No. 681,786. Patented Sept. 3, 1901.

C. C. HARTUNG.

MACHINE FOR ROLLING CONFIGURED WIRE GLASS.

(Application filed Oct. 18, 1900.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.

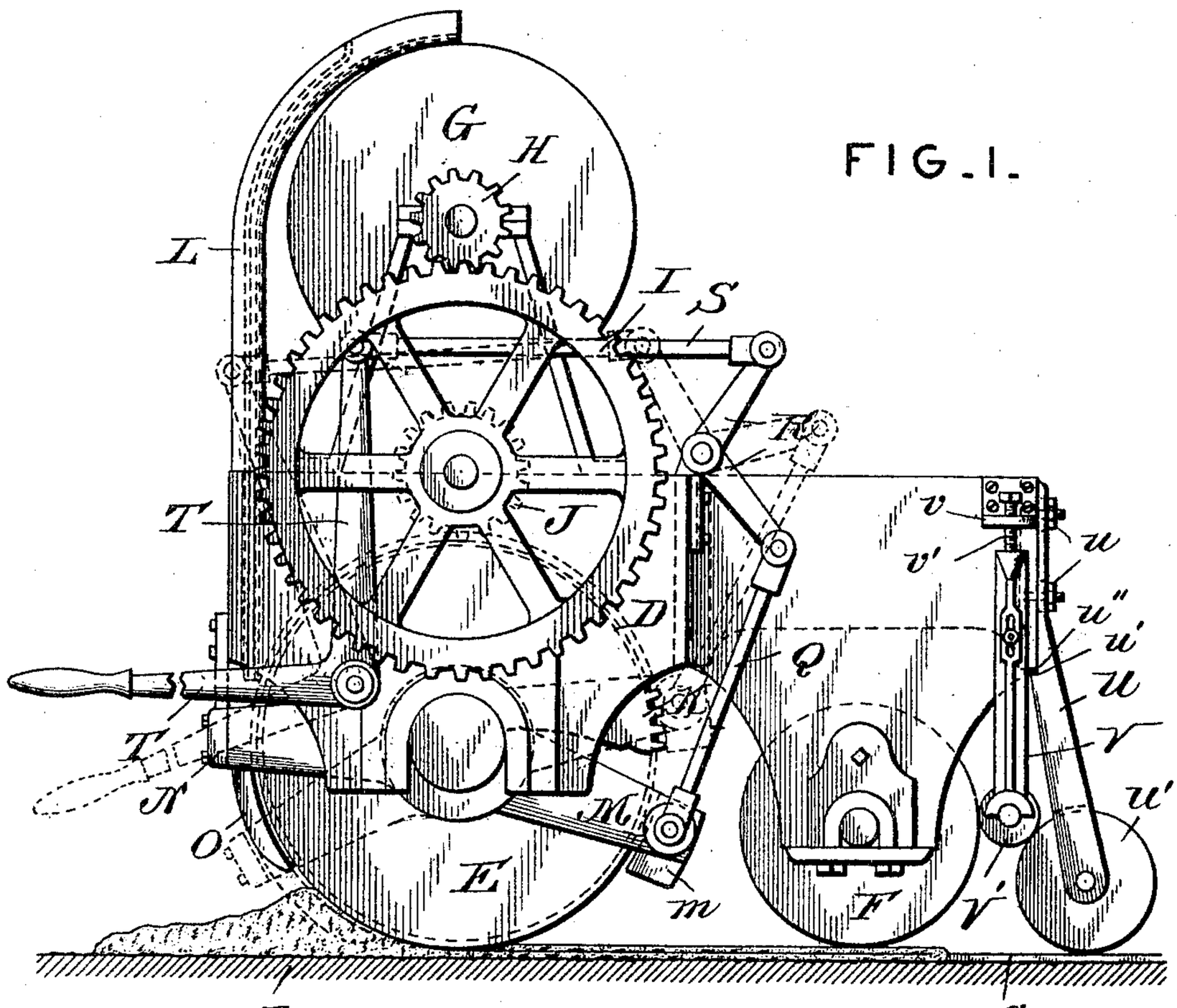
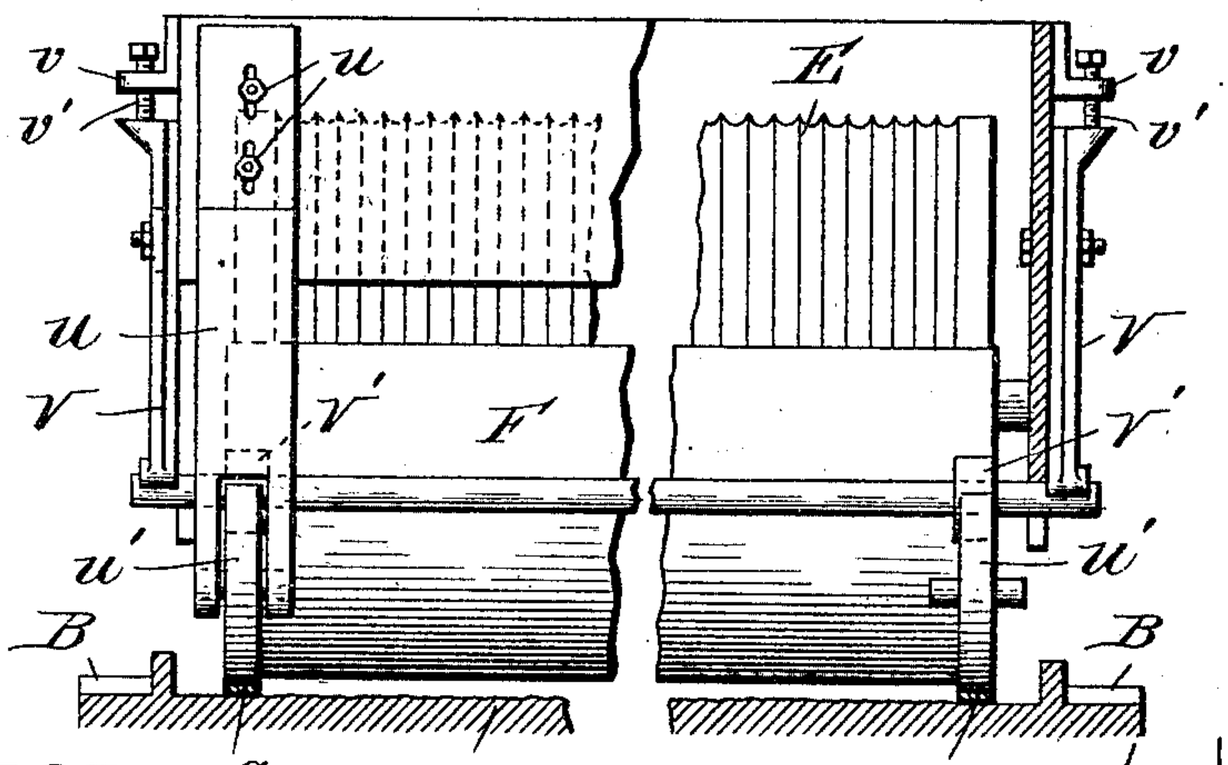


