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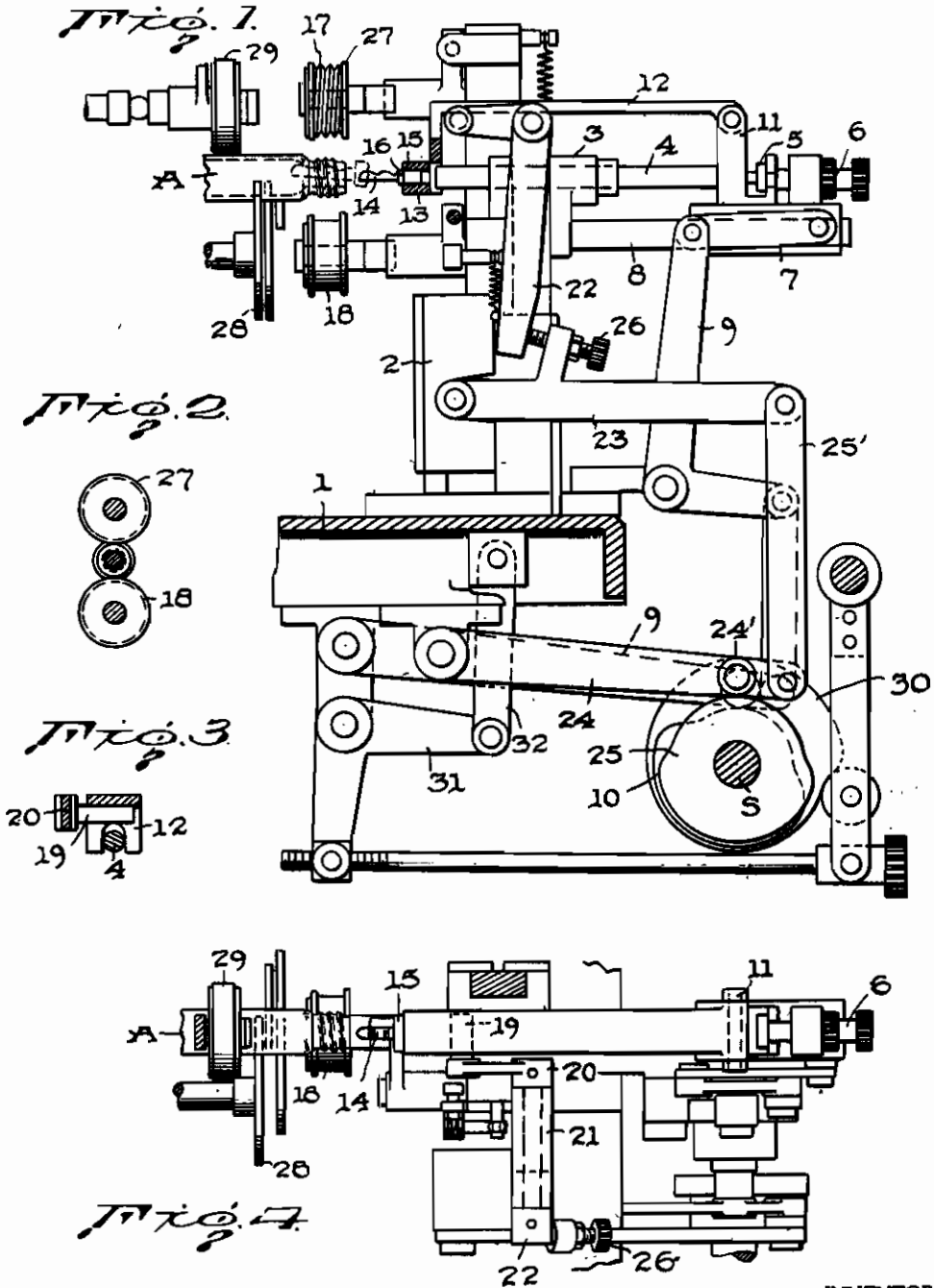
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FORMING NECKS ON GLASS CONTAINERS

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# ALIEN PROPERTY CUSTODIAN

## FORMING NECKS ON GLASS CONTAINERS

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This invention relates to the manufacture of small bottles and vials, and more particularly to the shaping of necks and mouth openings therefor.

