No. 760,667. PATENTED MAY 24, 1904.

R. A. B. WALSH.

MACHINE FOR FORMING SHEET GLASS.

APPLICATION FILED FEB. 8, 1904.

NO MODEL.

Fig. 1.

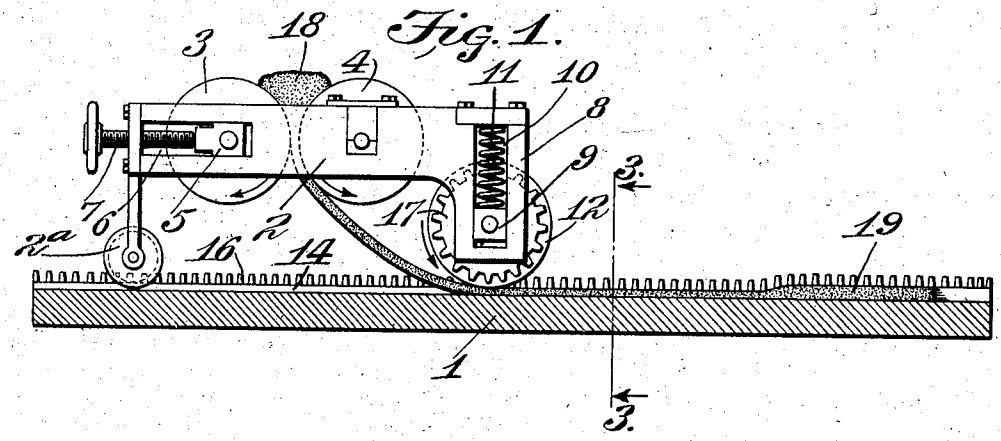



Fig. 2.

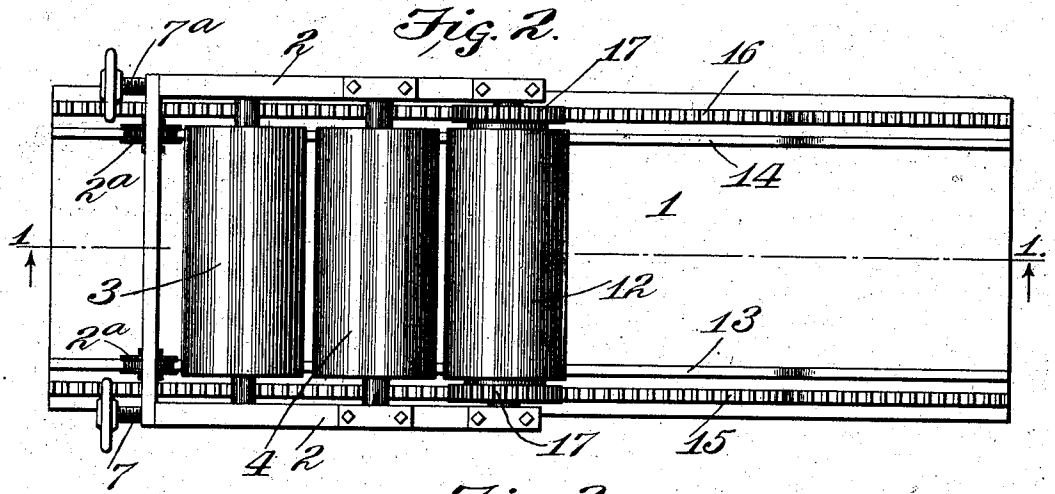
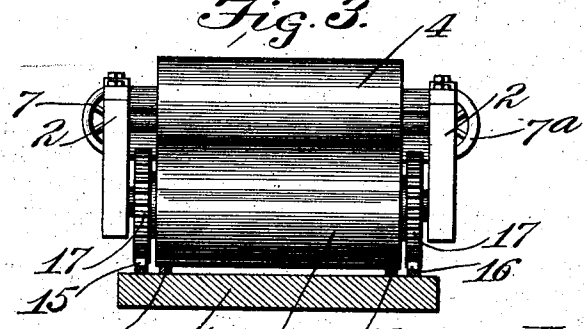



Fig. 3.




Witnesses:
G. A. Pennington
J. H. Brisbrod.

Inventor:
Robert A. B. Walsh,
By Bakewell & Connolly
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 760,667. Patented May 24, 1904.

# UNITED STATES PATENT OFFICE.

ROBERT A. B. WALSH, OF ST. LOUIS, MISSOURI, ASSIGNOR TO MISSISSIPPI GLASS COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

## MACHINE FOR FORMING SHEET-GLASS.

SPECIFICATION forming part of Letters Patent No. 760,667, dated May 24, 1904.

Application filed February 8, 1904. Serial No. 192,507. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT A. B. WALSH, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Machines for Forming Sheet-Glass, of which the following is a full, clear, and exact description, 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, forming part of this specification, in which—

Figure 1 is a vertical longitudinal sectional view through a bed or base of a machine constructed in accordance with my invention on the line 1 1 of Fig. 2, the feed mechanism and presser-roller being illustrated in side elevation. Fig. 2 is a top plan view of the feeding mechanism and presser-roller and the bed or base, and Fig. 3 is a cross-sectional view on the line 3 3 of Fig. 1 looking in the direction indicated by the arrows.

This invention relates to machines for forming sheet-glass; and one of the primary objects thereof is to provide means whereby the sheet will be prevented from buckling or ridging in the body portion thereof.

Another object is to provide means whereby the glass will be initially fed upon the bed in abnormal quantities, so as to provide an anchor for the plate proper, which anchor may be subsequently severed from the finished sheet.

Another object of the invention is to provide means whereby the predetermined quantity of glass may be fed upon the table or bed.

