

G. VON PAZSICZKY.  
 METHOD OF SPINNING GLASS.  
 APPLICATION FILED SEPT. 4, 1912.

1,137,814.

Patented May 4, 1915.

Fig. 1.

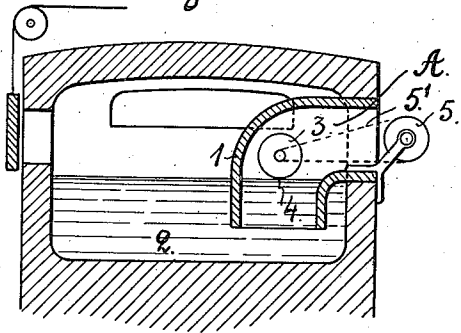


Fig. 2.

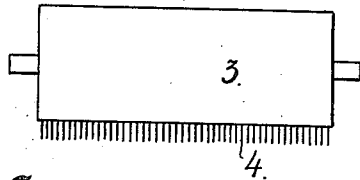


Fig. 3.

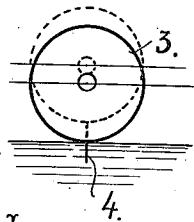


Fig. 4.

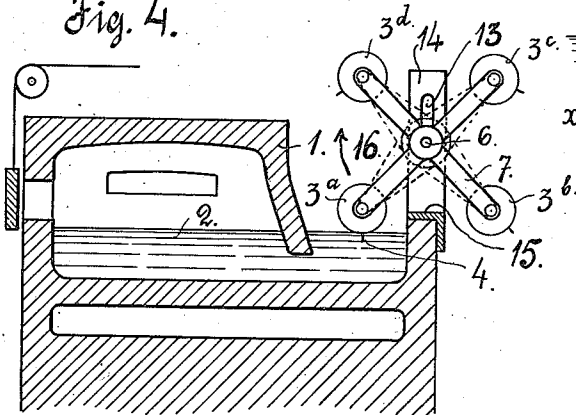


Fig. 5.

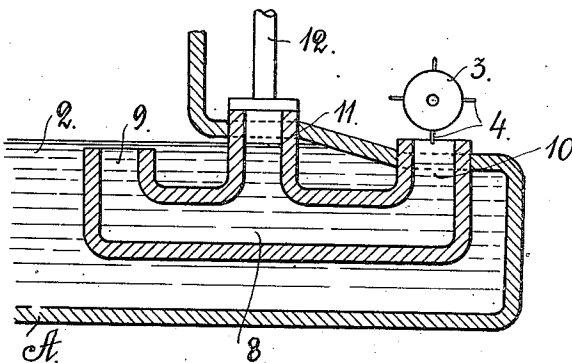
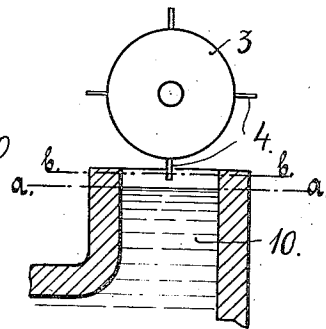


Fig. 6.



Witnesses:  
 B. Sommers  
 E. Leckert.

Inventor:  
 Gideon von Pagsiczky  
 By Henry [Signature] atty

# UNITED STATES PATENT OFFICE.

GEDEON VON PAZSICZKY, OF RIGA, RUSSIA.

## METHOD OF SPINNING GLASS.

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Specification of Letters Patent.

Patented May 4, 1915.

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*To all whom it may concern:*

Be it known that I, GEDEON VON PAZSICZKY, a subject of the Emperor of Austria-Hungary, residing at 73 Romanoff street, Riga, in the Empire of Russia, have invented certain new and useful Improvements in the Method of Spinning 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 letters or figures of reference marked thereon, which form a part of this specification.

A hitherto commonly used method of spinning glass consists in drawing threads from glass-rods, the ends of which are heated by gas flames or by other burners to such a degree, that the material of the rods becomes viscid and flowing to some extent. The machinery by which this process is mechanically performed consists in a drum rotated at a high speed and serving to draw out to threads the viscid material from the heated ends of several rods simultaneously.

In this process of spinning glass the threads formed break very often, as the viscosity of the heated glass depends upon the degree of heating, whereas it is very difficult to strictly coördinate, as necessary, the heating of the glass rods and the speed of the drawing and winding drum. The spinner, who controls the working of the machinery, is obliged to take up the broken threads and to put the same again upon the drawing drum and, as the threads break very often, he is capable of controlling only a small quantity of threads drawn from the ends of a corresponding small number of glass rods. Furthermore it is impossible to manufacture with this process fine and long threads of an equal thickness and with a smooth surface.

The object of my improved method of spinning glass contemplates to avoid the main fault or defect of this known method, laying in the necessary strict dependence between the heating of the glass rods and the angular speed of the drawing roller or drum, and with that view the glass threads are drawn, not from heated rods, but from glass-metal and preferably from the melted mass of a glass melting pot or furnace. In the practice it is preferred to form the threads directly from the glass metal con-

tained in a flaming furnace and in such case a small chamber or a fore-hearth is formed in the furnace room so that the drawing of threads may be effected within this smaller chamber out of direct contact with the flame or combustion gases in the melting room. The drawing of the threads from the glass metal is also in my process effected, as hitherto, by a drum rotated at a very high speed and provided with one or more wire-combs, the said drum being located above the level of the glass metal in the furnace in such a way that the teeth or fingers of each comb may be fully or partly dipped into the glass metal and then again put out of contact with the latter. The melted mass adheres to the said fingers when these become glowing from the heat of the glass metal, and when this occurs the fingers are brought out of contact and the drum put in rotation to draw out the threads. The said dipping of the comb, fixed on the drum preferably in a line parallel to the axis of the drum, into the glass metal may be effected either by lowering or displacing in an appropriate manner the drum, or by raising the level of the glass metal to the necessary extent, or by both means simultaneously, as the case may be.

