(No Model.) 2 Sheets—Sheet 1.

F. SHUMAN.

APPARATUS FOR EMBEDDING WIRE IN GLASS.

No. 546,196. Patented Sept. 10, 1895.

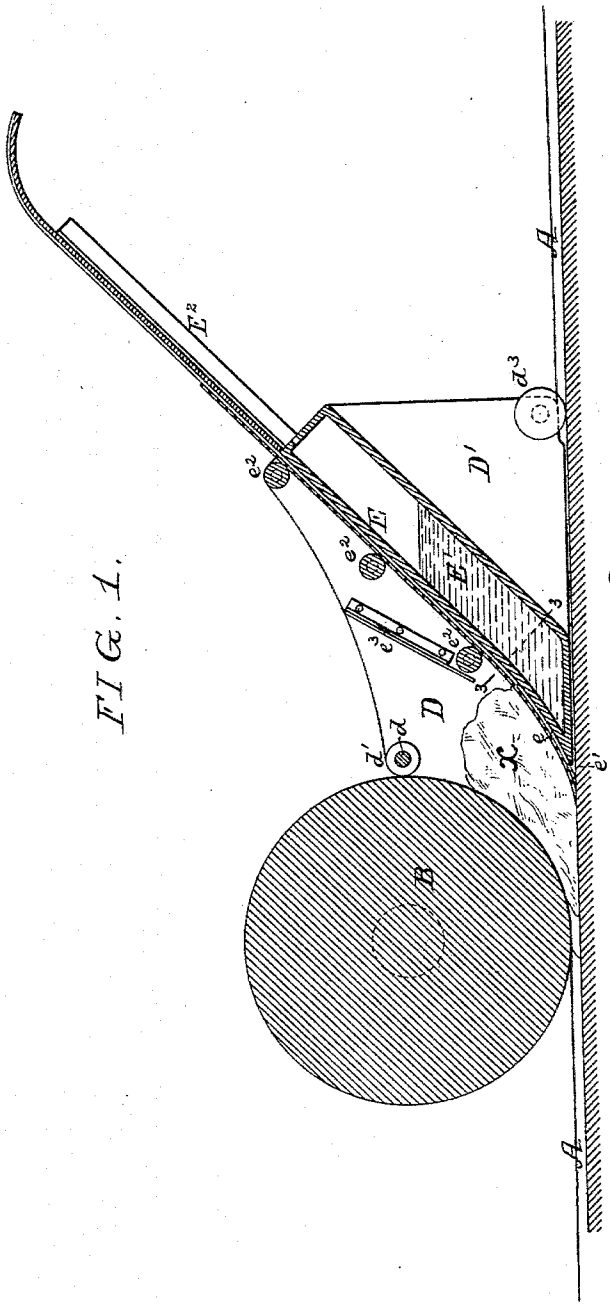


FIG. 1.

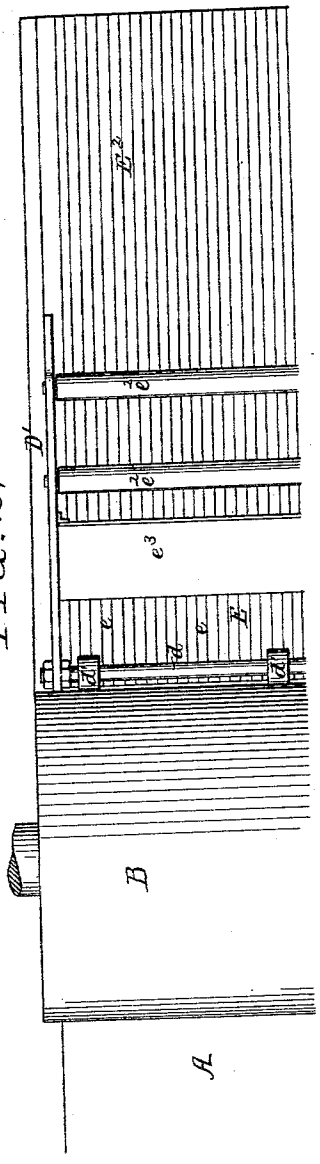


FIG. 2.

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Inventor:
Frank Shuman
by his attorneys
Howson & Howson

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

(No Model.) 2 Sheets—Sheet 2.

