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J. DICHTER
APPARATUS FOR SHAPING GLASS TUBING

Serial No.
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BY A. P. C.

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2 Sheets-Sheet 1

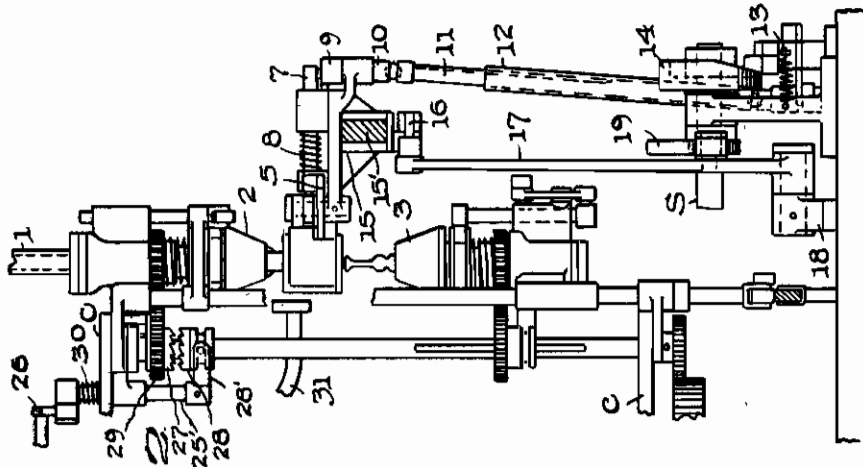


Fig. 2

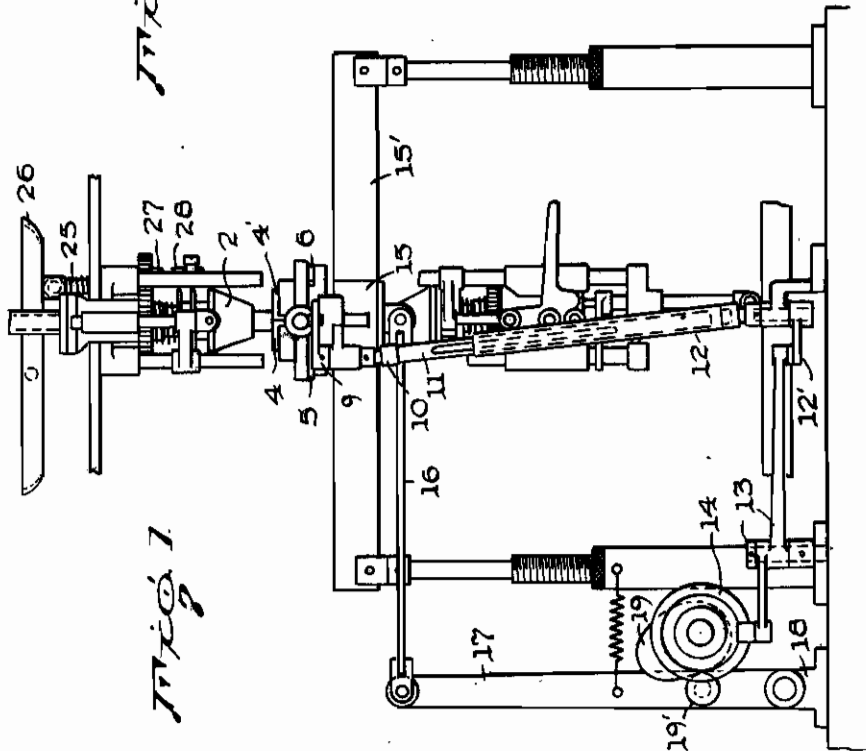


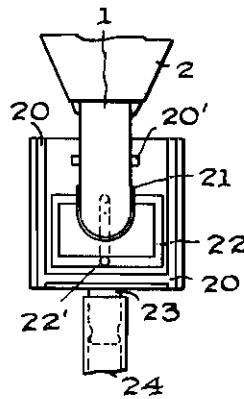
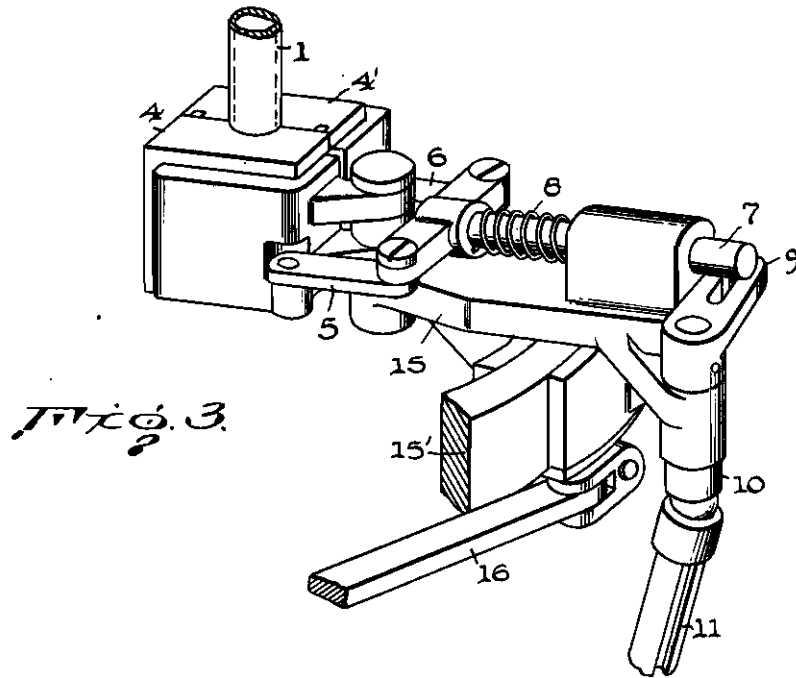
Fig. 1

