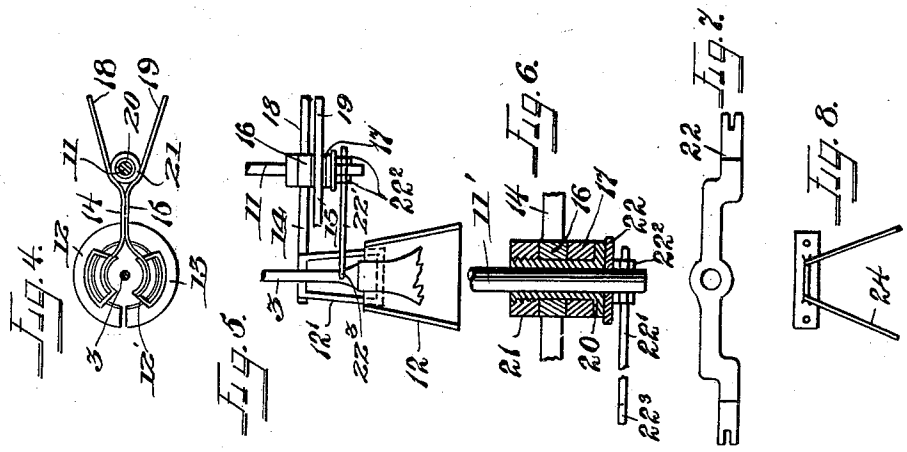
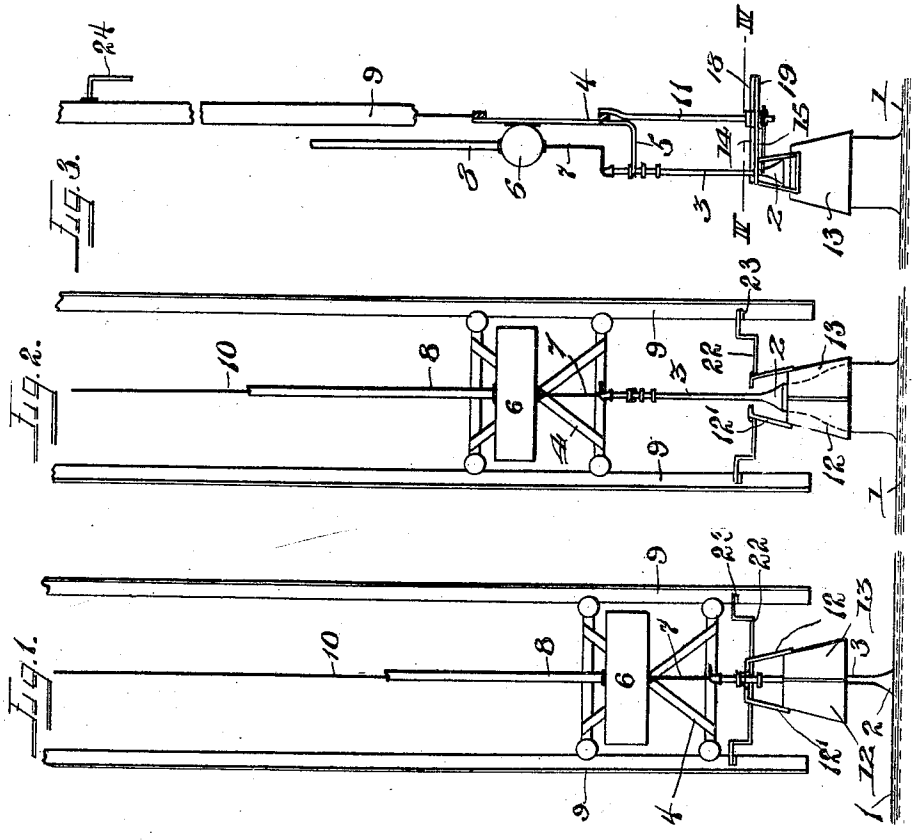
H. G. SLINGLUFF.

GLASS DRAWING APPARATUS.

APPLICATION FILED DEC. 19, 1908.

1,045,901. Patented Dec. 3, 1912.





WITNESSES

Harvey L. Lechner.

J. C. Bradley

INVENTOR

Harry G. Slingluff

by Cathy

Paul Symmestvedt

UNITED STATES PATENT OFFICE.

