

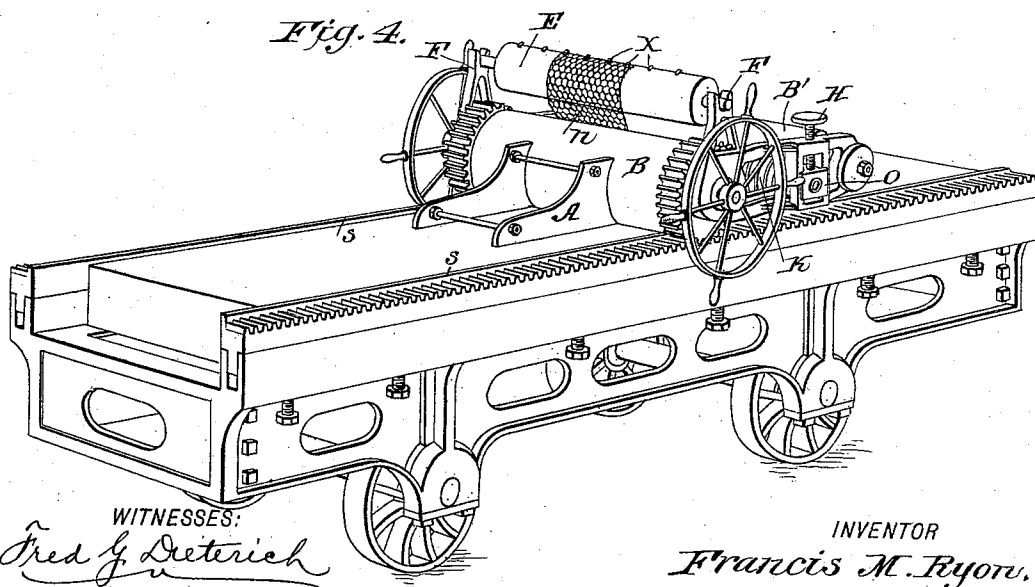
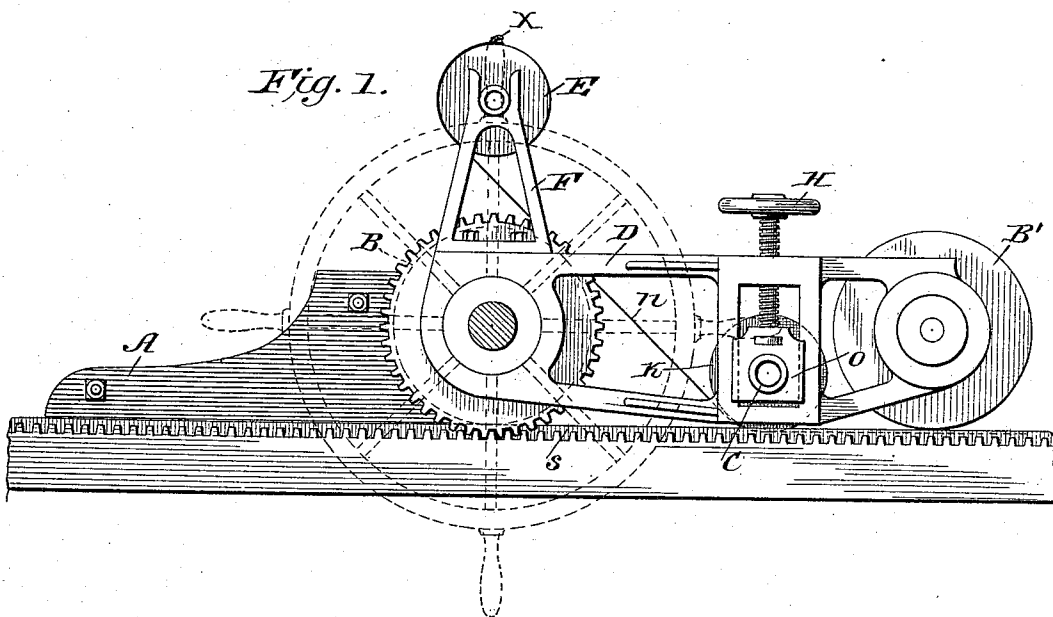
(No Model.)

2 Sheets—Sheet 1.

F. M. RYON.
WIRE GLASS MACHINE.

No. 531,570.

