(No Model.)

H. SCHULZE-BERGE.

MANUFACTURE OF GLASSWARE.

No. 421,621. Patented Feb. 18, 1890.

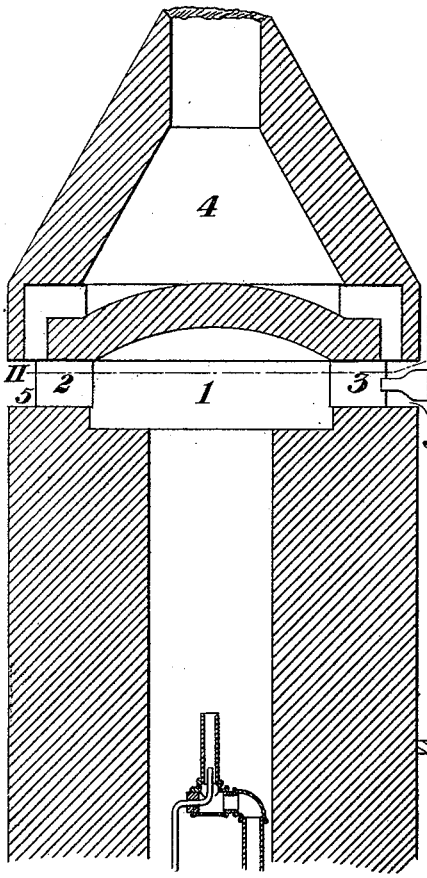


Fig. 1.

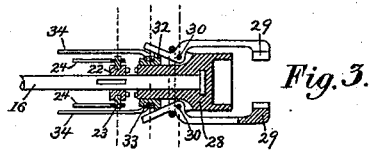


Fig. 3.

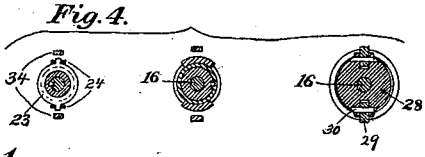


Fig. 4.

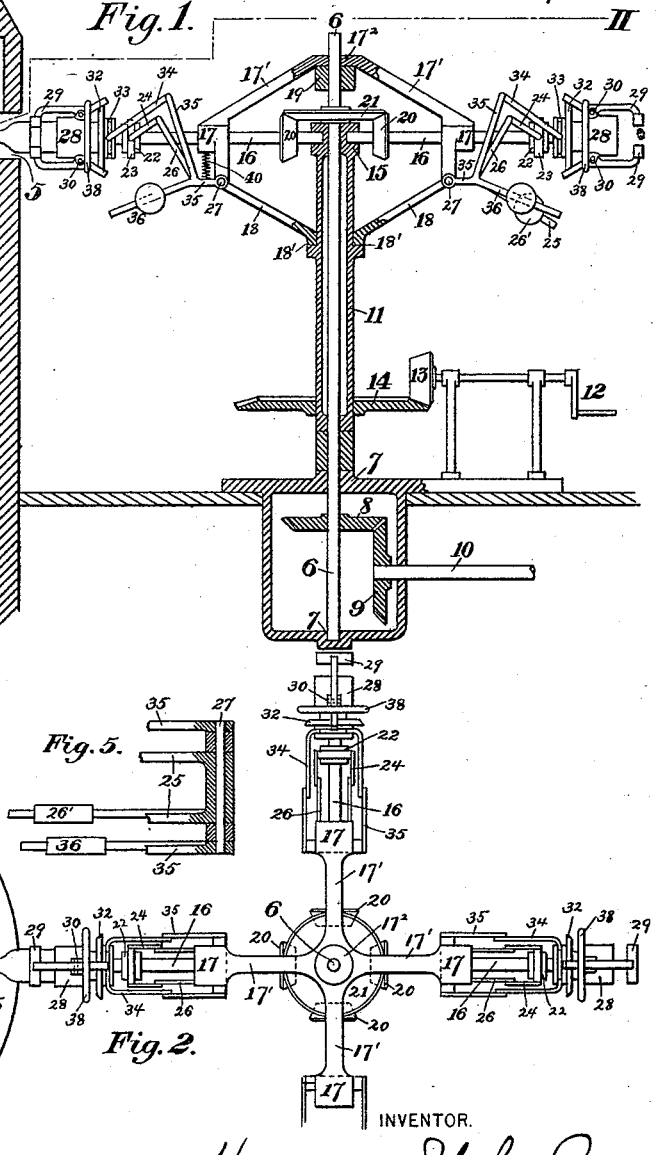
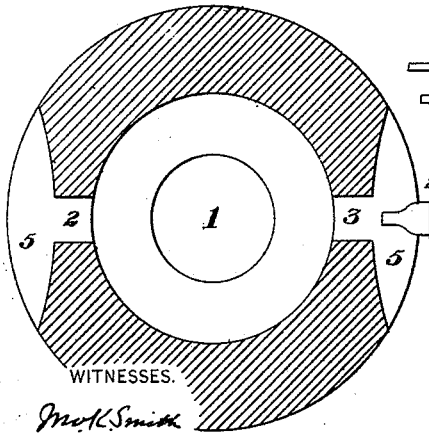


Fig. 2.

