A. J. SANFORD.

GLASS FINISHING TOOL.

APPLICATION FILED JUNE 17, 1921.

1,436,825. Patented Nov. 28, 1922.

Fig. 1.

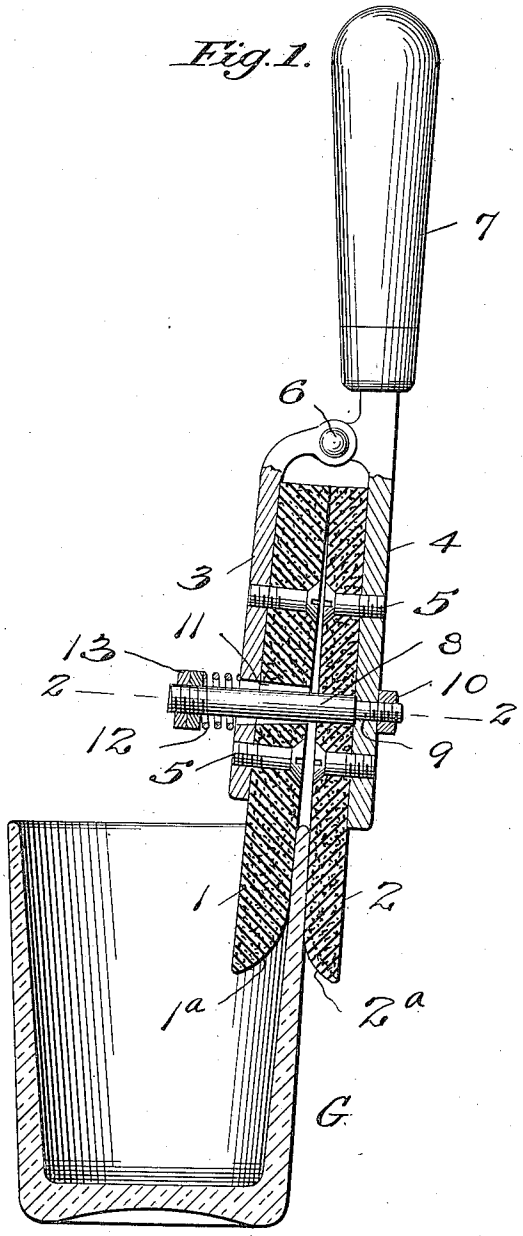


Fig. 2.

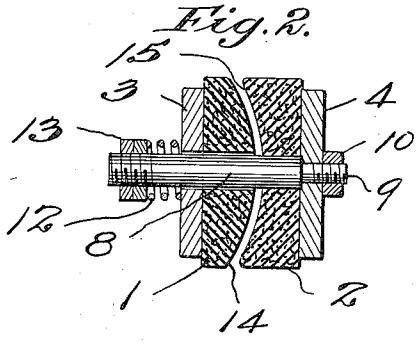
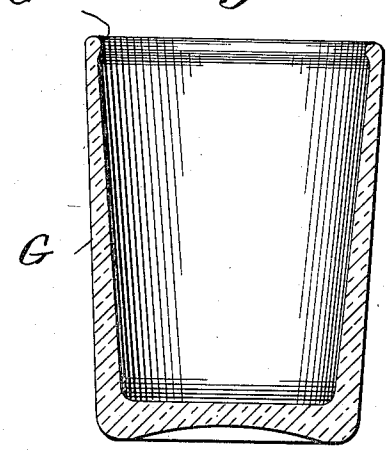


Fig. 3.



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UNITED STATES PATENT OFFICE.

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GLASS-FINISHING TOOL.

Application filed June 17, 1921. Serial No. 478,355.

To all whom it may concern:

Be it known that I, ANDREW J. SANFORD, a citizen of the United States, residing at Newark, in the county of Licking and State of Ohio, have invented certain new and useful Improvements in Glass-Finishing Tools, of which the following is a specification.

The invention relates particularly to that class of tools utilized in finishing cylindrical glass ware, such as tumblers, vases, and similar articles, wherein the walls of the open end article are required to be thinned, and especially for use in eliminating the annular bead at the inner edge of tumblers formed during the process of making the tumbler.

To this end the invention consists essentially in certain novel combinations and arrangements of parts involving a pair of shaping or squeezing fingers for co-action on the walls of the cylindrical article to be thinned, and also in certain novel features of construction wherein a resilient pressure is accomplished and proper adjustment secured for reducing the plastic walls of the glass article to the required thickness.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged according to the best mode I have thus far devised for the practical application of the principles of my invention.

Figure 1 is a view illustrating the tool in section and applied to a tumbler, which also is shown in section, the parts being in operative position for use.

Figure 2 is a transverse view through the squeezing fingers, at line 2—2 of Figure 1, showing the curvature of the adjacent finishing faces or surfaces of the tool, and the resilient connection between the fingers.

