

J. R. SCOHY.

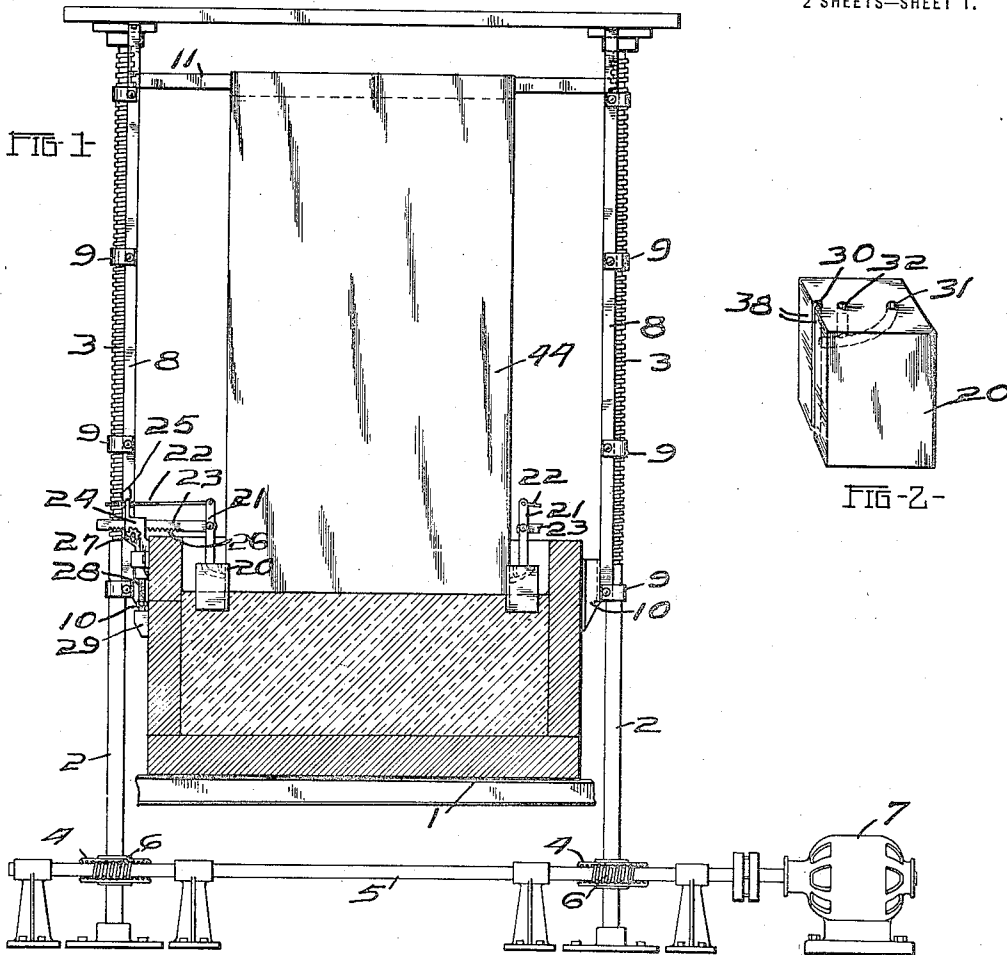
SHEET GLASS DRAWING APPARATUS AND METHOD OF DRAWING GLASS.

APPLICATION FILED JULY 24, 1920.

1,420,868.

Patented June 27, 1922.