HARRY G. SLINGLUFF, OF MOUNT VERNON, OHIO, ASSIGNOR TO PITTSBURGH PLATE GLASS COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

GLASS-DRAWING APPARATUS.

1,045,901. Specification of Letters Patent. Patented Dec. 3, 1912.

Application filed December 19, 1908. Serial No. 468,261.

To all whom it may concern.

Be it known that I, HARRY G. SLINGLUFF, a citizen of the United States, residing at Mount Vernon, in the county of Knox and State of Ohio, have invented certain new and useful Improvements in Glass-Drawing Apparatus, of which the following is a specification.

The invention relates to apparatus employed in drawing glass, and particularly to means for securing a proper temperature in the upper portion and neck of glass cylinders during drawing. The invention has for its primary objects; the provision of an improved means of the character specified wherein the heat for the hood employed is applied from the molten glass itself; and the provision of improved means whereby the hood for surrounding the neck of the cylinder is automatically operated and without interference with the bait or the cylinder being drawn. One embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a diagrammatic front elevation of the apparatus, with the bait in the position at which the drawing starts,

Figure 2 is a similar view, but with the cylinder partially drawn,

Figure 3 is a side elevation of the apparatus as shown in Figure 2,

Figure 4 is an enlarged detail section taken on the line IV—IV of Figure 3,

Figure 5 is an enlarged detail section through the heating annulus or hood, and through the means for supporting such hood,

Figure 6 is an enlarged detail section at the lower end of the supporting guide rod,

Figure 7 is a plan view of the stop bar, and

Figure 8 is an enlarged rear view of the mechanism for automatically opening the heating means or hood when it reaches its upper position.

Briefly stated the device comprises a metal hood which is mounted to move with the bait during the drawing operation, and is designed during the starting operation to rest adjacent the glass and be heated to a high temperature. The heat thus stored in the annulus or hood is subsequently radiated against the upper portion and neck of the cylinder as it is drawn, maintaining the glass at a higher temperature than would otherwise be the case, which condition results in less breakage at this point, due to rapid cooling, and greatly facilitates the drawing of long cylinders. A lost motion connection is provided with the carriage of the bait, so that the hood is automatically stopped at the desired position above the surface of the molten glass. Automatic means are also preferably supplied for opening the hood when it reaches its upper position, so that the cylinder and the bait may be withdrawn laterally without interference with the hood.

Referring to the general arrangement of Figs. 1, 2 and 3, 1 is a body of molten glass from which the drawing is to take place; 2 is the bait provided with the hollow handle 3 for the admission of air; 4 is the reciprocatory carriage to which the bait is secured by means of the fork 5, (Fig. 3); 6 is an air cylinder having connection with the end of the bait by means of the pipe 7; 8 is a pipe by means of which air is supplied to the cylinder 6; 9 are the guides upon which the carriage 4 travels; 10 is the cable by means of which the carriage is moved upward; and 11 is a vertical rod (Figure 3) secured to the carriage and upon which the hood is mounted in a manner which will now be described.

The hood is made in two sections 12 and 13 shaped to fit about the upper end of the cylinder as indicated in Figure 2, and composed of iron or other material capable of retaining heat for a considerable period. The sections 12 and 13 are provided with upwardly extending brackets 12′, which brackets are mounted upon bars 14 and 15. The bars 14 and 15 are mounted respectively upon the collars 16 and 17 (Fig. 6) carried by the rod 11, and their rear ends are extended to form the handles 18 and 19 by means of which the sections may be spread apart. The collars 16 and 17 are not mounted directly upon the rod 11, but are pivoted upon the collar 20 and are held in position thereon by means of the nut 21. A pivotal sliding connection is thus made between the sections 12 and 13 and the rod 11, which rod 11 as before indicated is secured to the carriage with which the bait moves. In order that the hood may be suspended above the surface of the glass when the bait descends to the position indicated in Figure 1, a

