No. 645,788. Patented Mar. 20, 1900.

W. BUTTLER.

APPARATUS FOR MAKING HOLLOW GLASSWARE.

(Application filed July 14, 1899.)

(No Model.) 2 Sheets—Sheet 1.

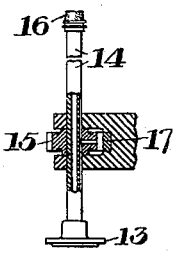

Fig. 1.

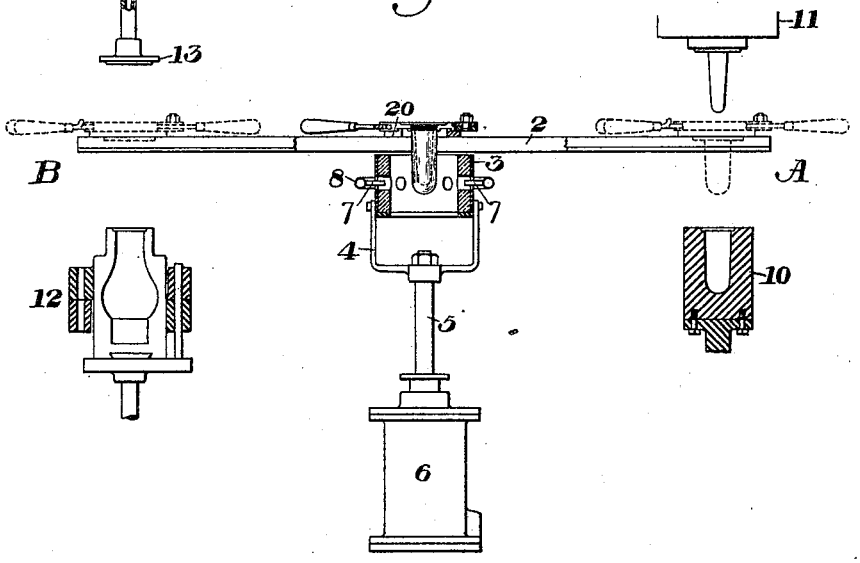

Fig. 2.

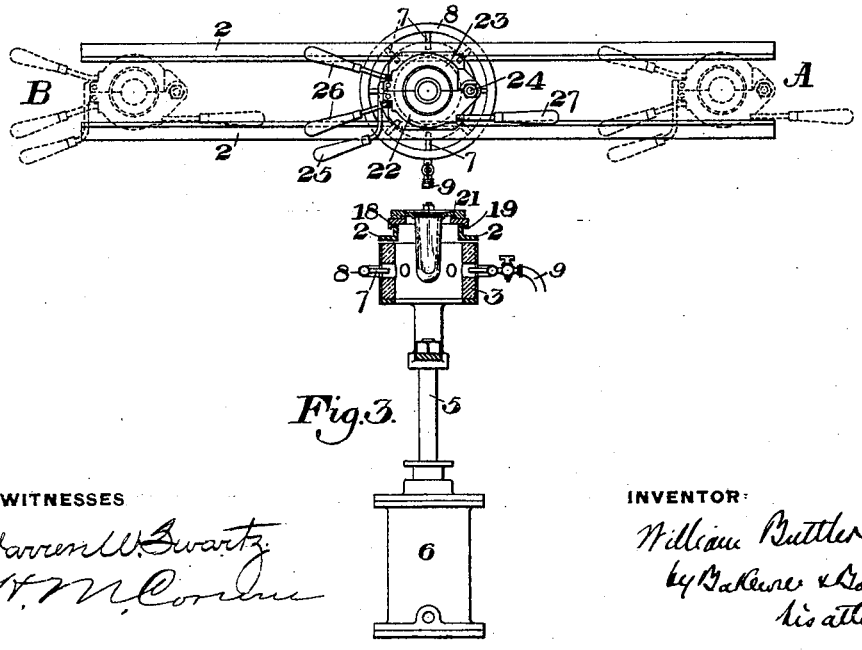

Fig. 3.