2 SHEETS—SHEET 1.



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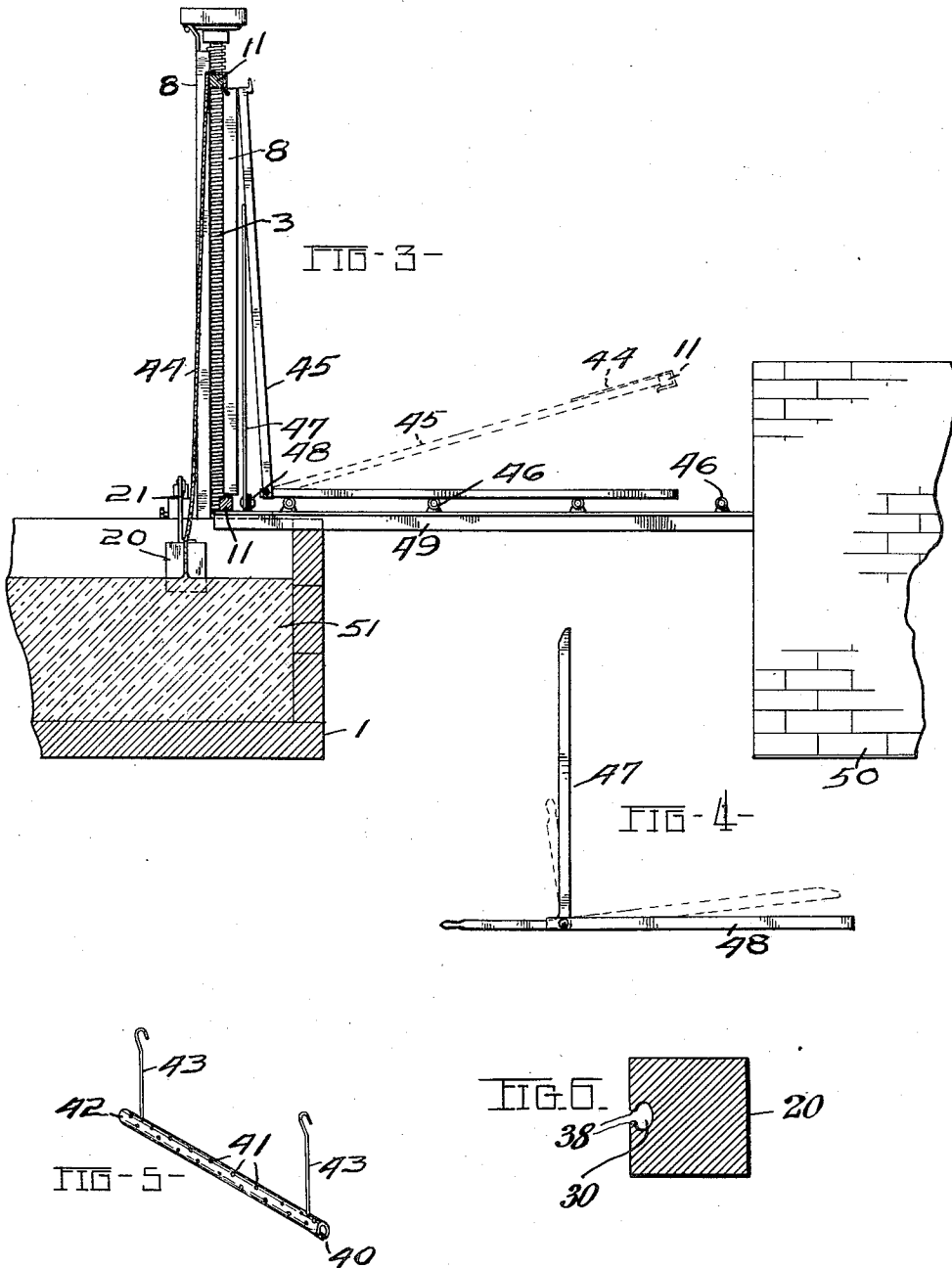
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UNITED STATES PATENT OFFICE.

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SHEET-GLASS-DRAWING APPARATUS AND METHOD OF DRAWING GLASS.

1,420,868.

Specification of Letters Patent. Patented June 27, 1922.

Application filed July 24, 1920. Serial No. 398,798.

To all whom it may concern:

Be it known that I, JOHN R. SCOBY, a citizen of the United States, and a resident of Okmulgee, county of Okmulgee, and State of Oklahoma, have made an invention appertaining to Sheet-Glass-Drawing Apparatus and Methods of Drawing Glass; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention has for its object to provide a means for efficiently and rapidly drawing sheet glass.

The invention may be contained in structures of different forms. To show a practical application of the invention I have selected a structure containing the invention as an example and shall describe it hereinafter. The structure selected is illustrated in the accompanying drawings.