Figure 3 is a view in section of a tumbler in the process of making, ready for the application thereto of the tool for thinning its walls and eliminating the inner annular bead at its upper edge.

In the preferred form of the invention as illustrated in the drawings the tumbler or glass G, referred to here specifically as a tumbler for convenience of illustration and description, as shown in Figure 3 is in the process of making, and during this process the tumbler as shown is suitably supported and revolved by approved means, first in one direction and then in the reverse direction. Usually the glass article while so supported is revolved on its axis, say a half dozen times in each direction, and during these revolutions the tool of my invention is applied to the walls thereof for the purpose of bringing said walls to the required thickness and shape in cross section. The material of the walls, while thus being acted on, is maintained by heat in a plastic condition, and the reverse movement of the tumbler prevents the material of plastic glass from running together.

In the utilization of my invention I employ a pair of opposed members or fingers 1 and 2, preferably made of carbon, and formed at their lower ends with flaring or outwardly rounding faces 1^a and 2^a. These fingers, between which the walls of the open end, cylindrical glass article are to be squeezed are carried on metallic plates 3 and 4, which are secured to the fingers by transversely extending screws 5. The plates, with their respective fingers, are hinged together at 6, in such manner as to permit the fingers to be swung apart if required, and the tool is manipulated by hand grasping the handle 7 at the end of the plate 4 or by any power machine.

Spreading of the squeezing fingers, however is limited by the tension bolt 8, which is rigidly fixed to one finger by means of the reduced extension or threaded stud 9 passed through an opening in the plate 4, and firmly fixed therein by means of the nut 10 on the stud.

For the accommodation of the tension bolt, the finger 1 and its plate 3 are slotted at 11 to permit movement of the finger 1 with relation to the opposed finger 2, and a coiled spring 12 is carried on the bolt adjacent the plate 3 and between said plate and the locking or adjusting nuts 13 on the threaded end of the tension bolt. From this construction it will readily be apparent that the space between the two fingers may be decreased or increased by tightening or loosening the nuts 13 on the bolt, and the variations in the tension of the spring will also change the resiliency between the opposed fingers. In this manner the required pressure and distance may be maintained between the fingers to insure proper contact with the plastic walls of the cylinder.

The finishing faces of the two fingers are indicated as 14 and 15 respectively, and in

Figure 2 it will be noted that these faces are concavo-convex, or curved to conform to the outer and inner faces of the walls of the cylindrical glass article or tumbler to be finished. If desired, in order to insure a smooth finishing surface, these curved faces may be treated with a coating of material suitable for the purpose.

In Figure 3 the tumbler G is illustrated with an inner annular bead G′ at its upper open end, caused during the process of heating, which is to be eliminated by the use of the tool; and the walls of the glass are also thinned by the action of the fingers. After the required resiliency and adjustment between the fingers have been secured by turning the tension nuts 13, while the glass or cylindrical article is being revolved on its axis as stated, the tool is applied to the walls as indicated in Figure 1, the concavo-convex faces of the two fingers being held in correct position and with the proper pressure against the inner and outer faces of the cylinder or tumbler. As the tumbler revolves the plastic material of the walls is fashioned to the proper degree of thickness, the bead G′ is eliminated, and the tumbler is given a uniform and symmetrical finish. After completing its work the tool is withdrawn, and may be re-heated while apart from the glass in order that the temperature of the tool may correspond with the degree of heat of the glass, thus eliminating danger of cracking the glass by sudden cooling which would likely occur if the tool were cooler than the glass.

After the two fingers of the tool or squeezer have been properly adjusted it will be apparent that a continuous, uniform pressure, with a resilient action, is maintained on the walls of the revolving cylinder, thus insuring an article of uniform size. From the above description taken in connection with my drawings, it is apparent that I have provided a device which fulfills the conditions set forth as the object and purpose of my invention, and which may be manipulated with facility and convenience for properly performing its functions and giving to the glass cylinder the required uniform and symmetrical finish.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is—

1. A glass finishing tool comprising a pair of hinged fingers, a tension bolt attached to one of said fingers and passed through a slot in the other finger, a spring, and a tension nut on the threaded free end of said bolt for the purpose described.

2. A glass finishing tool comprising a pair of hinged fingers having adjoining concavo-convex finishing surfaces, hinged plates attached to said fingers and a handle on one plate, and resilient means for holding said fingers in adjusted relation.

3. A finishing tool comprising a pair of carbon fingers having adjoining concavo-convex finishing faces, hinged plates attached to said fingers and a handle on one plate, a tension bolt passed through one of said fingers and attached to its plate, the other plate and finger having a slot therein for said bolt, a nut on the free end of the bolt, and a spring interposed between said nut and the adjoining plate.

ANDREW J. SANFORD.