

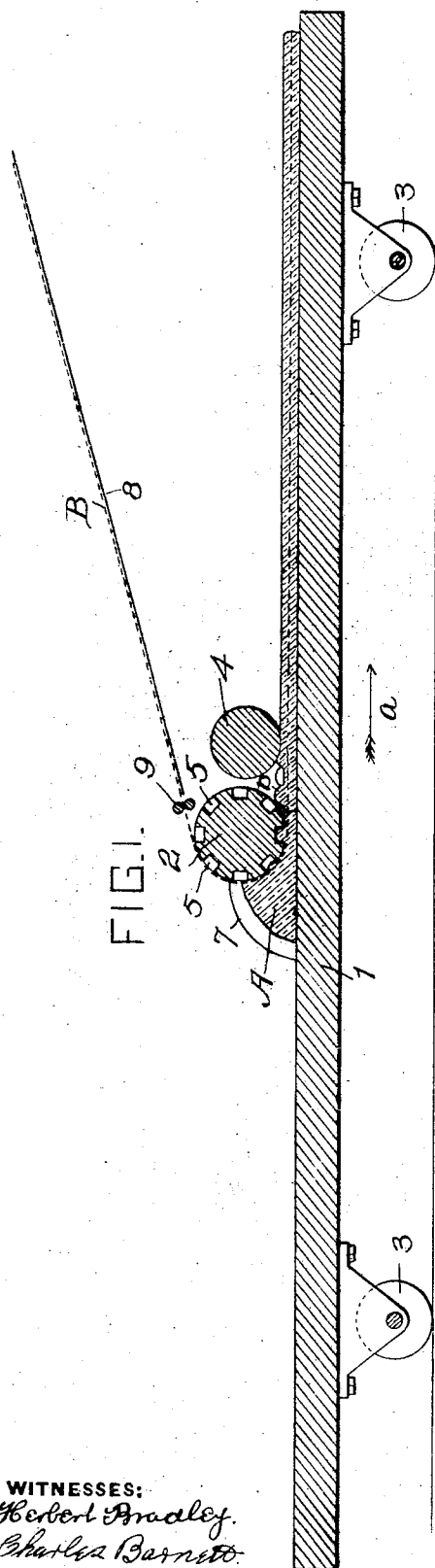
No. 823,112.

PATENTED JUNE 12, 1906.

N. FRANZEN.

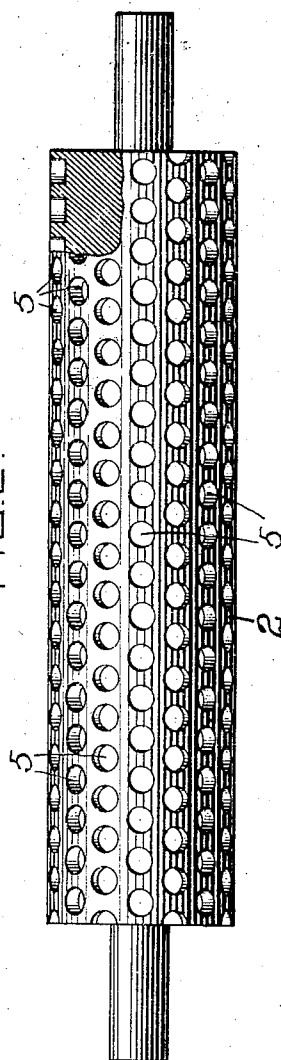
METHOD OF AND MACHINE FOR FORMING WIRE GLASS.

APPLICATION FILED JUNE 7, 1905.



WITNESSES:
Herbert Bradley.
Charles Barnett.

FIG. 2.



Nicklas Franzen, INVENTOR
by Christy and Christy,
Atty's.

UNITED STATES PATENT OFFICE.

NICKLAS FRANZEN, OF DUNBAR, PENNSYLVANIA, ASSIGNOR TO
WILLIAM L. MUNRO, OF PITTSBURG, PENNSYLVANIA.