FIG. 2.



ATTEST- C A

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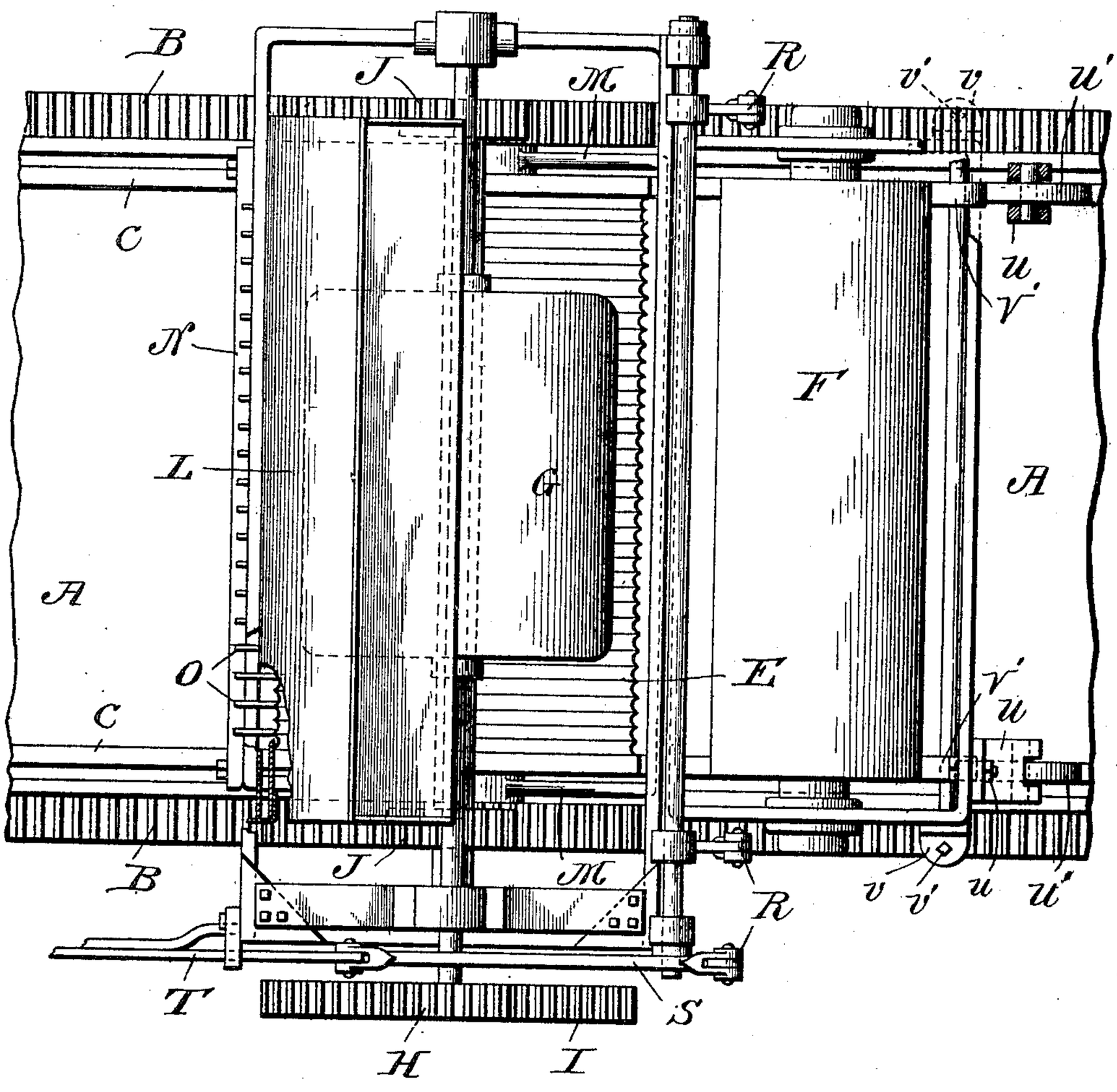
(No Model.) 2 Sheets—Sheet 2.

FIG. 3.



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UNITED STATES PATENT OFFICE.

CHARLES C. HARTUNG, OF ST. LOUIS, MISSOURI, ASSIGNOR TO EDWARD WALSH, JR., OF SAME PLACE.

MACHINE FOR ROLLING CONFIGURED WIRE-GLASS.

SPECIFICATION forming part of Letters Patent No. 681,786, dated September 3, 1901.

