former the peripheral wall of which curtains the grooves of the interior former, pins reciprocating through the curtain of the exterior former in registry with a portion of the slots of the interior former, means for normally keeping the reciprocating pins retracted within the curtain-wall of the exterior former and a cylindrical punch or member extending from the end of the interior former.

4. In a device of the class described, a feather handle-bar the branches *f* and *g* of which carry the pins *d* and *e* reciprocating through the curtain-wall of the exterior former in such manner as to force the plastic glass of the bottle-neck inward.

5. A machine for forming the necks of protective bottles comprising a mandrel arranged to receive the neck of the bottle, said

mandrel being provided with a depression extending partially around the circumference of the mandrel and means for forcing a portion of the bottle-neck into said depression to form a shoulder extending inwardly beyond the inside surface of the neck, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ANTON FREDERIKSEN.

Witnesses:
HANS PEDERSEN,
A. G. MICHELSON.