Another object of the invention is to provide a yielding presser-roller.

Other objects and advantages of the invention, as well as the novel details of the construction, will be specifically described hereinafter, it being understood that changes in form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Referring to the drawings, the reference-numeral 1 designates a bed or base upon which the sheet-glass is to be formed. The feed mechanism and the base, table, or bed are relatively movable—that is to say, either has a reciprocal movement with relation to the other; but in the present instance I have illustrated the feed mechanism as being movable, while the base is stationary. The frame 2 can be of any form suitable for the purpose, and it is illustrated as being supported and guided by the rollers $2^a$, movable on the trangs of the base. In this frame are journaled rollers 3 and 4. One of the rollers (designated by the numeral 4) is in a fixed bearing in the frame, while the other roller is in sliding bearings (designated by the numeral 5) slidable in slots 6 in the frame 2, which bearings can be adjusted by either of the adjusting-screws 7 or $7^a$, whereby the relative distance between the two rollers 3 and 4 can be regulated to govern the amout of glass fed therebetween. Carried by the vertical arm 8 of the frame 2 are sliding bearings 9, movable in the guides illustrated as slots 10 and resiliently secured by means of the springs 11, interposed between the ends of the slots and the bearings 9. These bearings 9 carry the presser-roller 12, which evenly distributes the glass over the surface of the bed or base to form the plate or sheet.

As commonly practiced the sheets of glass are formed upon beds, and the thickness thereof is governed by the depth or heights of longitudinally-disposed upstanding ribs, which in the trade are termed "trangs."

13 and 14 designate the trangs carried on the base and which are of varying depths, one relatively deep portion of each trang being disposed near the end of the base, so that the distance between the top edge of the relatively deep portion of each trang and the upper surface of the bed will be greater than the distance between the top edge of the intermediate portion of the trang and the surface of the base. The purpose of providing the trangs with different depths is to permit an abnormal quantity of the glass to be initially fed upon the bed, so as to serve as an anchor for the remaining portion which is to form the sheet proper, and thereby prevent buckling or any inequality in the finished product. In order

that the presser-roller will be rotated as it passes over the bed, I have provided approximately parallel racks 15 and 16, which are carried by the bed and the teeth of which mesh with the teeth of the gear-wheels 17 at the respective ends of the roller 12. These racks are also provided with varying depths to conform to the variations in the trangs heretofore described. When the machine is started, one end of the bed is adjacent to the feed-roller, or at least the feed-roller is superimposed above the edge of the trang, which governs the relative thickness of the glass sheet. The regulating devices 7 and $7^a$ will be controlled to move the rollers 3 an abnormal distance apart from the roller 4 to permit an abnormal quantity of the glass from the source of supply 18 to pass between the rollers and onto the base 1, so that a relatively thick portion will be distributed, as at 19. As the presser-roll 12 reaches the end of the relatively deep portion of the trangs the supply of glass will be restricted, so that only a sufficient quantity will be fed to permit the roller 12 to evenly distribute a layer of glass of uniform thickness upon the base. The relatively thick portion of the glass, as at 19, will constitute the anchor, so that any liability of the portion being formed into the sheet being buckled or otherwise deteriorating will be materially lessened, if not wholly prevented. Inasmuch as the distributing-roller is yieldingly supported in the frame 2, the even distribution of the glass over the surface of the bed will be easily accomplished, and it will be apparent that but little practice will be required for the operator to be able to regulate the governing devices 7 and $7^a$ so that the proper amount of glass will be distributed between the rollers 3 and 4 so as to exactly fill the space between the surface of the bed and the top edge of the trangs 13 and 14. Any suitable mechanism can be used or any means employed for moving the frame and the parts carried thereby and the base relative to each other.

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

1. A machine for forming sheet-glass, having a trang of varying depths; substantially as described.

2. A machine for forming sheet-glass, having a bed provided with a trang of varying depths, the relatively deep portion of the trang being at one end of the bed; substantially as described.

3. A machine for forming glass sheets, having a bed and means for distributing the glass upon the bed in an initially relatively thick state, and in a subsequently relatively thin state; substantially as described.

4. In a machine for forming sheet-glass, a bed having an anchor-receiving portion, and a portion for receiving the glass in quantities of equal thickness; substantially as described.

5. In a machine for forming sheet-glass, the combination with a bed, of trangs on the bed of varying depths, and a feed mechanism having a reciprocating roller coöperating with said trangs; substantially as described.

6. In a machine for forming sheet-glass, the combination with a bed, of trangs on the bed of varying depths, and a feed mechanism having a resiliently-supported roller coöperating with said trangs; substantially as described.

7. In a machine for forming sheet-glass, the combination with a bed, of trangs on the bed of varying depths, and a feed mechanism having a yielding roller coöperating with said trangs; substantially as described.

8. In a machine for forming sheet-glass, the combination with a bed, of trangs on the bed of varying depths, and a feed mechanism having a roller coöperating with said trangs, and means on the bed for positively imparting a rotating motion to said roller; substantially as described.

9. In a machine for forming sheet-glass, the combination with a bed, of trangs on the bed of varying depths, a roller coöperating with said trangs, means on the bed for positively imparting a rotating motion to said roller, teeth carried by the roller, and teeth on the bed for imparting a rotating movement to the roller; substantially as described.

10. In a machine for forming sheet-glass, the combination with a base having trangs of varying depths, feed-rollers having movement relative to each other to feed a relatively large quantity of glass between the relatively deep portions of the trangs and a relatively smaller portion of glass between the relatively shallow portions of the trangs; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 5th day of February, 1904.

ROBERT A. B. WALSH.

Witnesses:
B. F. FUNK,
GEORGE BAKEWELL.