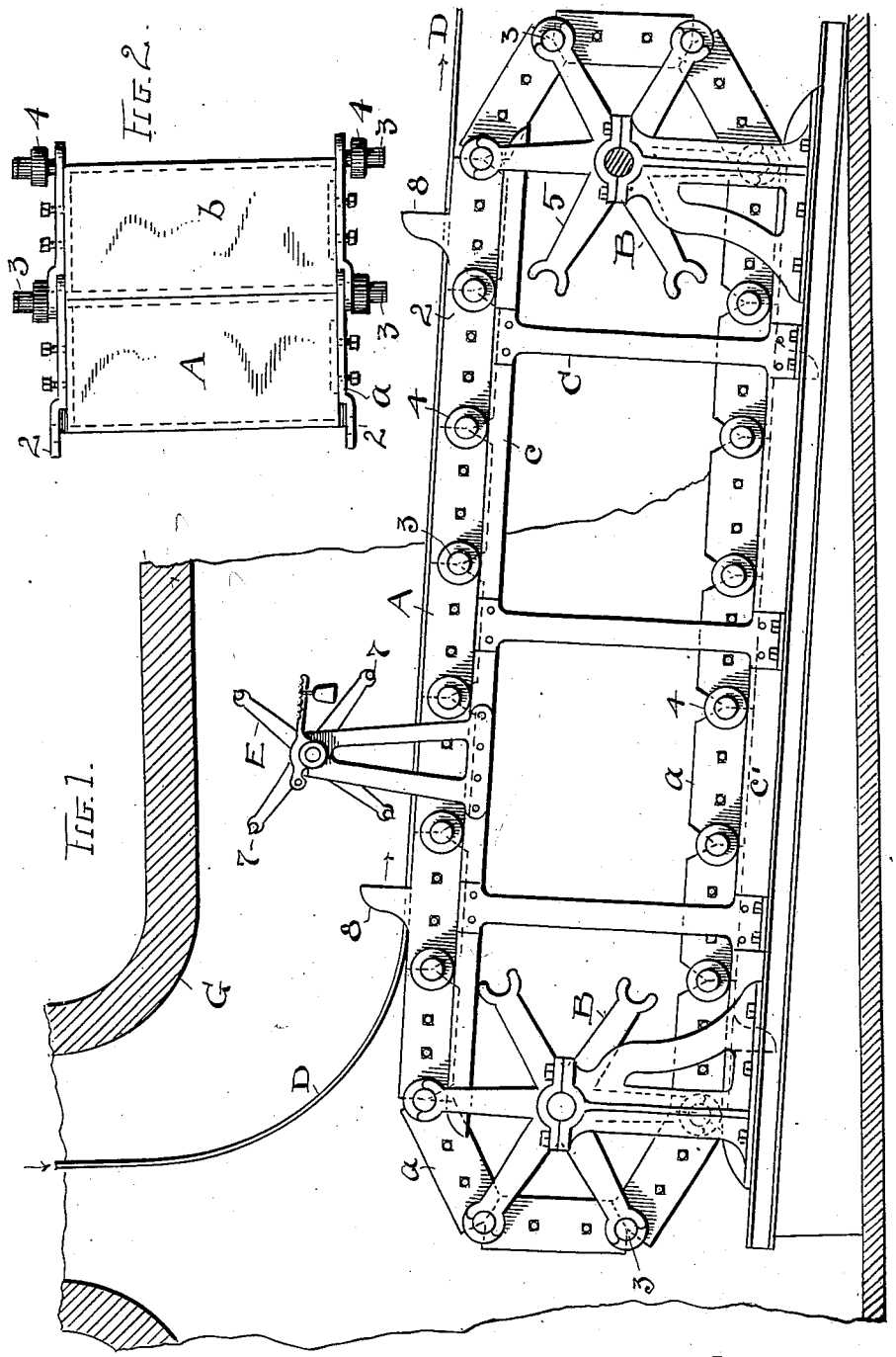
No. 722,688. PATENTED MAR. 17, 1903.

R. L. FRINK & W. DE H. LEE.

FLATTENING TABLE FOR SHEET GLASS.

APPLICATION FILED JAN. 2, 1902. 2 SHEETS—SHEET 1.

NO MODEL.



ATTEST
T. B. Moser
T. M. Madden.

INVENTORS
Robert L. Frink
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BY H. J. Fisher ATTY

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FIG. 4.