WITNESSES

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Fig. 4.

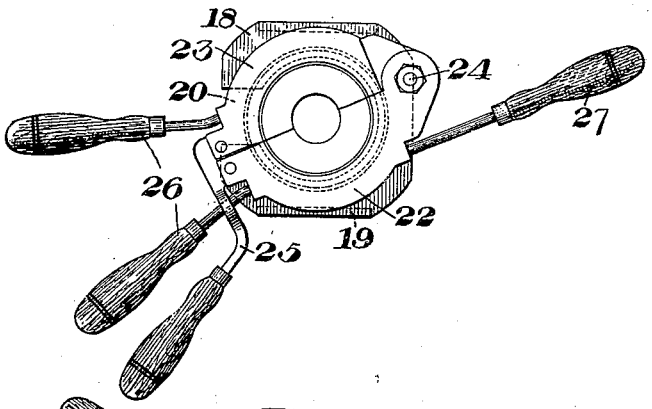


Fig. 5.

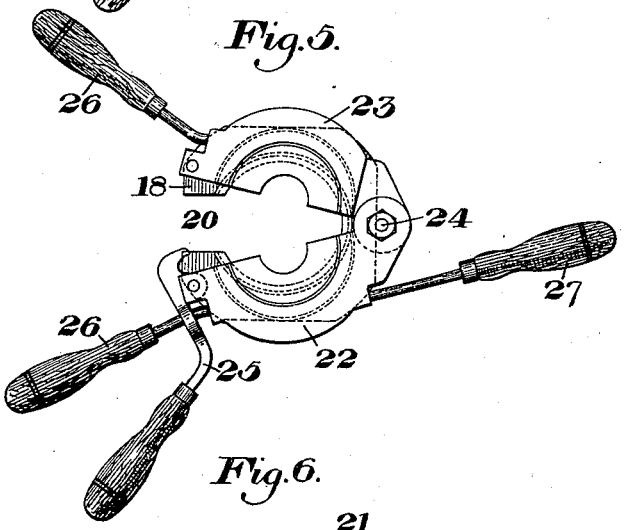


Fig. 6.

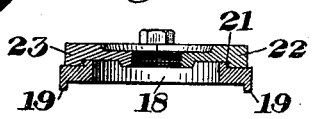
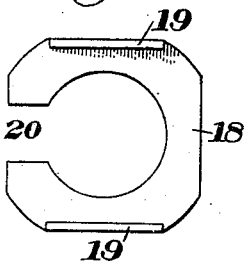


Fig. 7.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM BUTTLER, OF REDKEY, INDIANA.

APPARATUS FOR MAKING HOLLOW GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 645,788, dated March 20, 1900.

Application filed July 14, 1899. Serial No. 723,763. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BUTTLER, of Redkey, in the county of Jay and State of Indiana, have invented a new and useful Improvement in Apparatus for Making Hollow Glassware, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional side elevation of apparatus constructed in accordance with my invention. Fig. 2 is a top plan view. Fig. 3 is a central cross-section showing the heater in raised position. Figs. 4 and 5 are top plan views of the mold-ring and its support, showing the parts in closed and open position, respectively. Fig. 6 is a cross-section of the mold-ring and support, and Fig. 7 is a bottom plan view of the support or slide.

My invention relates to the making of hollow glass articles by pressing a blank, reheating such blank, and then expanding the blank into final form, and it is designed to provide improved apparatus therefor.

In the drawings, 2 2 represent rails of a horizontal track, which rails lead from a pressing-station A to a blowing-station B. Beneath the intermediate portion of the track and registering with the space between the rails is located a hollow burner or furnace 3, preferably made in the form of a ring with refractory lining and carried by a yoke 4, secured to the upper end of the piston 5 of a motive cylinder 6. The burners 7 project inwardly through holes in the furnace-wall and are connected by a common annular supply-pipe 8, to which gas is fed through a flexible pipe 9.

At the pressing-station, 10 represents a press-mold which may be supported on a hydraulic plunger, and 11 is a mold-plunger which may be similarly supported. The mold and its plunger are simultaneously moved toward or from each other by the cylinders or by any other desirable mechanism.

