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G. COBY
MEANS FOR FORMING THE BOTTOMS OF GLASS
AMPOULES OR BOTTLES OR THE LIKE
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Fig. 1.

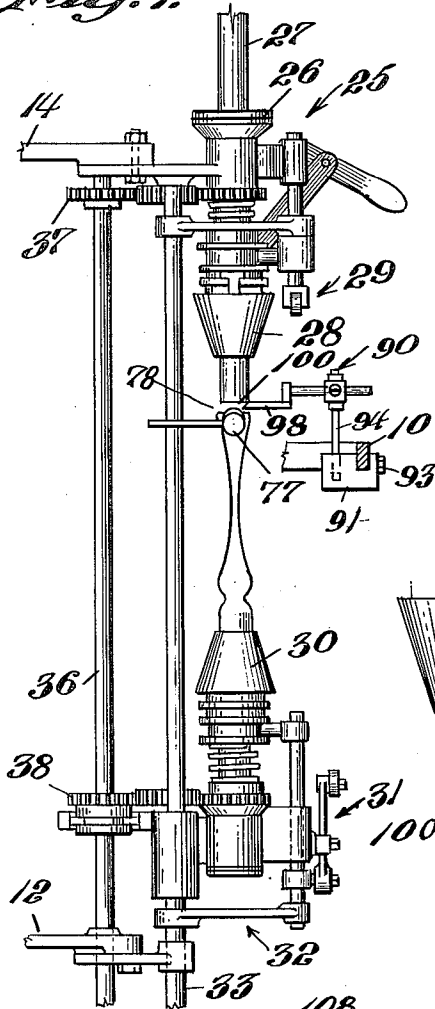


Fig. 2.

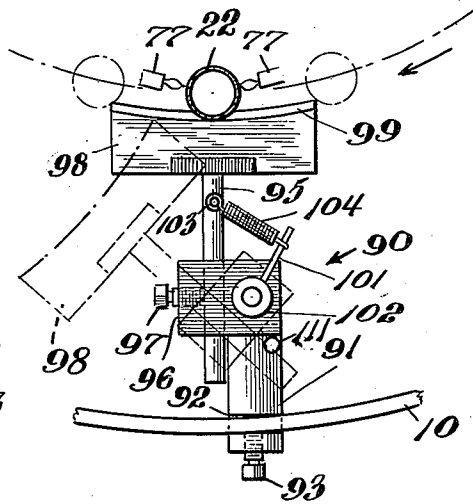


Fig. 3.

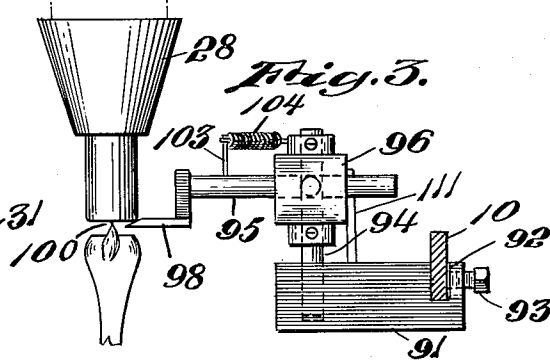


Fig. 4.

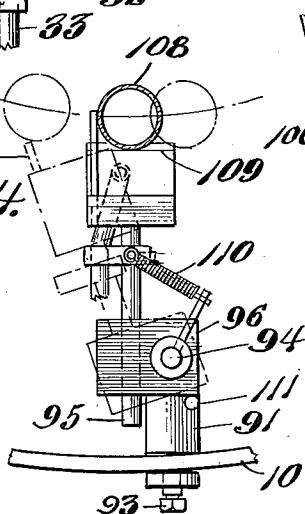
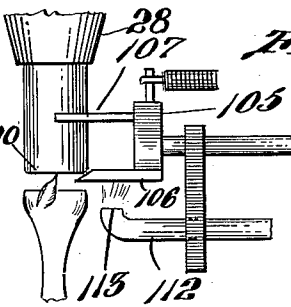


Fig. 5.