Figure 1 of the drawings illustrates a side view of the structure containing my invention. Fig. 2 illustrates a sheet distending block. Fig. 3 illustrates an edge and sectional view of the structure illustrated in Fig. 1. Fig. 4 illustrates a knife for severing the sheets of glass. Fig. 5 illustrates a bait for starting the operation of the first drawing of the sheet glass. Fig. 6 illustrates a horizontal sectional view of the block illustrated in Fig. 2.

Referring to the drawings 1 is a dog house that communicates with a glass furnace and which is filled with molten glass from the furnace to the level of the glass in the furnace. On each side of the dog house is located a suitable frame which may be mounted in any suitable way. For conventional purposes I have illustrated a pair of tubular members 2 that are suitably secured in position. The tubular members 2 contain screw members 3. Worm-wheels 4 are keyed to the screw members 3 and a shaft 5 provided with worm gears 6 operate upon the worm wheels 4 to rotate the screws 3. The shaft 5 is rotated by a suitable motor means such as the electric motor 7.

On opposite sides of each screw member 3 there are located a pair of guide bars 8 which are secured to each other by suitable

bands 9 and are secured in position also by any suitable means such as the brackets 10. One of the guide bars 8 located on one side of each screw member 3 is shorter than the other guide bar. The lower end of the shorter guide bar is located slightly remote from the horizontal plane of the top of the dog house 1 and the upper end of the shorter guide bar is located below the upper end of the other guide bar. By this arrangement a rod 11 extending over the dog house may be inserted beneath the lower ends of the pair of shorter guide bars 8. The ends of the rod 11 are provided with threaded sectors that mesh with the threads of the threaded members 3 and so that when the bar 11 is inserted beneath the shorter guide members 8 the ends of the rod 11 will mesh with the threaded members 3 and upon rotation of the threaded members 3 the rod 11 will be raised and its ends held in position and guided by the guide members 8 located on opposite sides of the threaded members 3. Inasmuch as the threaded members 3 rotate at the same rate, they being connected through the worm gearing to the shaft 5, the bar 11 will be raised from the dog house and maintained in a horizontal position while it is being raised to the top of the guide members 8. In the operation of the machine glass is first lifted by suitable bait from the dog house and carried over the bar 11 whereupon the bar 11 is raised and consequently a sheet of glass is formed.

The tendency, however, of glass when thus lifted from molten mass is to converge to the axis of the drawn glass, that is, the sides and the edges tend to shape themselves to reduce the cross sectional area of the glass at the surface of the glass from which it is drawn, while thus being drawn. In drawing sheet glass there is a tendency of the side edges to converge towards the vertical axis of the sheet. By my invention is provided a means for maintaining the edges in vertical lines and at the proper distance apart and thus overcome the natural tendency to converge.

By my invention I have provided a pair of blocks 20 formed of baked clay. The blocks 20 will float in the glass, but they are maintained in adjusted positions by means of the bars 21 which are secured to the tops of the blocks 20 by any suitable means. The bars 21 are held in adjusted positions

by means of the bars 22 and 23 which are connected to the bars 21 and to adjustable brackets 24. The bar 22 is threaded and is provided with suitable nuts 25 located on opposite sides of the bracket for securing the bars 22 relative to the brackets 24. The bar 22 operates to tilt the blocks 20 with respect to the bars 23 since the bars 21 are pivotally connected to the bars 23. The bars 23 are provided with racks 26 which may be shifted by suitable pinions 27 and thus the bars 23 may be moved to and from the brackets 24. The position of the blocks 20 with reference to the level of the glass in the dog house may be adjusted by means of the screw lifting members 28 which are threaded in the brackets 24 and abut against the brackets 29. By this arrangement the blocks 20 may be adjusted as to its angular relation to a vertical line and also as to its altitude with reference to the level of the glass in the dog house.