Application filed October 18, 1900. Serial No. 33,460. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. HARTUNG, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Machines for Rolling Configured Wire-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 side elevational view of my improved machine. Fig. 2 is a rear elevational view of a portion of the machine. Fig. 3 is a top plan view, partly in section, of my improved machine.

This invention relates to a new and useful improvement in a machine for rolling configured wire-glass, the object being to form a design of some kind upon one or both surfaces of the sheet of glass at the time that the wire mesh is embedded therein.

With this object in view the invention consists in the construction, arrangement, and combination of the several parts, all as will hereinafter be described and afterward pointed out in the claims.

Heretofore sheet-glass has been rolled and wire mesh embedded therein; but in attempting to configure a sheet of glass with a design of some character it has been found that by reason of the molten condition of the glass the following roller, which smooths the upper surface of the sheet after the wire mesh has been embedded therein, will cause the sheet of glass to move slightly on the table, and if the design is formed on the table the result will be a double impression of the design on the sheet of hot glass, which is objectionable. If the following roller is configured with a design and it is sought to impress the design on the upper surface of the glass through the medium of the following roller, the irregularities of the upper surface of the glass are such that the design will be impressed only upon certain portions (the highest) of the sheet, while the low portions are not touched.

In the accompanying drawings I have illustrated a machine for rolling wire-glass, such as shown and described in United States Patent No. 610,586, granted September 13, 1898, to Edward Walsh, Jr., assignee of myself; but it is obvious that other types of wire-glass machines may be equipped with my improvement.

Generally speaking, I will state that the manner of embedding the wire mesh into the sheet of molten glass may be done by appropriate machinery; but my invention contemplates elevating the following or finishing roller to the proper height and positively driving said roller so that the contact or weight thereof will not disturb the position of the sheet of glass on the table. Thus the glass is permitted to lie quiet on the table, which table is preferably configured with the design.

A indicates a casting-table which is preferably configured with the design it is desired to impart to the sheet of glass. This table is provided with a rack B along its sides, as is usual in the type of machine illustrated.

C indicates a fillet or strip which is arranged upon the table at or near its sides for determining the thickness of the glass.

D is a frame for the carriage, in which the embedding-rollers are mounted.

E is the advance corrugated roller, and F the following smooth finishing-roller, which instead of resting upon the strips C, as is usual in this art, is elevated out of contact with said strips and positively driven by mechanism which will hereinafter be described.

The carriage shown in the drawings is propelled by an electric motor G, having a pinion H on its armature-shaft meshing with a gear I on a counter-shaft, said counter-shaft carrying a pinion J, meshing with a gear K, conjoined to the advance corrugated roller E.

L indicates a chute or way in which a panel of wire mesh is placed preparatory to being embedded into the molten glass.

M indicates two rocking levers pivotally mounted on opposite sides of the embedding-roller E and on the axle thereof.

N indicates a knife-bar, formed as part of or secured to the front ends of the rocking levers M. This knife-bar carries a series of knives O, suitably spaced apart, said knives

preferably curving outwardly at their upper ends, the inner faces of their lower ends being concentric with the periphery of the embedding-roller E. The rear ends of the rocking levers M are preferably connected and carry a weight *m*, acting as a counterbalance for the knife-bar and knives.

Q indicates a link secured to the rear end of one of the levers M and to a bell-crank lever R, pivotally mounted on the carriage-frame D. S indicates a link connecting the other end of said bell-crank lever R to a bell-crank-operating lever T, pivotally mounted on the framing D. One of the members of this bell-crank lever is formed as an operating-handle and is preferably provided with a latch-dog for holding the knives in their raised positions.