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FIG. 4

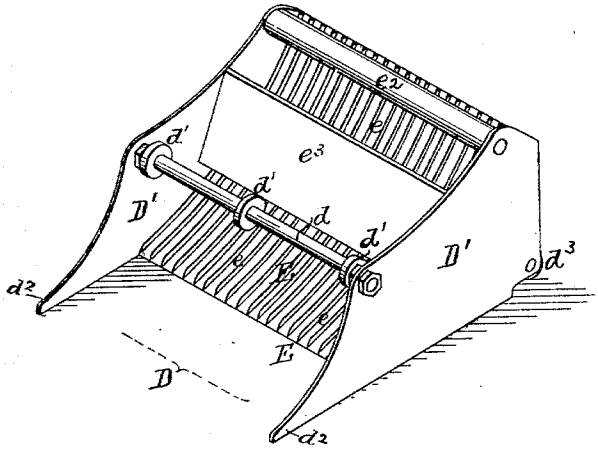


FIG. 3.

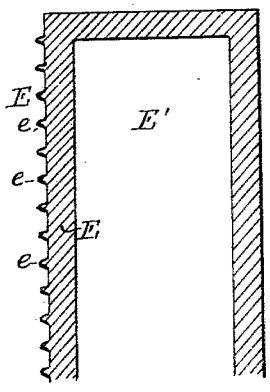


FIG. 5.

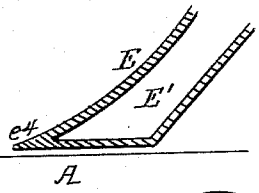


FIG. 6.

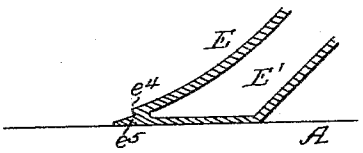
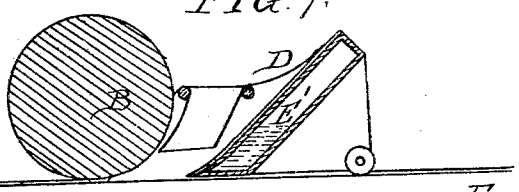


FIG. 7.



Witnesses:
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UNITED STATES PATENT OFFICE.

FRANK SHUMAN, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR EMBEDDING WIRE IN GLASS.

SPECIFICATION forming part of Letters Patent No. 546,196, dated September 10, 1895.

Application filed May 28, 1894. Serial No. 512,654. (No model.)

To all whom it may concern:

Be it known that I, FRANK SHUMAN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Apparatus for Embedding Wire in Glass, of which the following is a specification.

The object of my invention is to embed wire-netting or other metallic sections in glass. This object I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of sufficient of a machine to illustrate my invention. Fig. 2 is a plan view of one-half of the machine. Fig. 3 is a section on the line 3 3, Fig. 1. Fig. 4 is a perspective view of the hopper detached from the machine. Figs. 5, 6, and 7 are views of modifications of my invention.

A is the bed of the machine, of any of the ordinary forms, and B is a roller which may be mounted on a carriage or may be geared to the table by a gear-wheel on the roll and a rack on the table, as in ordinary glass-rolling machines, and the roll may be driven either by hand or power.

The roll is mounted on rails of a height corresponding to the thickness of glass required, or flanges may be formed on the roll for the same purpose.

Adapted to travel in front of the roll on the table is a hopper D into which the glass x is poured. In this hopper is an inclined chute E for the glass, and on the face of this chute are a series of ribs e. These ribs extend preferably from the point e' to the upper end of the chute, but may terminate a short distance above the point, sufficient, however, to allow the glass to pass through the wire which rests upon the chute to form protuberances on the under side, which in the present instance are in the form of ribs.

e^2 are rollers arranged at intervals throughout the length of the chute, and these rollers tend to hold the wire in position on the chute. It will be understood that a plate or plates may be substituted for the rollers.

I preferably arrange in front of the lower roller a deflecting-plate e^3, to prevent the glass being accidentally poured between the guide-rolls and the wire.

The hopper D consists of the two side frames D′, which are held together by the chute, the rod d, and other cross-rods, and on the rod d are antifriction-rolls d', which rest against the main pressing-roll D. The tongue d^2 of each side plate D′ passes under the pressing-roll and forms a guide for the glass as it is rolled.