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MEANS FOR FORMING THE BOTTOMS OF GLASS AMPOULES OR BOTTLES OR THE LIKE

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Application June 12, 1948, Serial No. 32,693

5 Claims. (Cl. 49—7)

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This invention relates to a glass machine for making glass ampules or bottles for the storage of medicine or chemicals or such liquids as may be desired. This invention is an addition to the machine described in my application, Serial No. 20,625, filed April 13, 1948, to which application reference will be made for further amplification of certain mechanical structures which are referred to herein.

In the manufacture of glass ampules or small bottles when the severing occurs from the supply tube of glass and the glass flows inwardly to form a bottom on the tube for the bottom of the bottle or ampule, it frequently occurs that the bottom is irregular and not at right angles to the axis of the tube so that when the bottle or ampule is formed it will not readily stand up upon a horizontal surface.

One of the objects of this invention is to provide a means for forming the bottom of this tube as the work is severed therefrom and to straighten the bottom formed while the same is still plastic so that the bottom will be in a plane at right angles to the axis of the tube.

Another object of this invention is to utilize the heat which is used for plasticizing and cutting off of the glass tube for the straightening of the bottom without the necessity of a subsequent heating.

Another object of this invention is to provide a means for straightening this bottom which, should there be some fault in the operation of the machine, would not break the tube or work which is being transmitted through the machine.

Another object of the invention is to provide this bottom straightening device on a resilient mounting so that the same may swing out of the way by the pressure of the work should there be an imperfect formation in the operation of the machine.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is an elevation of one of the units of the glass machine which carries the tube and forms an ampule as it rotates once about the machine, the unit being at a position where cut-off of the ampule occurs and illustrating in this location on the machine, the device which is the subject of this invention;

Figure 2 is a top plan view on a larger scale illustrating the mounting of the device which is the subject of this invention and its relation to

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the work, and also showing in dotted lines a position to which it may swing in case of pressure beyond normal against it;

Figure 3 is an elevation of the structure shown in Figure 2;

Figure 4 is a top plan view of a modified form of device; and

Figure 5 is a view similar to Figure 3 but illustrating in addition the use of a cooling device for the plate which forms the bottom tube.

In proceeding with this invention, I mount upon the fixed framework of the machine at a location substantially where the cutting-off of the tube and the forming of the bottom thereof occurs, a plate which will engage the edge of the tube while it is still plastic, so as to straighten the bottom to form it in a plane at right angles to the axis of the tube, while it is still rotating so that the next ampule or bottle to be formed will be provided with a bottom of the desired shape. The numerals which are used in this drawing are comparable to the numerals in my preceding application above referred to, parts of the structure being omitted for the sake of clearness.

With reference to the drawings, 10 designates part of the framework of the machine with relation to which the units which carry the work rotate. These units are formed at the end of spiders 12 and 14 which rotate about a center post of the machine and pass through a cycle of several operations during their revolution about the machine so as to be discharged at another location in finished form. These units are designated generally 25. Each of these units consists essentially of a guide 26 for a glass tube 27, a chuck 28 to grip this glass tube, a cam means 29 for opening and closing this chuck, a lower chuck 30 for gripping the lower end of the ampule, a means 31 for opening and closing the lower chuck and a means 32 for varying the elevation in order to control the height of the chuck 30 which means is operated through rods 33. The chucks which hold the work are rotated by means of shafts 36 having a gear 37 at its upper end for rotating the upper chuck and a gear 38 opposite the lower chuck mounting for rotating the lower chuck. One shaft 36 extends through each of the spiders and is provided with means for rotation, such as the carrier comprising the spiders being caused to rotate by the movement of the spiders about a fixed sun gear.

