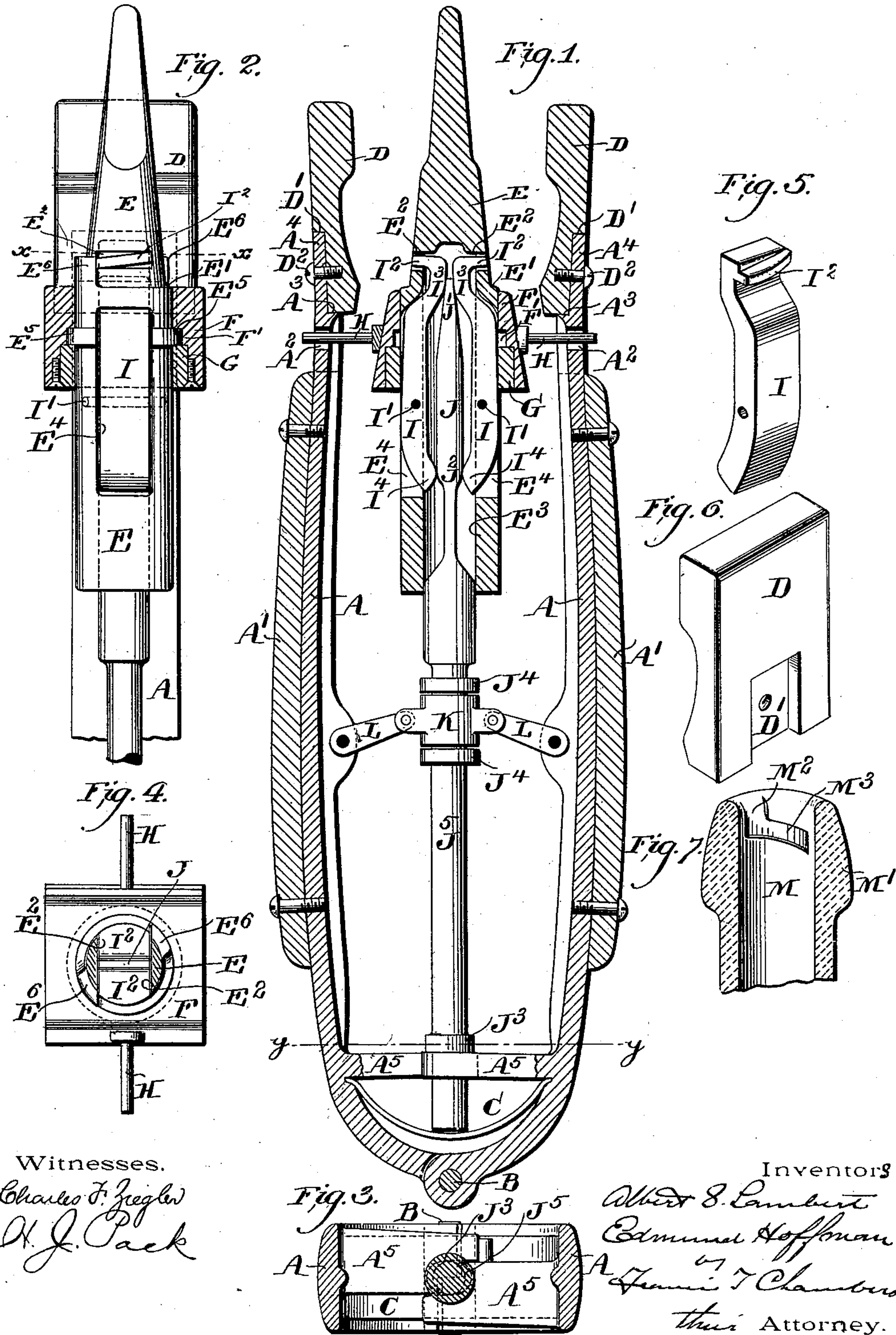


(No Model.)

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TOOL FOR FINISHING GLASS BOTTLES, &c.

No. 568,772

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Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## TOOL FOR FINISHING GLASS BOTTLES, &c.

SPECIFICATION forming part of Letters Patent No. 568,772, dated October 6, 1896.

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*To all whom it may concern:*

Be it known that we, ALBERT S. LAMBERT and EDMUND HOFFMAN, citizens of the United States, and residents of Bridgeton, county of Cumberland, State of New Jersey, have invented a certain new and useful Improvement in Tools for Finishing Glass Bottles, &c., of which the following specification is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

Our invention relates to tools for shaping the mouths or necks of glass bottles, jars, and similar articles, and has for its main object to provide a tool which will provide the mouth or neck of a bottle or similar article of glass or other material with cam-grooves adapted to act as a screw-thread or wedge when a properly-shaped stopper is employed in connection therewith.