Patented Dec. 25, 1894.



WITNESSES:
Fred G. Deterich
Edw. W. Ryan.

INVENTOR
Francis M. Ryan.
BY *Wm. L.*
ATTORNEYS.

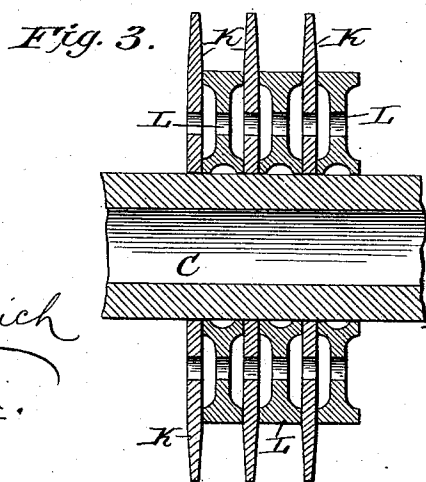
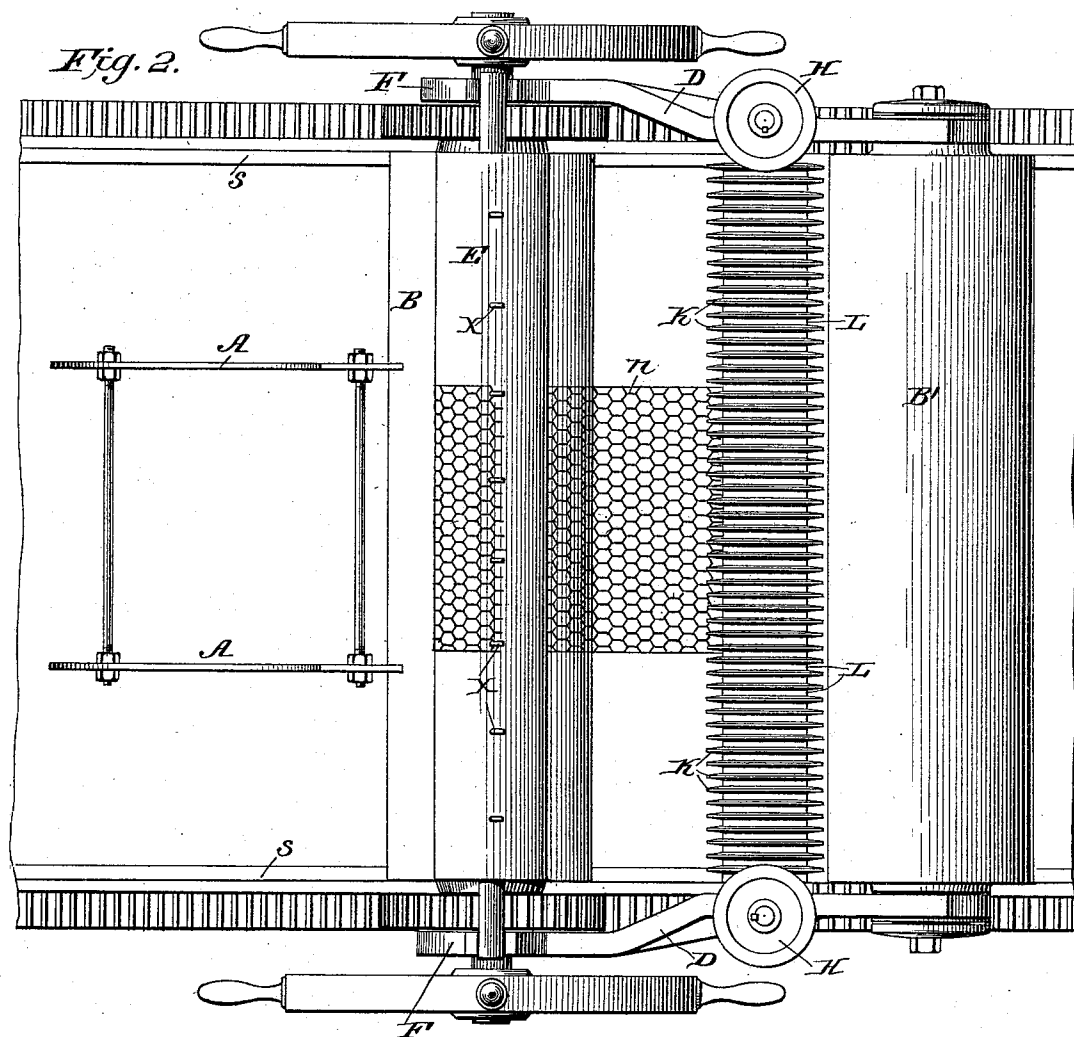
(No Model.)