Glass containers for essences, the principal constituent of which is a volatile liquid such as alcohol, are fabricated from tubing in large quantities by automatic machines. At the present time many of these containers are provided with threaded necks to receive a screw cap. Unless the seal in the cap bears uniformly on the edge of the mouth opening, the contents of the container will evaporate. If the wall of the neck is thin, it is not unlikely that it will cut into the seal and thus cause sufficient leakage so that the volatile contents escape. Since it is desirable for labeling purposes that the outer diameter of the screw cap be substantially the same as that of the outer diameter of the container, it is obvious that the mouth opening is likewise relatively large. Hence, a large surface of the container and cap is presented for evaporation.

One of the objects of the present invention is so to shape the mouth, and particularly the end surface of the neck, that a relatively wide surface is presented for engagement with the cap seal.

Another object of the invention is the provision of a novel form of shaping tool designed to form a wide wall end face for the neck so that said face not only provides a relatively large bearing surface but is reinforced as well.

A further object of the invention is to provide mechanism for inserting a specially designed finishing tool for shaping the internal wall of the container neck and for moving it to shaping position so that it cooperates with exterior thread and groove forming tools.

Other objects will be apparent from the following description of a preferred embodiment as illustrated in the accompanying drawings in which:

Fig. 1 is a side view partly in section of a preferred embodiment of the present invention;

Fig. 2 is a transverse section of the exterior and interior shaping tools employed in the invention;

Fig. 3 is a partial section taken on the line 3—3 of Fig. 1;

Fig. 4 is a top plan view of the apparatus shown in Fig. 1.

Referring to the drawings, the base of the machine is indicated at 1 and supports a guide member 2 on which is mounted a horizontal guide 3 forming a bearing for a reciprocable rod 4. Rod 4 is connected to a bracket 5 and may be adjusted with respect thereto by means of nut 6. Bracket 5 is slidable on guide 3 and is connected by means of link 7 and bell crank lever 8 and link 7' to a rocker arm 9', on the latter of which is journaled a roller or cam follower 10'. The cam 10 secured to shaft 8 engages the cam fol-

lower 10' to reciprocate bracket 6 on guide 6, thereby moving rod 4 toward and away from the glass containers to be shaped.

On bracket 5 is a vertical standard 11 to which is pivoted arm 12, the forward end of which is forked and adapted to engage rod 4 in its lowered position. Also attached to arm 12 is a plug carrier 13 having a bore 13' adapted to accommodate plug 14 therein. The face 15 of the plug carrier forms a shaping surface for smoothing the end face of a glass container. The plug is provided with notches 16, 16' designed to provide respectively an internal annular reinforcement for a vial and to shape the internal shoulder in the vial. In cross section the plug 14 is provided with a shaping surface which, including the grooves therein, is arcuate and substantially less than 180 degrees, to bases of the grooves being parallel to the curved face of the plug. This permits ready insertion of the plug into the container. The vial, indicated at A, is threaded by means of a threading tool 17, while the portions of the neck on either side of the threads is smoothed by flanges on roller 18. It is also to be noted that threading tool 17 is provided with a flange 21.

Positioned beneath and adapted to engage the lower face of arm 12 is a pin 19 on arm 20, the latter being secured to shaft 21 to which is also fastened arm 22. Arms 20 and 22 are adapted to be rocked by lever 23 pivoted at 23' and having fixed thereto a threaded stop member 26. Lever 23 is connected to rocker arm 24 by means of a link 25', the rocker arm 24 having thereon a cam follower 24'. Cam 25 engages the cam follower to rock arm 24 and lever 23.

The small bottle or vial A is supported on rollers 26 and rotated by means of friction wheel 29. Suitable heating burners (not shown) soften one end of the vial, after which arm 12 is elevated by means of pin 19 to lift the plug into engagement with the inner side of the vial neck. The flanges on rollers 17 and 19 engage the softened end of the vial to form a reduced neck, while the threads on roller 17 form threads on the neck. The plug is so shaped that the groove 16 forms an internal annular rib adjacent the mouth opening, this rib having a thickness somewhat greater than the thickness of the vial walls. Groove 16 is of such depth that the increase in wall thickness of the neck due to reduction in diameter permits the softened glass to fill the groove. Face 15 on plug 13 is aligned with the end radial surface of groove 16 and smooths the end of the neck so that a relatively large seal engaging face is formed at the end of the neck and merges into the annular rib.

While a preferred form of the invention has been described and illustrated, it is to be understood that modifications thereof may be employed without departing from the invention.

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