Our invention consists, first, in combining a suitable shaping-former for the outside of the neck or mouth of a bottle with a former adapted to project into the neck of the bottle, which latter former is so pivoted that it can turn independently of the outside formers.

Our invention further consists in the arrangement, in combination with the formers, of dies for forming the grooves on the inside of the neck and in various improvements in the details of the device, which will be pointed out hereinafter.

Our invention will be best understood as explained in connection with the accompanying drawings, in which—

Figure 1 is a central longitudinal section of our improved tool. Fig. 2 is a view at right angles to the section taken in Fig. 1 and with the outer clamp and head removed, showing the block F in section. Fig. 3 is a cross-section on line *y y* of Fig. 1. Fig. 4 is a cross-section on line *x x* of Fig. 2. Fig. 5 is a perspective view of one of the dies and its attached lever. Fig. 6 is a perspective view of one of the outer former-heads, and Fig. 7 is a perspective sectional view of a bottle neck or mouth formed and grooved with our improved tool.

A A are clamps hinged at their lower ends and provided with a spring C, which tends

to hold them open in the position shown in Fig. 1. These clamps A A have the former-heads D D secured to them, which heads are adapted, when pressed against a bottle-neck, to shape the outside thereof, the inner face of the heads F being formed with a suitable contour for this purpose. In order to adapt the tool for use with bottles of different conformation, we prefer to form the ends of the clamps with terminal tongues A<sup>4</sup> and shoulders A<sup>3</sup>, which tongues fit into recesses D' in the heads D, while the bottom of the heads rest against the shoulders A<sup>3</sup>, screws D<sup>2</sup> serving to secure the heads to the tongues, as shown.

A<sup>2</sup> A<sup>2</sup> are holes formed in the clamps, for a purpose to be hereinafter described.

The clamps A A are adapted to be held in the hand of an operator, and we prefer to provide them with wooden plates A' where the operator grasps them.

E is a former of any suitable contour adapted to fit in and shape the inside of the bottle-neck. This former we pivot so that it can turn independently of any motion of the clamps and heads D, while preserving a fixed position longitudinally thereto. Preferably we pivot the former E to a head supported on the outer ends of the clamps A, such a head being indicated at F and supported by means of rods H H, which extend into and are guided by the holes A<sup>2</sup> in the outer ends of the clamp-arms.

In the construction shown that part of the former E which extends through the head F is provided with outwardly-extending flanges E<sup>5</sup>, which flanges rest in a circumferential groove F' in the head F and are held in place by means of the annular plug G, which closes the lower edge of said groove. This engagement permits the former E to turn freely in the plug F, which, however, is prevented from turning by reason of the engagement of the pins H with the clamps, and at the same time the former is held securely against longitudinal motion in the head or plug F, which in turn is prevented from moving longitudinally by the engagement of its pins with the clamp-arms.

The lower portion of the former E is made



of tubular form, as indicated at  $E^3$ , openings or slots  $E^2$  extending through the walls of the tube at its upper portion, and slots  $E^4$  being formed below these openings  $E^2$ , as indicated.

5  $E'$  indicates a shoulder on the former  $E$ , against which the top of the bottle rests, and  $E^6$   $E^6$  (see Figs. 2 and 4) indicate projections extending from the shoulder  $E'$  upward to the openings or recesses  $E^2$ , with the side  
10 edges of which openings the projections  $E^6$  register.

$I$   $I$  are levers pivoted at  $I'$  in the slots  $E^4$  of the tubular extension of the former  $E$ , and having at their upper ends dies  $I^2$ , registering with the openings  $E^2$  and of proper con-  
15 formation to form the cam-grooves desired in the neck of the bottle. Preferably we give the levers  $I$  the form indicated in the drawings, that is, provide them with approaching  
20 surfaces  $I^3$  at their upper ends and approaching surfaces  $I^4$  at their lower ends, and in the tubular extension  $E^3$  of the former and between the levers  $I$   $I$  we place a plunger  $J$ ,  
25 having a wedge-shaped upper end, as indicated at  $J'$ , and a projecting lower end, as indicated at  $J^2$ , the said parts being so placed that when the plunger is drawn down, as  
30 shown in Fig. 1, the bulging or projecting portion  $J^2$  will press on the lower ends of the levers  $I$ , forcing them apart and drawing the upper ends together, thus drawing the dies  $I^2$   
35 inward, so that they lie within the former  $E$ . An upward motion of the former forces the projection  $J^2$  beyond the ends  $I^4$  of the levers  $I$ , thus permitting the lower ends of the levers to come together, while the wedge-shaped  
40 point  $J'$ , acting on the portions  $I^3$  of the levers, forces them apart, and thus force the dies  $I^2$  outward so that they extend beyond and outside of the surface of the former  $E$ .