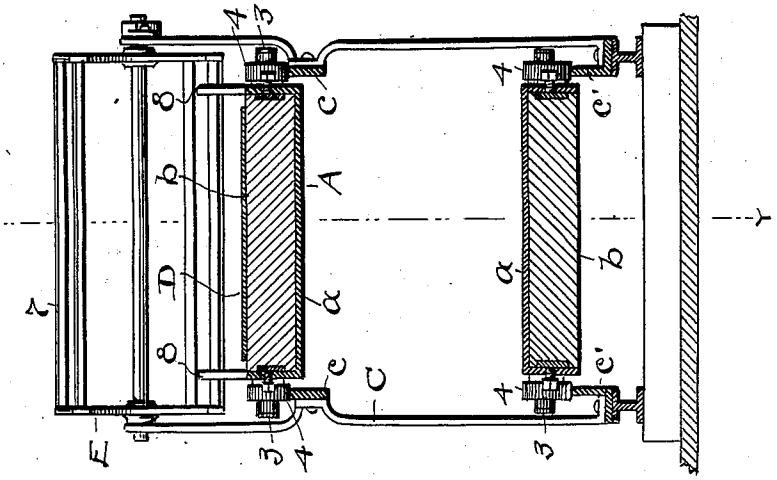
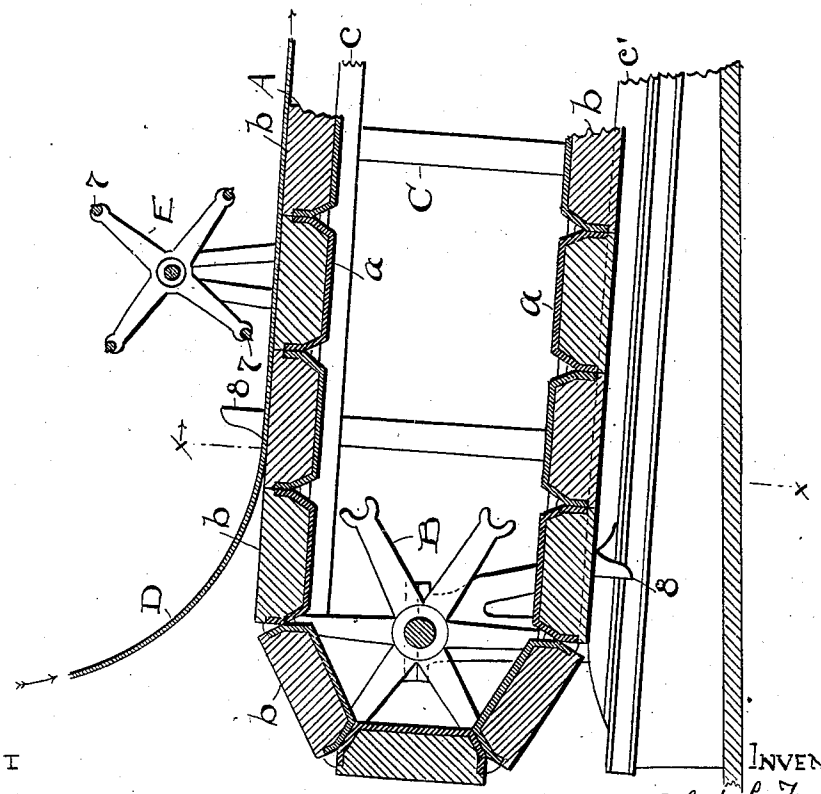


FIG. 5.



Attest

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UNITED STATES PATENT OFFICE.

ROBERT L. FRINK AND WALKER DE HAVEN LEE, OF CLEVELAND, OHIO, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO THEMSELVES, H. R. SANBORN, J. N. CLARKE, AND J. A. LANNERT, OF CLEVELAND, OHIO.

FLATTENING-TABLE FOR SHEET-GLASS.

SPECIFICATION forming part of Letters Patent No. 722,688, dated March 17, 1903.

Application filed January 2, 1902. Serial No. 88,056. (No model.)

To all whom it may concern:

Be it known that we, ROBERT L. FRINK and WALKER DE HAVEN LEE, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Flattening-Tables for Sheet-Glass; and we do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to an endless traveling flattening-table for sheet-glass; and the invention consists in the construction of a table and parts associated therewith and in the combinations substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of the table and a section of the inclosing wall within which the entire structure is supposed to be located for the purpose of maintaining heat therein, all as hereinafter fully described. Fig. 2 is a plan view of a pair of table-sections, showing the manner of linking the said sections together. Fig. 3 is a longitudinal sectional elevation of the end of the table shown in Fig. 1 and designed especially to disclose the construction of the table-sections. Fig. 4 is a cross-section of the entire structure on a line corresponding to *x x*, Fig. 3.