Fig. 5.



WITNESSES.

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MANUFACTURE OF GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 421,621, dated February 18, 1890.

Application filed May 6, 1889. Serial No. 309,735. (No model.)

To all whom it may concern:

Be it known that I, HERMANN SCHULZE-BERGE, of Rochester, in the county of Beaver and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for the Manufacture of Glassware, of which the following is a full, clear, and exact description.

My invention relates to an improvement in apparatus for reheating and finishing certain classes of glassware, such as blown bottles, blown lamp-chimneys, and the like.

My improved apparatus is represented in the accompanying sheet of drawings, in which—

Figure 1 is a vertical section through the glory-hole of the furnace and the devices for supporting and revolving the glass articles. Fig. 2 is a horizontal section on the line II II of Fig. 1. Figs. 3, 4, and 5 are sectional detail views.

Like symbols of reference indicate like parts in each.

The furnace shown in Fig. 1 possesses the usual fire-place or combustion-chamber 1, from which the gases of combustion pass through side flues 2 and 3 to the chimney 4. Both side flues are provided with openings for the introduction of the glass articles, which openings are constructed differently from those commonly used, in that they allow the glass article to be presented to the gases of combustion by a sidewise motion of the supporting-tools. For such purpose the passage for the introduction of the article forms in the walls of the glory-hole a tangential channel or slot 5, which intersects or connects with the flue or with the combustion-chamber. In front of the place of connection of the slot with the flue or combustion-chamber are located the tools for supporting, revolving, and removing the glass article, which, as represented in Figs. 1 and 2, consist of the following devices:

A vertical shaft or axle 6, journaled in the bearings 7, is revolved by means of the gear-wheel 8, deriving power from a gear-wheel 9 on the main driving-shaft 10. A hollow shaft or axle 11 encircles the axle 6, and is revoluble by hand by means of the crank 12 and the gear-wheels 13 and 14. At the upper part of this hollow shaft or axle are four bearings 15 for the ends of four supporting-rods 16, which are preferably swivel-jointed to the bearings 15. The supporting-rods are also journaled in bearings 17, which are held in place by connecting-rods 17′, and are connected at 18′ to the hollow spindle 11 by means of the brace-rods 18. The connecting-rods 17′ are joined to a casting 17^2, loosely resting upon a collar 19, which collar is fastened to the shaft 6. Each of the supporting-rods 16 is provided with a gear-wheel 20, which gears with a gear-wheel 21, fastened upon the vertical axle 6. From this construction it is evident that if the axle 6 is revolving the supporting-rods 16 will also be revolved, and that by revolving the hollow shaft 11 by means of the hand-crank 12 the position of the supporting-rods 16 with reference to the glory-hole will be changed. The gear-wheel 13 is one-fourth the diameter of the gear-wheel 14, and therefore each full revolution of the gear-wheel 13 will bring one of the supporting-rods in front of the glory-hole opening. The outer end or head of each of the supporting-rods is provided with a device for receiving, holding and releasing the article, and also with a device for disconnecting and connecting it with the revolving supporting-rod or with the rotary axle 6. The latter device consists in the following arrangement: A collar 22 slides upon the revoluble supporting-rod 16, and is attached thereto by a key and key-seat. (See Fig. 3.) The collar is provided on its outer side with a groove, in which revolves a ring 23, which at diametrically-opposite points is provided with pins or pivots, to which are connected the links 24, thus forming a yoke, by which the collar can be moved in a direction parallel to the axis of the supporting-rod. The links 24 are connected with the knee-lever 25, which is pivotally joined to the lower part of the bearing 17. The arms 26 of a knee-lever 25 are adapted to be depressed by the weight 26′, thus forcing the collar 22 toward the head of the supporting-rod. The knee-lever 25 passes loosely around the pivot or rod 27, the arms 26 passing on each side of the supporting-rod 16, being connected by a tubular section, to which is also connected the weighted arm of the knee-lever, as shown in Fig. 5.

The collar 22 is provided with teeth or cogs

on the side facing the head of the supporting-rod, so that this collar, in connection with its actuating knee-lever 25, forms a common clutch.

The head of the supporting-rod consists of the casting 28, revoluble around the supporting-rod 16, which is swivel-jointed thereto, as shown in Fig. 3. This casting is provided at its side facing the collar 22 with cogs or teeth, which engage or disengage with the collar 22, accordingly as the knee-lever 25 is raised or depressed. The casting 28 on its outer side is provided with a socket or with an inverted cone, in which rests the foot of the article to be treated. The casting is also provided with catches, which close upon the article resting against it to hold it firmly during its revolutions. These catches are closed and released by the following mechanism: The catches 29 turn pivotally around the pivots 30 on the casting 28 and are outwardly inclined at their end next to the collar 22. Beneath the inclined part of the catches, and sliding axially upon the casting 28, is a collar 32, connected to the casting by a key and key-seat, so that it shall revolve if the casting 28 is revolving. It is caused to slide upon the casting 28 by an arrangement which is similar to the device for operating the collar 22, and consists of the ring or yoke 33 upon the collar 32, the links 34, and the weighted knee-levers 35, pivotally connected to the lower part of the bearing 17. The two arms 35 are fastened by set-screws to the rod 27, to which is also fastened the weighted arm 36. In this way the collar 32 and the collar 22 can be moved independently of one another. The collar 32 carries at its end next to the catches a conical elevation or a conical ring, which is caused by the weighted lever 36 to bear against the inclination of the catches, thereby forcing the latter to close upon the glass article on the supporting-rod. If the lever 36 be raised, the collar 32 is withdrawn from the inclination of the catches and the latter are opened by an encircling annular spring 38, which tends to draw the inclined ends of the catches together.