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APPARATUS FOR SHAPING GLASS TUBING

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The present invention relates to a method and apparatus for shaping glass tubing, and more particularly to the shaping of the tubing by differential fluid pressure on opposite sides of the tubing while the latter is plastic. Specifically, the invention pertains to the use of a shaping mold from which air is withdrawn to create a partial vacuum, the molten glass being drawn into the shaping mold to produce thereon a bottom or other shaped portion.

It has been past practice to shape a portion or portions of tubing by heating the portions to be shaped to soften the glass, and then introducing fluid, usually air, under pressure to the interior of the tube. Positioning the tubing to align it with the air heads is frequently difficult, particularly when the tubes are relatively long. These difficulties are overcome in a large measure by the present invention, one of the objects of which is to provide a novel form of shaping mold and connections thereto from a suction pump.

Another object of the invention is to provide mechanism designed to operate in timed relation with a multiple station shaping machine, such as that illustrated in the patent to Dichter No. 1,962,985, relating to apparatus for shaping ampoules.

Other objects will be apparent from the following description of the invention taken in connection with the accompanying drawings, in which

Fig. 1 is a front view of a preferred form of apparatus embodying the invention, a portion of an ampoule machine being shown to illustrate the relation of the molding apparatus therewith;

Fig. 2 is a side view, partly in section, of the apparatus illustrated in Fig. 1;

Fig. 3 is a fragmentary perspective view of the shaping mold and actuating mechanism therefor; and

Fig. 4 is an enlarged side view of one mold section, showing the end of the tubing therein.

In the drawings which show certain parts of an ampoule making machine similar to that described in the Dichter Patent 1,962,985, the length of tubing is indicated at 1 and is adapted to be held between chucks 2 and 3 which are movable toward and away from each other. In this type of ampoule machine, after the neck portion of the ampoule has been formed by drawing a softened portion of the tube, the formed ampoule is separated from the length of tubing held by the upper chuck. In this invention, the end of the tubing held by the upper chuck is rounded or

otherwise shaped to form a bottom thereon by means of a mold having two halves 4, 4' pivoted on plate 15 and swingable toward and away from each other. The means for swinging the mold halves consists of links 5 connected to cross piece 6, the latter being secured to rod 7 and being urged into mold closing position by spring 8 surrounding rod 7. Pin 7' on rod 7 is engaged by a slotted arm 9 having a swiveled connection at 10 to splined shaft 11 which is keyed to hollow shaft 12.

Pivoted at 13' to the base of the machine is a bell crank lever 13 having a follower 14' thereon. The follower engages cam 14 on shaft 15 which is driven in timed relation with respect to the rotation of the chuck carriers. Lever 13 is connected through arm 12' with hollow shaft 12 so that, as the shaft 12 is oscillated at predetermined intervals, mold 4 will be opened and closed.

Plate 15 supporting mold 4, 4' is slidably mounted on an arcuate guide 15', the radius of the guide being such that the mold will travel in a circular path corresponding to that of the tube holding chucks. Link 16 connects plate 15 with a rocker arm 17 pivoted to bracket 18 on the base of the machine and adapted to be rocked by means of cam 19 engageable with follower 19' on arm 17. In this way the plate carrying the mold is reciprocated back and forth along a circular path so that the mold can move with the chucks as they are indexed from station to station on the machine.

From Figs. 3 and 4 it will be seen that the mold halves are provided with seals 20, 20', the latter surrounding a cold portion of the tubing. The mold is provided with channels 22 connected by means of passages 22' with a suction coupling 23 having a rubber hose 24 thereon connected to a suitable suction pump. Within the mold is a cup-shaped cavity 21 open to channels 22 and having the desired shape to bottom the softened end of tubing 1. In the device shown herein, this cavity is of such contour that a semi-spherical end will be formed in the end of the tubing. It is to be understood, however, that other configurations may be utilized to produce other forms of ends for the tubing.

Since it is desirable that the end of the tubing be shaped when its rotation is arrested, that is, while it is not rotating, clutch means are provided for alternately rotating and stopping the chucks carried by a rotatable carrier C, such as that shown in the Dichter patent No. 1,962,985. As shown in Figs. 1 and 2, cam follower 25 is

engageable with the stationary cam track 26. The cam follower is connected to rod 25' at the lower end of which is a yoke 28' adapted to move dental clutch 28 into and out of engagement with the corresponding clutch member 27 connected to gear 29. Spring 30 normally urges the clutch members into engaging relation with each other. It is necessary, of course, that the portion of the tubing to be bottomed and shaped be heat softened. Burner 31, adapted to be positioned in

heating relation to the tube stock and to travel therewith, softens the glass sufficiently to permit molding thereof.

A preferred embodiment of the invention has been described and shown in the drawings, but it is intended that changes therein may be made. It is, therefore, to be understood that the invention is not limited to the exact details illustrated.

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