2 Sheets—Sheet 2.

F. M. RYON.
WIRE GLASS MACHINE.

No. 531,570.

Patented Dec. 25, 1894.



WITNESSES:

Fred G. Dietrich
Edw. W. Byrn.

INVENTOR

Francis M. Ryon.

BY

Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FRANCIS M. RYON, OF STREATOR, ILLINOIS.

WIRE-GLASS MACHINE.

SPECIFICATION forming part of Letters Patent No. 531,570, dated December 25, 1894.

Application filed September 27, 1894. Serial No. 524,264. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS M. RYON, residing at Streator, in the county of La Salle and State of Illinois, have invented certain
5 new and useful Improvements in Wire-Glass Machines, of which the following is a specification.

This invention is designed to provide a machine to manufacture what is known in the
10 market as "wire glass," and the result of the operation of the machine so invented, is to embed in rolled plate glass, wire netting, of mesh of greater or less size.

This machine is intended to be used in connection with tables for rolling rough or ribbed
15 plate glass, and it is not necessary, in using this machine, to construct special plants where the tables have to be heated with furnaces under them, since with this machine,
20 it is not necessary to provide heat for the tables or rollers, other than is imparted to them by their contact with the molten glass, while the sheets are being rolled. In fact, in the actual operation in making the wire glass
25 with this machine, it is necessary to apply cold water to the table plate and roller at more or less frequent intervals, to keep the surfaces that come in contact with the glass, sufficiently cool to prevent the molten glass
30 from sticking to said surfaces. In the rollers herein employed it is not necessary to have hollow spaces, where heat is applied, but said rollers are solid iron or steel.

The invention consists in the peculiar construction and arrangement of devices for embedding the glass and producing a smooth
35 surface which will now be described with reference to the drawings, in which—

Figure 1 represents a side view of the machine, standing on a section of table plate.
40 Fig. 2 is a plan view; Fig. 3, a section of the embedding devices taken longitudinally to the axis, and Fig. 4 is a perspective view of the device applied to the ordinary plate rolling
45 table.

A represents the guides or cheeks which regulate the widths of the sheets of glass as they are rolled.

B and B' are two rollers of greater or less
50 diameters.

C represents the axle on which are sus-

ended a greater or less number of disks K, which are hereinafter explained.

D represents the frame connecting the rollers B and B' and the axle with disks K. 55

E represents a spool, or hollow drum, around which the sheet of wire netting is rolled, the spool being held by the upright frame, F, which is attached to frame D. The sheet of wire netting is held fast to the spool by the
60 small hook X.

H represents a hand wheel on top of the screw as shown, such screw being attached by a swivel collar at its lower end to the boxing O, carrying the bearings of the axle of
65 the disks. By raising or lowering this screw, the axle of disks is raised or lowered as desired, and by means of this regulation, the wire netting can be placed to any desired depth in a sheet of glass, as hereinafter described. 70

Referring to Fig. 2 the axle C is shown as hollow, and around it revolve the thin disks K, the disks being kept apart, by washers L, and the disks and washers having hollow
75 spaces through them, to allow the air to circulate through to keep them somewhat cool, and thus prevent bending and warping. Should these disks wear away, by the action of the molten glass, they can be easily re-
80 moved and replaced with other disks, by merely removing the boxing from the axle. The axle full of disks is held suspended by the frame D as shown in Fig. 1.

As shown in Fig. 2 the first roller B is provided with a hand wheel, by which it is turned
85 to move the axle with its disks, under which is passing a sheet of wire netting from the spool E.