The endless carrier or table thus shown is designed to be used as a part of a continuous process or operation of manufacture of sheet-glass in which the sheet of glass in a semi-cooled state and while it is yet flexible is delivered in a continuous sheet upon said table, whereon the sheet is adapted to flatten itself by its own consistency and weight and become even and flat as it is delivered upon the even surface of the table, as is shown in the drawings. To these ends we provide an endless carrier-table A, consisting of table-sections having metallic portions *a* approximately trough-shaped, as here shown, and linked together at their extremities by means of connecting and overlapping portions 2 at or on the ends of said boxes engaged upon the lateral projections or trunnions 3. The projections or trunnions may be a part of the troughs or boxes *a*, if such boxes are cast, or they may be made in separate pieces and fixed thereon in any suitable way, the idea being that they serve to make the connections between the table-sections and also as points of engagements for the extremities of the wheels B at the ends of the carrier-frame C, over which the endless carrier travels. Each of said boxes *a* is further provided with a slab *b*, of some suitable refractory material—such as fire-clay, stone, carbon, or other material—having a flat exterior surface and all of the same size, so that when they come onto the top of the table or frame they will furnish a perfectly smooth table-surface, continuous and even throughout, the same as if it were an unbroken or single table. To this end the frame C is provided with a track *c* at each side at its top, and there are rollers or wheels 4 on trunnions 3, which run on these tracks and afford an easy and uniform travel to all the table-sections over these tracks and the corresponding tracks *c'* at the bottom of frame C, which serve to support the wheels 4 as the endless carrier travels idly over the bottom of said frame. The wheels B have a series of arms 5, with cavities in their extremities adapted to engage the ends of trunnions 3, and these serve as carriers for the endless table as well as mediums for applying power to cause the table to travel, and power may be applied to either of said wheels or the shafts that carry the same.

D represents a sheet of flexible glass as it comes from the producer, which is supposed to be just above, and the said glass sheet is delivered in a continuous form and carried away by the table A just as rapidly as it is delivered thereto. The object and purpose of this table is to flatten or straighten the glass automatically, or, in other words, to enable the glass to flatten itself thereon and thereby, as already described, and thus adapt itself to the surface upon which it comes. This surface being flat, it necessarily takes the flat shape, and assuming that it is not

only conveyed over this table in this form, but is taken care of in like manner when it leaves this table and is being cooled, it will continue to be flat, and thus we get at last a perfectly flat sheet of such size as may be provided for.

E represents a rotatable reel having somewhat-sharpened blades 7 supported in the arms thereof and extending across the surface of this glass, and the blades are adapted to produce indentations or furrows of such depth and sufficiency that as the glass becomes cooled it is readily broken off at these points. However, it is not our practice to sever the glass entirely by means of these blades, and the sheet passes on from under said reel deeply scored, but not separated. The reel itself is rotated at fixed intervals, which may be changed by means of the projections 8 on the sides of the endless table, and so it occurs with the marking-reel as it is here shown and having arms 8 that at certain intervals the sheet of glass will be marked or scored at fixed distances apart until the conditions have been changed so as to produce the markings farther apart or nearer together. G represents the inclosing wall of the machine, which is necessary to maintain a certain degree of heat within this space, so that the glass will not unduly cool as it is going through this part of the process or operation of manufacture, and hence the inclosure of said table will be understood as having connection with some source for heating, which, however, is not shown here.

If the sheet of glass does not flatten of its own accord on the table, any suitable means may be employed to facilitate such flattening, as a roller of wood, cork, or other material.

What we claim is—

1. In sheet-glass manufacture, an endless carrier consisting of sections having metallic base portions provided with trunnions centrally at their ends and links connecting said trunnions, and a slab of refractory material forming the top portion of each section, substantially as described.

2. In glass manufacture a frame and parallel tracks at the top and sides thereof, in combination with an endless carrier formed in sections and each of said sections having a metallic base with trunnions at its ends, and overlapping connecting-links engaged on said trunnions and fixed to said sections, and rollers on said trunnions running on said rails, substantially as described.

3. An endless sectional flattening-table for sheet-glass in combination with a rotatable marker over said table constructed to score the glass transversely at intervals to form breaking-lines, substantially as described.

4. In sheet-glass manufacture, a flattening-table to carry the glass, in combination with a rotatable marker constructed to score the glass transversely at regular intervals, and means on said table to rotate said marker, substantially as described.

5. A flattening-table and a reel-shaped marking device, and means to engage said marking device at fixed intervals and rotate the same to score the glass, substantially as described.

6. In glass manufacture, an endless carrier for sheet-glass, in combination with a marking device to score the glass transversely at intervals, and means to raise and lower said device, substantially as described.

Witness our hands to the foregoing specification this 11th day of December, 1901.

ROBERT L. FRINK.
WALKER DE HAVEN LEE.

Witnesses:
R. B. MOSER,
H. T. FISHER.