Between the side plates is situated the ribbed chute E, back of which is a water-jacket E′, preferably formed integral with the chute and extending to a point near the table. This water-jacket extends to a point sufficiently above the line of molten glass as to keep the metal of the chute sufficiently cool to prevent the glass adhering to the metal. The outer end of the hopper D is supported preferably by rollers d^3; but it may be supported directly by the side plates D′.

Extending above the water-jacketed portion of the chute is an apron E^2, preferably having ribs corresponding with the ribs of the water-jacketed portion, and the upper portion of the apron is rounded, as shown.

The operation of the machine described is as follows: Glass is poured into the hopper D between the roll B and the chute, the wire in the first place being placed in the chute, as shown in Fig. 1, the end of the wire resting on or near the table. The glass will, by its own weight, pass through the meshes of the wire, which is held away from the base of the chute by the ribs, and as the roller is traversed over the bed A it will roll over the glass, pressing it to the desired thickness and pushing before it the hopper, and as the hopper moves forward the glass will adhere to the wire, the chute practically passing from under the wire, and as the chute and roller move forward the glass will enter the meshes of the wire, and the protuberances thus formed will hold the wire off the bed until rolled out by the roller, forming a sheet of glass smooth on both sides, with wire embedded therein. Thus the wire is supported during an interval, between the chute and the point where it is pressed by the roll, by protuberances of glass in the form of ribs which are set sufficiently by coming in contact with the metal of the chute and the metal of the bed.

It will be understood that in some instances the roll and hopper may be stationary and the

bed may travel under both, the roll, however, turning on its axis, and different forms of chutes and different forms of hoppers may be employed without departing from my invention.

While I have shown the hopper formed by the roller and chute, the hopper may be made independent of both and mounted between the two, as shown in Fig. 7.

Instead of the ribs being longitudinally arranged they may be transversely arranged or otherwise formed so as to allow the glass to pass through meshes of the wire. The protuberances, however, when transverse ribs are used, will necessarily pass over the ribs as the roller is fed forward. The chute may be perfectly plain, as shown in Fig. 5, only arranged sufficiently above the table as to form an offset or single transverse rib e^4, which will allow the molten glass to pass through the meshes of the wire at this point. This offset or rib e^4 may be made some distance above the table, as shown in Fig. 6, and the chute provided with an extension e^5, which will limit the passage of the glass through the wire. In the case of a single rib or offset the machine would have to be run slow, and care would have to be taken to make a perfect sheet of glass; but by the device shown in Fig. 1 the glass can be accurately and quickly manufactured.

I claim as my invention—

1. The combination in a machine for embedding wire in glass, of a table, a roller, a hopper having an inclined side forming a chute for the wire, the roller and hopper forming one element and the table another element, one element longitudinally movable in respect to the other, substantially as described.

2. The combination of a bed, a roller for rolling the glass upon the bed, a hopper in front of said roller, a chute having a rib or ribs or other projections for the wire, with means for traversing the roller and hopper over the bed, substantially as described.

3. The combination in a machine for rolling wire glass, a bed, a roller for rolling out the glass, a hopper formed of two sides and an inclined chute, ribs on said chute, with a water jacket back of the chute, substantially as described.

4. The combination of a bed, a roller for rolling the glass upon the bed, an inclined chute in front of the roller forming with the roller a hopper, ribs on said chute, said chute terminating in advance of the pressing point of the roller so that the glass will enter the meshes of the wire by its own weight, while the wire is on the chute, substantially as described.

5. The combination of a bed, a roller for rolling the glass upon the bed, an inclined ribbed chute for the wire, side plates forming with the chute and roller a hopper for the glass, with guides for the wire as it passes over the ribbed chute, substantially as described.

6. The combination of a bed, a roller, an inclined ribbed chute, a water jacket at the back of the chute, said chute being independent of the roll and pushed forward by it, substantially as described.

7. The combination of a bed, a roller for rolling out the glass, a chute having ribs at its lower end to support the wire, a water jacket back of the ribbed portion of the chute, rollers for supporting the outer end of the chute, and antifriction rollers against which the pressure roller bears to move the chute forward, substantially as described.

8. The combination of a bed, a roller, a chute for the wire, with a hopper for the glass situated between the chute and the roller, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK SHUMAN.

Witnesses:
HENRY HOWSON,
JOSEPH H. KLEIN.