The panel of wire mesh is placed in the chute L and supported by the knives O, which afford a curved path therefor and so prevent the wire mesh from following the embedding-roller. When it is desired to introduce one end of the panel of wire mesh into the molten glass, the handle T is depressed, which depresses the knives O, said knives carrying with them the lower end of the wire mesh into the molten glass in advance of the embedding-roller and under the embedding-roller, which now takes hold of the mesh and embeds the same into the plate of glass being formed. The knives are immediately withdrawn from the molten glass, the panel of wire mesh feeding itself without further manipulation of the knives. The handle T and the knives are held in their raised positions, the friction of the corrugations of the embedding-roller E being sufficient to draw the panel of wire downward.

So far as the above parts are concerned they illustrate the machine shown in said Patent No. 610,586, before referred to, and therefore I do not claim the same here. However, I will here repeat that the finishing-roller F instead of bearing upon and being supported by the strips C is held in an elevated position above said strips and is positively driven in the proper direction by mechanism which I will now describe.

U indicates brackets, preferably slotted at their upper ends for the reception of the securing-bolts *u*. A shoulder *u'* is provided on each bracket to fit under the rear end wall of the carriage-frame D, and shims or liners *u''* may be employed between these shoulders and the lower edge of the end wall for the purpose of adjusting these brackets and holding them firmly in their adjusted positions.

U' indicates rollers mounted in the lower ends of brackets U, which rollers are designed to rest upon the strips C and support the rear end of the carriage.

V indicates vertically-adjustable frames arranged on each side of the carriage-frame D, said frames being provided with sockets in their lower ends for receiving the journal of a friction-roll V', interposed between the supporting-roller U' and the suspended finishing-roller F.

v indicates a threaded lug extending from the carriage-frame, in which is arranged an adjusting-screw *v'*, bearing upon the upper end of the frame V. In this manner the interposed friction-roll V' may be forced tightly into contact with its associate rollers, or by loosening the binding-screws *v'* the pressure may be relieved from the interposed friction-roll, whereby the weight of said friction-roll only is relied upon to drive the finishing-roller F. The purpose of regulating the pressure on the friction-roll is to meet the varying conditions of the glass being rolled. In some instances, where the glass is hot and fluid, the finishing-roller may be positively driven and occupy a relatively close position to the table. Where the glass is fluid, after the embedding-roller has forced the wire mesh thereinto and the glass is hot enough to flow and close the impressions left by the embedding-roller the finishing-roller has little work to do, merely smoothing the upper surface of the sheet to displace certain portions of the sheet and make an even surface. The finishing-roller, however, must be so adjusted that in doing its work it will not displace the entire sheet of glass on the table, which would cause a double printing of the design on the lower face thereof. Where the glass is less fluid and the impressions of the embedding-roller more pronounced, it is obvious that the finishing-roller has more work to do, and consequently should be positively driven, so that in evening the upper surface of the glass it will not displace the entire sheet, so as to make a double impression of the design on its lower surface. Of course it will be understood that the finishing-roller is adjusted properly, so that it will occupy a proper position relative to the disturbed upper surface of the glass and even said upper surface without displacing the entire sheet while performing this operation.

While I have shown the finishing-roller as being driven from the carriage-supporting bracket-rollers, yet it is obvious that said finishing-roller may be driven from other sources—such, for instance, as being geared positively with driving mechanism for the carriage. It is important, however, that the peripheral speed of this suspended finishing-roller be approximately the same as the peripheral speed of the pitch-line of the corrugating-roller or rather the peripheral speed of the corrugating-roller, taken at the greatest diameter of the corrugations thereof.

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

1. In a machine for embedding wire mesh into glass, the combination with the embedding mechanism, of a positively-driven sus-

pended finishing-roller for evening the surface of the sheet of molten glass; substantially as described.

2. In a machine for embedding wire mesh into glass, the combination with a corrugated embedding-roller, a positively-driven finishing-roller and means for suspending the said finishing-roller out of contact with the table; substantially as described.