The blocks 20 are provided with channels 30 that extend over the sides that face each other. The channels 30 may be substantially cylindrical in form but have a narrow slot that connects the cylindrical part of the channel with the outside of the block whereby is formed two inwardly extending lips or edges that extend towards each other and are located on opposite sides of the channel 30 and at the surface of the side of the block. The blocks 20 are also provided with passageways 31 and 32 that communicate with each other and with the channel 30. The passageways 31 and 32 are located above the level of the glass and afford a means for permitting the air to circulate through the upper portion of the block and thus keep the upper portion of the block slightly cooler than the lower portion which is heated by being within the molten glass. When the blocks are placed in position and properly tilted and adjusted with reference to each other, it has been found that when the edges of the channels 30 touch the edges of the drawn sheet of glass, that the edges of the drawn sheet of glass will be retained within the channels 30 and that therefore the blocks 20 may be positioned apart to produce the desired width of sheet of glass and maintain the edges in substantially vertical lines and at desired distances apart by the cohesion of the edges of the sheet glass to the glass within the channels 30 or to the narrow slots or to the edges located on each side of the narrow slot that connects the channels 30 with the exterior of the blocks 20.

In Figure 5 is shown a bait that may be used for starting the glass drawing and consists of a tubular member having a slotted opening 40 and a plurality of openings 41. The tubular member 42 may be dipped into the molten glass and then raised. It may be

provided with the hooks 43 whereby the bait may be hooked on to the rod 11 if desired. The blocks are placed in position and so as to draw and retain the edges of the sheet glass in their proper relative positions. When the bait 42 has been raised a short distance it may be drawn over the rod 11 located near the lower ends of the guides 8. The glass may then be cut off between the rod 11 and the bait and the rod 11 raised by the operation of the screw members 3. This will draw the glass from between the blocks 20 until the bar 11 rises to the top of the guide members 8 whereupon it may be slipped upon the upper end of a pivoted frame 45 supported on rollers 46. The rotatable part of the frame 45 may then be rotated down so as to carry and at the same time support the glass until it reaches the main portion of the frame 45 after the rod 11 has been inserted in position beneath the lower ends of the shorter guide rods 8. This will lay the glass over the rod 11 as well as upon the frame 45. A knife 47 may then be operated to shear the glass. The knife 47 coacts with the bar 48 which is secured to the tracks 49 or extensions thereof and to which the knife 47 is pivoted. The glass is sheared between the knife 47 and the bar 48. This leaves a portion of the glass on the bar 11 which is then shifted into position between the threaded members 3 and raised. The overextending portion of the glass falls down onto the side of the bar and thus the upper edge of the glass is hooked upon the bar 11. This bar 11 is raised to the top of the shorter of the guide members 8 and the frame 45 is again placed in position for receiving the sheet glass 44. The operations are repeated in the formation of successive sheets of glass.

Each sheet of glass that is laid upon the frame 45 is carried into the Lehr 50, where it is tempered in the manner well known in the art.

I claim:—

1. The method of drawing sheet glass, which consists in drawing the glass substantially vertical in sheet form and maintaining the edges of the sheet substantially in parallel relation by feeding the glass to the edges through slotted bodies, and turning the glass over a member and shearing the turned portion of the glass at a point near the member and raising the member and the glass to form a succeeding sheet.

2. In a sheet glass drawing apparatus, a means for drawing sheet glass and members having slots for maintaining the edges of the glass in substantially parallel relation, the members having edge portions at the sides of the slots turned towards each other and closely positioned.

3. In a sheet glass drawing apparatus, a means for drawing sheet glass and members

having slots for maintaining the edges of the glass in substantially parallel relation, the edges of each slot turned towards each other and closely positioned, the slotted member having means for keeping the upper ends of the members cool.

4. In a sheet glass drawing apparatus, a bar for receiving the plastic end of a sheet of glass, threaded members for raising the bar to draw the sheet glass from the molten glass, a rack for receiving the bar and the drawn sheet glass and rotating the drawn

glass into a horizontal position, a knife for severing the drawn glass.

5. In a sheet glass drawing apparatus, a means for drawing the sheet glass, members for maintaining the edges of the glass in substantially parallel relation, and means for adjusting the members angularly with respect to the edges of the sheet.

In testimony whereof I have hereunto subscribed my name to this specification.

JOHN R. SCOHY.