To fully explain the nature of my invention I have shown on the drawing, by means of some diagrammatic figures, some arrangements for the performance of the new process.

Figures 1 and 4 show two various arrangements in connection with a glass melting furnace, in which the drawing drum or drums are located in such a manner that they may be lowered to temporarily dip the combs into the glass metal. Figs. 2 and 3 denote, respectively, a side view and an end view of a drawing drum; Fig. 5 shows an arrangement in which a drawing drum rotating on a fixed shaft is used, the dipping of the combs being attained by raising the level of the glass metal beneath the drum. Fig. 6 is a detail having reference to the arrangement as per Fig. 5.

Referring more especially to Fig. 1, there is a wide knee-pipe 1 inserted into the glass metal 2 assembled in the hearth of the melting furnace, in such a way that a chamber A leading to the outer air is formed. In this chamber a drum 3 is located in such a manner, that the same can be raised or lowered to bring the fingers or teeth 4 of a

wire-comb (see also Figs. 2 and 3) into or out of contact with the glass metal. This drum is rotated at a high speed by means of a pulley 5 and a chain or belt 5' passing from the pulley 5 over a small pulley fixed upon the outer portion of the axis of the said drum 3.

The wire-comb 4 is ordinarily out of contact with the melted mass 2, but when it is desired to spin, the drum 3 is first lowered to such a level that the fingers 4 of the comb are fully or partly dipped into the melted glass. The fingers become glowing and when the glass metal adheres to the ends of same, the drum is again raised to interrupt the direct contact of the comb with the melted mass. After this is effected, the drum is put in rotation at a high speed whereby the threads drawn out from the melted mass will be wound upon the drum in an uninterrupted manner. When the drum 3 is full of glass threads, the same is replaced by another and the spun goods removed from it, after cooling, in the usual manner, *i. e.* by cutting and spreading the cylindrical layer of threads.

With the arrangement shown on Fig. 4 it is possible to perform the described spinning process, practically speaking, without interruptions. In this arrangement several drums (four for instance, as shown) 3<sup>a</sup>, 3<sup>b</sup>, 3<sup>c</sup>, 3<sup>d</sup> are mounted upon the arms of a frame 7 rotating upon a horizontal shaft 6, which may be raised or lowered within slots 13 provided in its bearings 14. At the moment shown on the drawing the fingers 4 of the drum 3<sup>a</sup> are dipped into the melted glass metal of the fore-hearth formed by the wall 1 dipping into the glass metal 2. When the viscid melted glass adheres to the glowing fingers 4 of this drum the frame 7 is turned in the direction indicated by the arrow 16 to such an angle, that the said fingers will come out of the mass; the drum 3<sup>a</sup> is then rotated at a high speed from the main shaft 6 of the frame work 7 and when the layer of threads upon the drum has attained a desired thickness, the rotation is discontinued and the frame 7 raised to such a height that the drum 3<sup>b</sup> may pass over the wall 15 when the frame 7 is turned in the direction of the arrow 16 to put the drum 3<sup>b</sup> in the fore-hearth. When this is effected, the frame 7 is again lowered and the described process is repeated with the drum 3<sup>c</sup>.

At the moment shown on the Fig. 4 the threads are cooling on the drum 3<sup>d</sup> and they are removed from the drum 3<sup>c</sup>, whereas the drum 3<sup>b</sup> is free from threads and the drum 3<sup>a</sup> is ready to commence the spinning operation.

The arrangement just described allows a practically uninterrupted performance of the spinning process, as will be understood from the above explanations. The length of the drums 3 may be very considerable and therefore a great number of glass threads may be produced within a very short time.

In the arrangement shown on Figs. 5 and 6 the drum cannot be raised or lowered and the dipping of the fingers 4 into the glass metal is obtained by raising the level of the latter beneath the drum. To that end there is arranged within the furnace a chamber in the shape of two tubes 9 and 10 communicating by a channel 8, one of these tubes (9) being fully immersed into the glass metal, whereas the other (10) is open to the outer air. A middle tube 11 may be set in communication, by means of a pipe 12, with a receiver containing air or any other appropriate gas or liquid under pressure. The ordinary level of the glass metal is at *a-a* (Fig. 6). If compressed air or the like is admitted through the pipe 12, the level in the branch 10 will raise to the line *b-b*, at which level the fingers 4 are partly immersed or dipped into the glass metal on account of the viscosity of the glass the level in 10 will remain raised for a time more than sufficient for permitting proper adhesion of the glass to the comb 4. As soon as the adhesion of the glass metal to the glowing fingers 4 has taken place, the pressure within tube 11 is removed and the level of the glass metal will therefore again return to the lines *a-a*, so that the drawing of threads may be commenced and performed in the manner already described in connection with Figs. 1 and 4.

The fingers, pins or teeth 4 may be arranged in one or several parallel rows.

Having thus fully described my invention, what I claim is:

1. The process of spinning glass, which comprises exposing a portion of a molten glass batch, maintained in continuity with the body of the batch, to a comb, separating the comb and exposed portion and drawing the threads.

2. The process of spinning glass, which comprises moving a body of molten glass into contact with a comb, separating the glass body and comb, and drawing the threads.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

GEDEON VON PAZSICZKY.

Witnesses:

E. THOUIGS,  
MARY STRASDE.