3. In a machine for embedding wire mesh into glass, the combination with a corrugated embedding-roller, a smooth finishing-roller suspended therebehind out of contact with the table, and means for positively driving said finishing-roller, substantially as described.

4. In a machine for embedding wire mesh into glass, the combination with a table, of a carriage, a corrugated embedding-roller mounted in the carriage, a smooth finishing-roller suspended in the carriage, and mechanism for positively driving said finishing-roller; substantially as described.

5. In a machine for embedding wire mesh into glass, the combination with a table, of a carriage traversing the same, a corrugated embedding-roller for supporting one end of the carriage, bracket-rollers for supporting the other end of the carriage, and a suspended finishing-roller mounted in the carriage; substantially as described.

6. In a machine for embedding wire mesh into glass, the combination with the table, of a carriage designed to traverse said table, a corrugated embedding-roller mounted in said carriage, and supporting one end thereof, adjustable brackets carrying rollers for supporting the other end of the carriage, and a smooth finishing-roller suspended by the carriage; substantially as described.

7. In a machine for embedding wire mesh into glass, the combination with the table, of a carriage designed to traverse said table, a corrugated embedding-roller mounted in said carriage, and supporting one end thereof, adjustable brackets carrying rollers for supporting the other end of the carriage, a smooth finishing-roller suspended by the carriage, and means for driving said suspended finishing-roller; substantially as described.

8. In a machine for embedding wire mesh into glass, the combination with the table, of a carriage designed to traverse said table, a corrugated embedding-roller mounted in said carriage, and supporting one end thereof, adjustable brackets carrying rollers for supporting the other end of the carriage, a smooth finishing-roller suspended by the carriage, and means for driving said suspended finishing-roller, said means comprising a friction-roller interposed between the bracket-rollers and the suspended finishing-roller; substantially as described.

9. In a machine for embedding wire mesh into glass, the combination with the table, of a carriage, a corrugated embedding-roller, supporting-brackets for the carriage, said brackets carrying rollers, a suspended, finishing-roller, a friction-roller interposed between the finishing-roller and bracket-rollers, and means for regulating the pressure on said interposed friction-roller; substantially as described.

10. In a machine for embedding wire mesh into glass, the combination with a table, of a carriage, a corrugated embedding-roller, a smooth, finishing-roller suspended by said carriage, adjustable brackets carrying rollers for supporting one end of the carriage, a friction-roller interposed between the bracket-rollers and the suspended finishing-roller, and means for regulating the pressure on said interposed friction-roller; substantially as described.

11. In a machine for configuring rolled glass and coincidently embedding wire mesh therein, the combination with a configured table-bed, of a corrugated roller for embedding the wire mesh into the molten glass and spreading said molten glass into plate form, a finishing-roller for smoothing the irregularities on the upper surface of the plate of molten glass, and means for positively driving said finishing-roller in such manner that the plate of glass will not be displaced so as to destroy the configuration imparted thereto by the table-bed; substantially as described.

12. In a machine for configuring wire-glass, the combination with a configured table, of a carriage designed to travel thereover, a corrugated roller for embedding the wire mesh into the molten glass and spreading said molten glass over said table so that the lower surface of the plate of glass partakes of the design of the table, a suspended finishing-roller having a smooth surface for operating upon the upper surface of the spread molten glass and smoothing the irregularities therein left by the corrugated embedding-roller, and means for positively driving said smooth, finishing-roller so that the peripheral speed thereof is approximately the same as the peripheral speed of the corrugated embedding-roller; substantially as described.

13. In a machine for configuring wire-glass, the combination with a configured table, of a corrugated embedding-roller mounted upon said table, a smooth, finishing-roller bearing a fixed relation to the embedding-roller, but elevated above the table, means for supporting said finishing-roller in its elevated position, and mechanism for driving said finishing-roller; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 3d day of October, 1900.

CHARLES C. HARTUNG.

Witnesses:
F. R. CORNWALL,
WM. H. SCOTT.