After the ampule or bottle is formed such as described in my preceding application, flames 77 are utilized for cutting off the ampule or bottle at a

particular location in the movement of the unit in the machine. In severing the work from the tubular supply, the tubular material at the point of severing will draw together centrally and fuse to form the bottom of the next of the said ampule or bottle to be formed. This severing and forming of the said bottom is illustrated in Figure 1 and as this occurs in the passage of the unit about the machine and the flames 77 are still in engagement with the work, the bottom edge of the said bottom will engage a plate which is the subject of this invention, as will now be more fully described, the device being illustrated more fully in Figures 2 and 3.

The frame of the machine comprises a rail which is designated 10 and upon which this device 90 is mounted, there being a bracket 91 which is provided with a slot 92 for engaging the rail and being clamped thereto by a screw 93. This bracket 91 has a rotatably mounted post 94 standing upwardly therefrom upon which is mounted a block 96 carrying an arm 95 and which is adjustable in this block by means of a screw 97. On the end of this arm 95 there is a plate 98 which has beveled edge 99. The plate 98 is positioned and located so that its marginal top edge at the bevel side will be engaged by the edge of the now formed bottom 100 of the tube 27, while the same is being rotated and the said bottom 100 is maintained plasticized by the flames 77. The plate 98 is positioned so that its top surface engaged by the bottom 100 extends substantially parallel to the path of movement of the tube 27 so that as the same is rotatably moved along the said marginal edge of the plate any irregularity in the said bottom will be smoothed out to straighten out said bottom to extend at right angles to the axis of the tube 27. An arm 101 extends outwardly from a collar 102 which is fixed to the post 94 and between this arm 101 and a pin 103 on the arm 95 a spring 104 extends to hold the plate in position against an abutment. Thus, should the ampule, bottle, or tube exert an excessive pressure on this plate, it will swing out of position as shown in dotted lines in Figure 2 so as to prevent breakage of the work. By this arrangement a smooth bottom 100 is provided on the bottom of the glass tube 27 so that the next bottle or ampule formed will be at right angles to the axis of the tube that it may stand upright on a horizontal support.

In some cases instead of providing the plate as just described, the mounting 105 for the plate 106 may have an arm 107 which may be engaged by the work 108 as it passes, and in each case will press the plate out of position by passing over the beveled edge 109 thereof, and forcing the arm 107 to move and swing the plate about the pivot post 94 to extend its corner into the center of the

tube 27 thereafter permitting it to return through the action of spring 110 to again engage another work piece. In this case the stop against which the spring will urge the arm is designated 111.

The plate is apt to attain a temperature hotter than desired, and accordingly a conduit for air 112 is provided to direct air out of its nozzle 113 against the plate to cool the same as operation continues.

I claim:

1. In a glass working machine, a carrier for conveying a tubular material supply, rotatable means for rotating said tubular material as conveyed by the carrier, a flame means for heating the material over an extended path of travel on said carrier for severing work from said supply and for closing the end of said supply, and a normally stationary plate having a surface at right angles to the axis of said tubular material and having a marginal edge positioned to extend into the path of travel of the material but short of the axis thereof and past which the work is conveyed for engaging the formed bottom while said supply in the plasticized condition is being rotated for smoothing out any irregularities in said bottom, means to pivotally mount said plate, a stop on said machine and resilient means to hold said plate against said stop but yieldable to permit the swinging of the plate in the direction of travel of said carrier.

2. In a glass machine as in claim 1 wherein the work-engaging marginal edge of said plate is shaped to follow the path of travel of the work in the machine.

3. In a glass machine as in claim 1 wherein the work-engaging marginal edge of said plate includes a beveled edge.

4. In a glass machine as in claim 1 wherein means are provided to cool said plate.

5. In a glass machine as in claim 1 wherein a blower is provided to direct air against said plate to cool the same.

GEORGE COBY.

REFERENCES CITED

The following references are of record in the file of this patent:

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