The weights 26′ and 36 may be replaced by springs placed so as to depress the knee-levers 25 and 35, as indicated by spring 40 in Fig. 1. Weights, however, are more suitable for the purpose, because they allow an adjustable variation of pressure to be exerted by the catches upon the glass article, which is desirable for some purposes, because the article must be held very tightly by the supporting-rod if the shape of the article is to be changed after it has been heated in the glory-hole, while if it is only to be fire-melted on its edge the catches need not be closed with much pressure. In fact, a cylindrical tube, even if it is larger in diameter than the article to be treated, may answer the purpose of a catch or holder if the supporting-rod be made to revolve in a direction somewhat upwardly inclined.

The effect of the apparatus is to feed in at one place the glass articles to be reheated—for instance, bottles on which the necks are to be formed after reheating, or chimneys on which the edges are to be crimped after reheating. To this end I cause the vertical hollow shaft 11 to revolve for one-fourth of a turn, so as to place the glass article in front of the glory-hole. While the first bottle is being heated I attach another one to the next supporting-rod, and when the first is heated I turn the hollow shaft for a further quarter of a revolution, so as to bring the heated bottle in front of the finisher, who has only to insert and close the well-known neck-shaping apparatus, and the bottle, revolving with the supporting-rod by positive power, is thus shaped and at the next quarter of a turn of the hollow spindle may be removed from the supporting-rod by raising the knee-levers 25 and 35. The shaft 6 of course must be rotated continuously, because then the operator can stop the revolution of the article at any time, while it still is held firmly by the catches in a suitable position to imprint a crimping-stamp or a perforating device thereon.

The revolving apparatus may be constructed so as to work through the floor of the combustion-chamber in place of through the discharge-flues for the gases of combustion, and in such case the weighted knee-lever is preferably replaced by a spring-actuated knee-lever, as described before.

In the claims the term "catches" for holding the article is intended (unless otherwise expressly stated) to mean and include any catch, holder, or supporting device which prevents the object from falling, whether it be actually the catch described in the specification, or whether it be but a cylindrical or conical tube, or some other device accomplishing the same function.

I claim—

1. In apparatus for reheating or finishing glassware, a revoluble supporting-rod provided with a head to receive the glass article and with catches for closing in upon and centering the article, and a weighted lever connected to the catches, substantially as and for the purposes described.

2. In apparatus for reheating or finishing glassware, the combination, with the furnace having a glory-hole, of a supporting-rod revoluble in front of the glory-hole and provided with a head to receive the glass article and with catches to center and hold the same, and a revoluble shaft and gearing between the shaft and the supporting-rod, substantially as and for the purposes described.

3. In apparatus for reheating or finishing glassware, a revoluble supporting-rod provided with a head to receive the glass article and with catches to hold the same, and a lever connected to the catches, a revoluble shaft, gearing between said shaft and the supporting-rod, and a clutch actuated by a lever to temporarily disengage the revolving connections between the revoluble head of

the supporting-rod and the revoluble shaft, substantially as and for the purposes described.

4. In apparatus for reheating or fire-finishing glassware, the combination, with the furnace having a glory-hole, of several revoluble supporting-rods, each one provided with a holder for the glass article and journaled in bearings revoluble around a common axle, substantially as and for the purposes described.

5. An apparatus for reheating or fire-finishing glassware, consisting in a glory-hole furnace provided with a glory-hole opening accessible through a slot in the walls constituting an open passage-way for the article to be reheated, in combination with a supporting-rod provided with a holder for the glass article, said supporting-rod being radially movable to and from said slot, substantially as and for the purposes described.

6. An apparatus for reheating or fire-finishing glassware, consisting in a glory-hole furnace and supporting-rods, each provided with a holder for a glass article, said rods being journaled in bearings revoluble around a common axle, and separate gearing to move the bearings of the supporting-rods around the common axle, substantially as and for the purposes described.

7. In apparatus for reheating glassware, the combination, with the furnace, of an upright rotatory shaft having projecting arms provided with holders for glass articles, substantially as and for the purposes described.

8. In apparatus for reheating or fire-finishing glassware, the combination, with the furnace having a glory-hole, of several revoluble supporting-rods, each one provided with a holder for the glass article and journaled in bearings revoluble around a common axle and radiating therefrom, and gearing connecting said rods with the axle, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 22d day of April, A. D. 1889.

HERMANN SCHULZE-BERGE.

Witnesses:

W. B. CORWIN,

THOMAS W. BAKEWELL.