As shown, the plunger  $J$  is secured on the end of a rod  $J^5$ , which rod is so connected with the clamp-arms  $A$  as to be forced upward when the clamp-arms are brought to-  
45 gether and drawn downward when the clamp-arms are allowed to spring apart. As shown, this is effected by providing the rod  $J^5$  with collars  $J^4$   $J^4$ , between which is situated a sleeve  $K$ , coupled by inclined lever-arms  $L$   $L$   
50 to the clamps  $A$   $A$ . The lower end of the lever  $J^5$  passes through a slot formed in the ends of the arms  $A^5$   $A^5$ , extending inward from the lower ends of the clamps  $A$ , and is provided with a collar  $J$ , which rests upon  
55 the top of the arms  $A^5$  and serves as a stop. Thus, for instance, as shown, it prevents the clamp-arms  $A$   $A$  from moving farther apart from each other, as illustrated in Fig. 1. At the same time the lower end of the rod  $J^5$  is  
60 connected and held in position by the arms  $A^5$ , and through the upper end of the rod  $J^5$  and the plunger attached to it a proper alignment is given to the former  $E$ .

65  $M$ , Fig. 7, represents a bottle-neck such as would be formed by the apparatus illustrated in the other figures of the drawings,  $M'$  showing the outer contour of the head,  $M^2$  the

groove formed in the inside of the head by the projections  $E^6$  of the former, and  $M^3$  the cam-groove registering with the groove  $M^2$  70 and formed by the action of the dies  $I^2$ . It will of course be understood that two such grooves, as is indicated at  $M^2$  and  $M^3$ , are formed by the tool represented in the drawings. 75

In a broad sense our tool may be called a "gaffering-tool" and is used in the same way, the plastic neck of the bottle having inserted in it the former  $E$ , after which the clamps are brought together, bringing the heads  $D$   $D$  in 80 contact with the outside of the bottle-neck, the bottle being then rotated so that the formers  $D$   $D$  will give to it the desired outer formation. In bringing the clamps and formers  $D$   $D$  together, however, the dies  $I^2$   $I^2$  85 are forced outward and into the glass, while at the same time the glass is forced around the stationary projections or dies  $E^6$ , and thus the grooves  $M^2$  and  $M^3$  are formed. The former  $E$ , which holds the dies  $I^2$ , being free 90 to rotate freely in the head or plug  $F$  remains stationary with respect to the bottle-neck while it is being rotated between the formers  $D$   $D$ , and when the head is completed, as shown, and the clamps and formers  $D$   $D$  95 permitted to move apart, this movement withdraws the dies  $I^2$  within the former  $E$ , permitting the bottle to be removed from the former  $E$  without disturbing or affecting the grooves formed by the dies. 100

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a tool for finishing the necks of bottles, the combination with the clamps  $A$  of 105 the heads  $D$  adapted to shape the outside of the bottle-neck, a spring adapted to force the clamps  $A$  apart, a head  $F$  supported by and between the clamps  $A$ , a former  $E$  supported by head  $F$  but free to turn therein, said 110 former having a hollow base and slots  $E^2$  therein, levers  $I$  pivoted to the head  $E$  and having dies  $I^2$  attached thereto so as to register with the slots  $E^2$ , a plunger  $J$  arranged to actuate levers  $I$  positively so as to advance 115 and retract dies  $I^2$  and means for actuating said plunger operated by the motion of the clamps.

2. In a tool for finishing the necks of bottles, the combination with the clamps  $A$  of 120 the heads  $D$  adapted to shape the outside of the bottle-neck, a spring adapted to force the clamps  $A$  apart, a head  $F$  supported by and between the clamps  $A$ , a former  $E$  supported by head  $F$  but free to turn therein, said 125 former having a hollow base and slots  $E^2$  therein, fixed dies  $E^6$  formed or secured on the outside of the former  $E$  so as to register with the slots  $E^2$ , levers  $I$  pivoted to the head  $E$  and having dies  $I^2$  attached thereto so as 130 to register with the slots  $E^2$ , a plunger  $J$  arranged to actuate levers  $I$  and advance or retract dies  $I^2$  and means for actuating said plunger operated by the motion of the clamps.



3. In a tool for finishing the necks of bottles, the combination with clamps A having  
formers D secured to their ends of a head F  
supported by and between said arms and hav-  
5 ing a slot F' formed in it, a former E having  
a flange E<sup>5</sup> adapted to engage slot F', dies I<sup>2</sup>  
situated within former E and adapted to pro-  
ject through slots E<sup>2</sup> therein, a rod J<sup>5</sup> sup-  
ported between the clamps A and connected  
10 therewith as described and so as to be moved

longitudinally as the clamps close and open,  
and a plunger J secured to said rod and ar-  
ranged to positively actuate the dies I<sup>2</sup> both  
to open and close them.

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