At the blowing-station, 12 represents a blow-mold made in two or more parts which are hinged together, as shown, though any other form of blow-mold may be used.

13 is a rotary blow-head secured to the lower end of a rotary shaft 14, having a spline connection with a pinion 15. The shaft 14 is hollow and connects with a flexible air-supply pipe 16. The pinion may be actuated to oscillate or rotate the blow-head by means of a rack 17 or other suitable connections.

Upon the track rests a support or slide 18 of general ring form, having depending flanges 19, which fit over the rails and guide the slide along the track. One side of the ring is slotted at 20, this slot leading into the hole of the ring, and around the hole is provided an upwardly-projecting annular flange 21, which is downwardly and inwardly beveled in its outer face.

The mold-ring is made of two parts 22 and 23, hinged together at 24 and having in its lower face an annular recess with a beveled outer portion, which when the parts are closed upon the support fits around the upper flange of the support and prevents upward movement of the mold-ring, while allowing it to rotate on the slide. The parts of the mold-ring are locked together by the usual lever 25, and each half of the mold-ring is provided with a handle 26. At the rear portion of one-half of the ring is provided an oppositely-projecting handle 27, by which the slide and ring may be moved along the track.

In using the apparatus, the mold-ring being clamped upon the slide and the slide moved along the track into registry with the press-mold, this mold and its plunger are moved toward each other to press the glass, which is dropped into the mold. The plunger and mold then being retracted, the slide and mold-ring, with the blank depending therefrom, are moved along the track into registry with the furnace. The furnace or heater is then raised by admitting fluid to the cylinder 6 and is thus brought into position to heat the blank or a portion thereof. When the blank is properly heated, the furnace is lowered and the slide moves along the track to the blowing-station and into registry with the blow-mold. The blow-mold is then closed about the blank, and the blow-head being oscillated or rotated is forced down into an upper recess in the mold-ring in which it fits, so as to rotate or oscillate this ring. The blank is thus rotated or oscillated during the blowing operation and a seamless article obtained.

The advantages of my invention result from the use of the vertically movable or adjust-

able burner by which any portion of a long blank may be heated or by which the entire blank may be heated, if desired, and, further, from the construction of the mold-ring and its support, which allows rotation of the blank, while the article may be easily removed after blowing.

Many changes may be made in the form and arrangement of the pressing and blowing apparatus and the other parts without departing from my invention.

I claim—

1. In apparatus for forming hollow glass articles, a track, a mold-ring movable along the track, and a furnace or heater movable toward and from the track, and arranged to heat at least a portion of the blank held in the mold-ring; substantially as described.

2. The combination with pressing apparatus and blowing apparatus, of a track extending between them, a mold-ring movable along the track, a furnace located below and in line with the track, and mechanism arranged to raise and lower the furnace; substantially as described.

3. The combination with a track, of a hollow slide movable thereon, and a two-part pivoted mold-ring having dovetailed revoluble connection with the slide; substantially as described.

4. The combination with a track, of a slide movable thereon, said slide having a hole with a side slot leading thereinto, and through which the article may be removed, and a mold-ring made in separable parts and revolubly mounted on the slide; substantially as described.

5. In apparatus for forming hollow glass articles, a pressing apparatus, a blowing apparatus, a movable mold-ring, transfer mechanism arranged to carry the mold-ring and the blank from the pressing apparatus, and a furnace in the path of the transfer mechanism, one of the two elements (the mold-ring and the furnace) being movable toward and from the other; substantially as described.

6. In apparatus for forming hollow glass articles, a pressing apparatus, a blowing apparatus, a track extending between them, a mold-ring movable along the track, and a furnace located adjacent to the track between the pressing and blowing apparatus, one of the two elements (the mold-ring and the furnace) being movable toward and from the other; substantially as described.

In testimony whereof I have hereunto set my hand.

WILLIAM BUTTLER.

Witnesses:
WILLIAM A. DRAGOO,
EDWARD ABRAHAM.