stop means is provided, which stop means consists of a bar 22 slidably mounted upon the rod 11, and having its ends out-turned to rest upon brackets 23 secured to the guide 9. A rod 22′ passes through the lower end of the rod 11 and is locked in position by the nuts 22^2 as indicated in Figure 6. The front end 22^3 of this rod is forked and is adapted to engage the handle of the bait and steady it. It will be seen that when the hood sections and the collar 20 reach the position of Figures 1 and 6, the stop bar 22 is arrested by the brackets 23, and the lower end of such collar rests upon the stop bar 22, thus maintaining the hood in position above the glass, while the bait, its steady bar 22′ and the bar 11 are free to descend so that the bait contacts with the glass. The sections 12 and 13 maintain the position indicated in Figure 1, until the bait reaches the position indicated in Figure 2, at which time the nuts 22^2 on the rod 22′ (Fig. 6) engage the lower end of the collar 20, and the sections are carried upward at the same rate of speed as the bait and the cylinder attached thereto. While the sections are in their lowermost positions they become heated to a very high temperature, due to their proximity to the molten glass. They may be spread apart if desired, to expose them more thoroughly to the heat from the glass below. A certain amount of this heat is retained throughout the drawing process, as the sections are made of heavy iron, and by their radiation the neck and upper portion of the cylinder are maintained at such a temperature that a long cylinder may be drawn without danger of breakage. When the extreme point of draw is reached, the handles 18 and 19 are engaged by the forked member 24, (Fig. 8), which forked member cams the handles toward each other, thus spreading the sections 12 and 13 apart sufficiently to permit the lateral passage of the bait and cylinder support thereby.

The upper edges of the sections 12 and 13 are preferably turned inward about the handle of the bait as indicated in Fig. 5 so that an upward passage of air between the sections and cylinder is prevented, and the heat from the sections is maintained about the neck of the cylinder being drawn.

It is obvious that the shape and construction of the hood might be considerably modified without departing from the broad invention involved. The lower edge of the hood might be extended up or down within certain limits and the invention is of course not restricted to the drawing of cylinders having a neck and shoulder as illustrated, the terms "cylinder" and "upper portion of the cylinder" being used generically, and the "upper portion of the cylinder" referred to defines that portion of the hollow glass member being drawn which is adjacent the bait whether it be a neck portion, a shoulder portion or the main body portion of the member.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is the following:—

1. The combination with a bait and means for drawing glass cylinders, of a sectional metal hood adjacent the upper portion of the cylinder and mounted to move with the bait, and supported independently thereof and automatic means for opening the hood during its upward movement.

2. The combination with a bait and carriage therefor for drawing glass cylinders, of a vertical supporting rod upon the carriage, a metal hood member for the upper portion of the cylinder mounted slidably on the rod, and means for stopping the downward movement of the said member adjacent the surface of the glass from which the drawing occurs.

3. The combination with a bait and carriage therefor for drawing glass cylinders, of a vertical supporting rod upon the carriage, a pair of metal members for encircling the upper portion of the cylinder slidably and pivotally mounted on the rod, and means for stopping the downward movement of the said members adjacent the surface of the glass from which the drawing occurs.

4. The combination with a bait and carriage therefor for drawing glass cylinders, of a vertical supporting rod upon the carriage, a pair of metal members for encircling the upper portion of the cylinder slidably and pivotally mounted on the rod and having rearwardly projecting handles and means for stopping the downward movement of the said members adjacent the surface of the glass from which the drawing occurs.

5. The combination with a bait and carriage therefor for drawing glass cylinders, of a vertical supporting rod upon the carriage, a pair of metal members for encircling the upper portion of the cylinder slidably and pivotally mounted on the rod and having rearwardly projecting handles and means for stopping the downward movement of the said members adjacent the surface of the glass from which the drawing occurs, and camming means for engaging the said handles and spreading the said members apart during the upward movement of the carriage.

6. The combination with a bait and carriage therefor for drawing glass cylinders, of a vertical supporting rod upon the carriage, a pair of hinged metal members for encircling the upper portion of the cylinder slidably mounted on the rod, means for stopping the downward movement of the

said members adjacent the surface of the glass from which the drawing occurs, and means for automatically opening the said members at a predetermined point during the upward travel of the bait.

7. In a device of the class described, the combination with a carriage, of a removable blow-pipe on said carriage, a hood on said carriage, and means for manipulating said hood toward and from said blow-pipe.

8. In a device of the class described, the combination with a carriage, of a blow-pipe on said carriage; a hood on said carriage; and automatic means for manipulating said hood toward and from said blow-pipe.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

H. G. SLINGLUFF.

Witnesses:
J. C. BRADLEY,
ARCHWORTH MARTIN.