METHOD OF AND MACHINE FOR FORMING WIRE-GLASS.

No. 823,112.

Specification of Letters Patent.

Patented June 12, 1906.

Application filed June 7, 1905. Serial No. 264,130.

To all whom it may concern:

Be it known that I, NICKLAS FRANZEN, a citizen of the United States, residing at Dunbar, in the county of Fayette and State of Pennsylvania, have invented or discovered a certain new and useful Improvement in Methods of and Machines for Forming Wire-Glass, of which improvement the following is a specification.

My invention relates to improvements in methods of and machines for making wire-glass; and the object of my improvement is to produce a superior product—a sheet of wire-glass free from defects incident to its production—by means and processes now commonly employed.

My invention is illustrated diagrammatically in the accompanying drawings, wherein—

Figure 1 is a view in longitudinal section of a machine embodying my improvement and in the operation of which my improved method may be followed, and Fig. 2 is a view in elevation and on larger scale of the distributing-roll of the machine of Fig. 1.

The machine consists, essentially, of a forming-surface and a spreader for distributing glass thereon. The forming-surface is preferably a table 1, and the spreader a roll 2. These parts are relatively movable, and to that end in the embodiment illustrated table 1 is mounted on wheels 3, whereon it travels beneath roll 2. A finisher is preferably employed for bringing the glass distributed by the spreader to its final form. Such a finisher is illustrated in roll 4, which is conveniently arranged to remain in fixed position relative to roll 2, table 1 traveling beneath both rolls. I have not indicated the adjustability of rolls 2 and 4 relative to table 1. Such adjustability is well known, and it is necessary to the present invention only that the rolls be suitably spaced above the table to accomplish the ends described.

The spreader is provided with a series of openings of such size and so disposed that as molten glass is distributed upon the forming-surface into a fabric-faced layer in the manner to be described portions of this molten material rising above the general level through the fabric and into these openings will form teat-like protuberances upon the surface of the layer. These protuberances, formed by virtue of the molten or fluid char-

acter of the material and without contact with a matrix, will remain unchilled, their surfaces unhardened, and the glass of which they are composed will remain molten. They may therefore be spread into a layer by the finisher in the manner presently to be described.

In the form illustrated the spreader is a roll 2, and the openings in it are pit-like pockets 5 of cylindrical form. As the roll distributes molten glass upon the table air will be included in these pockets, and the air thus included will in each pocket form a cushion, insulating the protruding molten glass from chilling or freezing contact with the pocket-walls.

The finisher serves to reduce the molten protuberances left by the spreader to a continuous upper layer, covering the fabric-faced lower layer and forming therewith the finished sheet. It is shown in the drawings as a roll of less diameter than spreading-roll 2. By employing a finishing-roll of smaller size than the distributing-roll I secure a superior surface finish.

Suitable means may be employed for feeding the fabric to the surface of the distributing-roll. To this end the drawings show a chute 8 and flattening-rolls 9, from which a sheet of fabric B is in the act of passing to roll 2. Guns 7 may be employed in front of and at either end of distributing-roll 2 for the usual purpose of confining the glass laterally and forming a sheet of definite width. I prefer to have no guns between rolls 2 and 4, for the sheet will at that point be of fixed width, and any surplus glass rolled down from the protuberances may in the absence of guns find lateral escape.

My invention further consists in the method followed in operating the machine thus described. Molten glass is teemed upon the forming-surface. The spreader distributes this molten glass into a layer and at the same time applies to the layer which it thus forms the fabric to be incorporated in the finished sheet. This fabric-faced layer thus spread bears upon its surface protuberances of molten glass which under the pressure with which the spreader is applied have exuded through the fabric into the openings with which the spreader is provided. The molten protuberances in turn are spread by the finisher into a continuous layer, covering and

uniting with the previously-spread fabric-faced layer and constituting with it the finished sheet of wire-glass.