Referring to Fig. 1 the process of making a
90 sheet of wire glass, would be as follows: Considering the machine as moving from right to left, the molten glass is carried to the table, and thrown between the guides A. As soon as the glass strikes the table, the machine is
95 pulled upon, and over the glass, by hand power applied to the hand wheels attached to the first roller. Rollers B, B' rest on strips or strands of steel s, lying on the table bed, and these strips determine the thickness to which
100 the sheet of glass is rolled. As the sheet is formed, and passes under the first roller, the

sheet of wire netting which is attached to the spool, and which has previously been drawn to the table surface, is allowed to unwind from the spool, and as the sheet of glass passes under the axle of disks, the disks force the wire netting down into the soft glass about half way the thickness of the sheet. As the sheet passes under these disks, there are small creases and ridges on its surface, and it now passes under the second roller B' which smooths it, and presses out all of the ridges caused by the action of the disks in the glass. The disks revolve independently on the axle, by the contact with the soft glass. After the sheet is rolled, it is pulled from off the table bed, and placed in an annealing oven, by the usual process of rough and ribbed plate glass making. After the sheet is annealed, and taken from the oven, the margin of glass on either edge, in which no wire has been forced, is cut off, and the sheet is ready for market, either in the form in which it comes from the oven, or cut to a special size.

With this machine no previously heated table is required and no hollow roller, wherein heat is applied, is necessary.

This invention is in the nature of an attachment to the present form of glass rolling table, as seen in Fig. 4 and already in use, for by simply attaching the connecting frame with the disks and smoothing roller, a complete wire glass machine is provided. This is a great advantage, as it permits any factory to make any sizes of rough or ribbed glass, and also any sizes of wire glass, on the same tables, with the same machines, and during the same day's work. No claim is made to corrugated rollers for pressing the wire into the glass as these have been used. With the thin disks, to press the wire netting into the sheets, each revolving independently upon a common axle, there will be much less friction than with corrugations on a roller, and the disks, will not displace nearly so much glass, so that there cannot be so many wrinkles in the sheet after the smoothing roller has passed over it. The disks acting freely and independently of one another, place the wire in the soft glass to a more uniform depth, and each adapts itself to the fluidity of the glass immediately below it. The wire netting being attached to a spool or drum, is fed into the glass more evenly, and there is no drawing out of shape and the spool being in the position indicated in the drawings, the wire netting is not in the way of the ladles in pouring the glass upon the table plate.

Power is applied to one roller only, this roller having a spur wheel, of practically the same diameter as the roller, the said spur wheel working in a rack on the side of the table. The smoothing roller B' will work merely on the strips or strands of steel, and not by spur wheel in rack, thus avoiding friction. An important feature of this invention is the pressing of the wire netting into the molten glass by means of the thin independ-

ently rotating disks, whereby less glass is displaced, less power required, and a smoother finish given than by any other plan.

In using my machine it is not necessary to remove an extra plate of steel or iron with each sheet of glass made, but only the sheet of glass itself is removed and placed directly in the annealing furnace.

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

1. In a machine for making wire glass, the combination with a carrying frame; of an axle having arranged upon the same a series of parallel and independently revolving disks to press the wire netting into the glass substantially as shown and described.

2. In a machine for making wire glass, the combination with a carrying frame; of a spreading roller arranged at the front, a smoothing roller arranged at the rear, and an intermediate axle having a series of parallel and independently revolving disks for forcing the wire into the glass substantially as and for the purpose described.

3. In a machine for making wire glass, the combination with a carrying frame; of a series of disks having open spaces in them for ventilation and an axle carrying them, for forcing the wire into the glass substantially as described.

4. In a machine for making wire glass, the combination with a carrying frame; of a device for pressing the wire netting into the glass consisting of a frame with means for propelling it, and an axle having freely and independently revolving disks and alternating washers, both being cut out or made with openings to permit a circulation of air for keeping them cool substantially as and for the purpose described.

5. In a machine for making wire glass, the combination with a carrying frame and means for propelling it; of a spreading roller arranged in front, a smoothing roller arranged in the rear, an embedding device consisting of an axle with independent and freely revolving disks arranged between the rollers, and a drum or spool for the wire netting arranged in bearings above the spreading roll, substantially as and for the purpose described.

6. In a machine for making wire glass, the combination with a carrying frame and means for propelling it; of two rolls arranged at opposite ends of the frame, and an intermediate axle with independent and freely revolving disks, a spool or drum arranged above the front or spreading roll, and guides or cheeks arranged in front of the spreading roll to determine the width of the glass substantially as and for the purpose described.

FRANCIS M. RYON.

Witnesses:

GEO. W. POWERS,
CHAS. H. WILLIAMS.