# W. LANGWELL.

## Machine for Finishing Bottle-Necks.

No. 166,390. Patented Aug. 3, 1875.

Fig. 1.

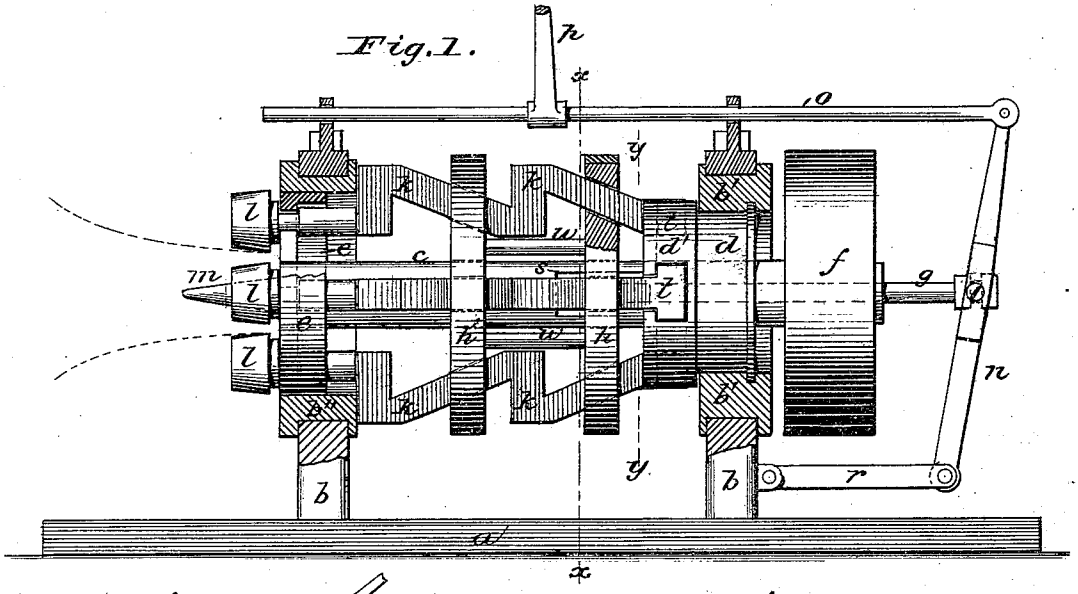



Fig. 2.

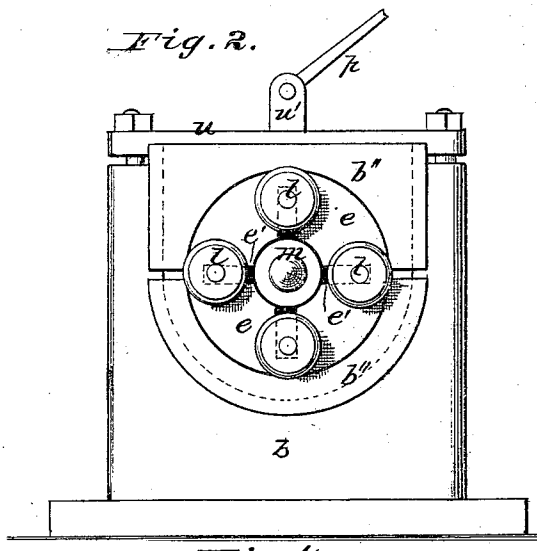



Fig. 3.

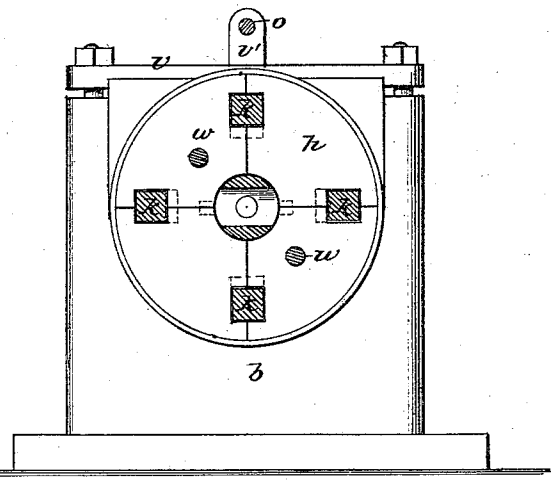



Fig. 4.

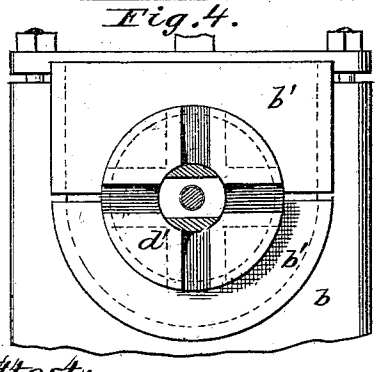
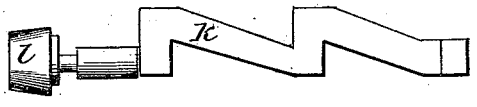



Fig. 5.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN MACHINES FOR FINISHING BOTTLE-NECKS.

Specification forming part of Letters Patent No. **166,390**, dated August 3, 1875; application filed July 24, 1875.