Fig. 1 of the drawings shows the machine in the course of operation. A web of fabric B extends from chute 8, between flattening-rolls 9, over the surface of roll 2, and thence rearward. A batch of molten glass A has been teemed on the table in front of roll 2. Roll 4 is arranged rearward of roll 2. Table 1 is moving beneath the rolls in the direction indicated by the arrow *a*. As the rolls thus advance over table 1 the molten glass is formed into a layer upon which the fabric is coincidentally spread. The thickness of the layer, and accordingly the position of the fabric, is determined by the distance at which roll 2 is supported above the table. The fabric-faced layer thus formed bears upon its surface protuberances of molten glass *b*, formed in pockets 5 of roll 2 in the manner already described. Upon the number and size of these protuberances will depend the thickness of the glass above the fabric in the finished sheet, the finishing-roll being spaced in proper accord. This fabric-faced layer bearing the protuberances passes next beneath roll 4, which is so spaced above the table to effect the end in view, as will readily be understood, and in passing beneath roll 4 the protuberances *b* are spread into a continuous upper layer extending upon and uniting with the fabric-faced lower layer to form the completed sheet of wire-glass.

It will be understood that the protuberances of molten glass formed upon the initial fabric-faced layer may when released from the confining conformation of the spreader flow or spread somewhat, and in such case may assist in maintaining the fabric in the position to which it has been brought by the spreader.

In the foregoing description I have applied the term "fabric" to the material which is incorporated in the sheet of glass and which is its characteristic feature. In the common practice of to-day this material is a netting of wire. Under the term "fabric" I mean to include not only this well-known material, but any other material which one may wish to use and whose qualities and shape are such as to permit its application to the end described.

Some of the following claims are not limited to the projection of the glass into the air-retaining cavities through the meshes of a fabric, for it is my purpose to use the same expedient in spreading plates of glass, whether the fabric be incorporated in this or in some other manner, as well as in the spreading of plate-glass not provided with fabric. The expedient is applicable generally in cases where a spreading operation is performed distinct from a smoothing or fin-

ishing operation, that the use of the pitted surface in the spreading operation may afford a better surface for the subsequent action of the finishing or smoothing roll.

I claim herein as my invention—

1. The herein-described method of making wire-glass which consists in, first, teeming a batch of molten glass upon a forming-surface; second, simultaneously spreading said batch of molten glass to layer form, applying to the surface thereof a fabric, and causing separated or segregated portions of said batch of molten glass to rise through said fabric in protuberances of molten or unchilled glass; and, finally, spreading said protuberances into a layer upon said fabric-faced layer, substantially as described.

2. The herein-described method of making wire-glass which consists in, first, introducing a sheet of fabric between a body of molten glass and a pitted spreading-roll; second, simultaneously spreading the body of molten glass to layer form with the fabric covering the surface thereof, and causing separated or segregated portions of the molten glass to exude or pass through the fabric into the pit-like pockets of the spreading-roll, but without solidifying contact with the walls thereof; and, finally, spreading said protuberances of unhardened glass into a layer over said fabric-covered surface, substantially as described.

3. In a machine for making wire-glass the combination of a forming-surface, means for simultaneously spreading molten glass into a layer thereon, applying fabric to the surface thereof and causing separated or segregated portions of the molten glass to exude through the fabric in teat-like projections unchilled by contact with a matrix, and means for spreading said teat-like projections upon said fabric-faced layer, substantially as described.

4. In a machine for making wire-glass the combination of a forming-surface, means for spreading upon said forming-surface a sheet of glass, the surface of said spreading means being provided with air-including cavities in which air is retained by the molten glass insulating the glass from cooling contact with the spreading means, and means for finishing the sheet of glass so spread, substantially as described.

5. A distributing-roll for a wire-glass machine having a plurality of air-including cavities in its surface in which air is retained by the molten glass insulating the glass from cooling contact with said roll, substantially as described.

In testimony whereof I have hereunto set my hand.

NICKLAS FRANZEN.

Witnesses:

W. H. WILLIAMS,
THOS. N. TAYLOR.