*To all whom it may concern:*

Be it known that I, WILLIAM LANGWELL, of Attercliffe, Sheffield, England, Kingdom of Great Britain, have invented certain Improvements in Machines for Finishing Bottle-Necks, of which the following is a specification:

This invention has for its object more especially the finishing of the neck and mouth of glass bottles, by shaping the neck and forming thereon the mouth, but it is applicable to the shaping and finishing of other glass vessels or receptacles, such as tumblers, gobblets, jars, &c.; and it consists generally in a revolving spindle, carrying revolving adjustable dies, a face-plate, a core or plug, and levers and connections for operating and adjusting the dies, all as hereinafter more particularly described and claimed.

In the drawings, Figure 1 is a side elevation of this invention, a part of the bearings being shown in section to more clearly illustrate the working parts. Fig. 2 is an end view of the same, showing the face-plate, dies, and plug. Fig. 3 is a section of the same through the line *x x* of Fig. 1. Fig. 4 is a partial view in section, through the line *y y* of Fig. 1. Fig. 5 is a separate view of one of the adjustable arms with its pivoted die.

In the various figures the same letters are used to indicate the corresponding parts.

*a* is the bed of the machine, and supports the parts shown in the drawing, and also the forks in which the snap, which carries the bottle or other vessel, is rested while such bottle or vessel is being applied for the action of the dies. *b b* are the standards, provided with boxes *b'* and *b''*, to receive the bearings of the machine. The box *b'* is formed with an annular groove to receive the flange on the drum *d*. *c* is the shaft or spindle, to which the various parts are attached. It receives its motion from the band or gear-wheel *f*, operated by hand or other power, and revolves upon its bearings, drum *d* and face-plate *e*, to which it is rigidly attached. Spindle *c* is slotted at *s*, and is perforated at its center to receive the rod *g*, which rod is operated by means of the connecting-levers *r*, *n*, and *o*, and handle *p*. Upon spindle *c* are arranged two sliding guide-heads, fully shown in front view in Fig. 3 of the drawings, designated by the letters *h h'*, which are secured to each other by the rigid connecting-rods *w w*. The sliding rod *g* is connected with the guide-head *h* through the slot *s*, and, by means of the levers *r n o*, these heads, to the limit of the slot's length, can be slid back and forth upon the spindle. As shown in Fig. 3, these guide-heads have four perforations made diagonally through them, and through these perforations the **Z**-shaped arms are passed. These **Z** or zigzag-shaped arms, as fully shown in Figs. 1 and 5, are at one end provided with **T**-shaped heads, arranged to slide in correspondingly-shaped grooves in the boss *d'*; their other ends pass through slots *e'* in the face-plate *e*, and upon them are hung, so as to turn freely upon their axes, the dies *m*. It is thus plain that these arms *k*, uncontrolled by the guide-heads *h h'*, have a freedom of movement to and from the center of revolution of spindle *c*, and that, by reason of their peculiar conformation, the movement back and forth of the guide-heads *h h'* will cause these arms to recede from and advance toward the spindle *c*, and will open and close the dies *l* about the core or plug *m*. This core or plug *m*, as shown in the drawings, is rigidly secured to the face-plate *e*, and is of a conical shape, but for some purposes it may be more desirable to allow the core or plug freedom of revolution, and its shape can be changed to conform to the purpose and object to which it is applied.

The dies *l*, as shown in the drawings, have at their base, next to the face-plate, an annular square groove, adapted to form a flange upon the neck of the bottle at its mouth. But the form of the dies may be varied to adapt them to the production of any other desired result in the manipulation of bottles or other vessels, and they may be rigidly secured to the arms instead of being hung, as shown. The end of rod *g* is annularly grooved, passed through an elongated opening in lever *n*, and secured in place by a set-screw, which passes into the groove, and allows the rod free revolution. The boxes *b' b''* are secured by metallic plates *u v*, held down by screw-bolts.

The operation of my invention is as follows: A bottle being ready for the action of this ma-

chine, is placed in a snap, the snap rested in the forks provided for the purpose, and the guide-heads, by means of the handle *p* and connecting-levers, thrown back, so as to open the dies and allow the partly-formed bottle-neck to be advanced about the core or plug *m* and up to the face-plate *e*. The dies are then closed upon the bottle-neck. By advancing the guide-heads operated by the handle *p*, held by the operator, motion is communicated to the machine through power applied through the medium of the band or gear wheel *f*, and the action of the rolling-dies upon the bottle-neck will cause it to flare out and against the face-plate *e*, and in a very short space of time form a perfectly-flanged mouth.

It is apparent that the whole mechanism, with the exception of the supporting and retaining parts, and the levers *r n o p*, revolves, and that in order to effect any different purposes in the shaping of bottles or of other glass vessels, which can be accomplished by revolving action, that it will be necessary merely to give different form to the dies and the plug.

I claim as my invention—

1. The combination of a revolving face-plate and adjustable dies, with a central plug or core, substantially as and for the purpose set forth.

2. The combination of the sliding guide-heads *h h'*, with the arms *k* and dies thereto secured, substantially as set forth.

3. The combination of the rod *g*, with the spindle *c*, guide-heads *h' h*, and arms *k*, substantially as and for the purpose set forth.

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