

No. 734,125.

PATENTED JULY 21, 1903.

A. M. GOW.
MANUFACTURE OF PLATE GLASS.

APPLICATION FILED NOV. 12, 1902.

NO MODEL.

Fig. 1

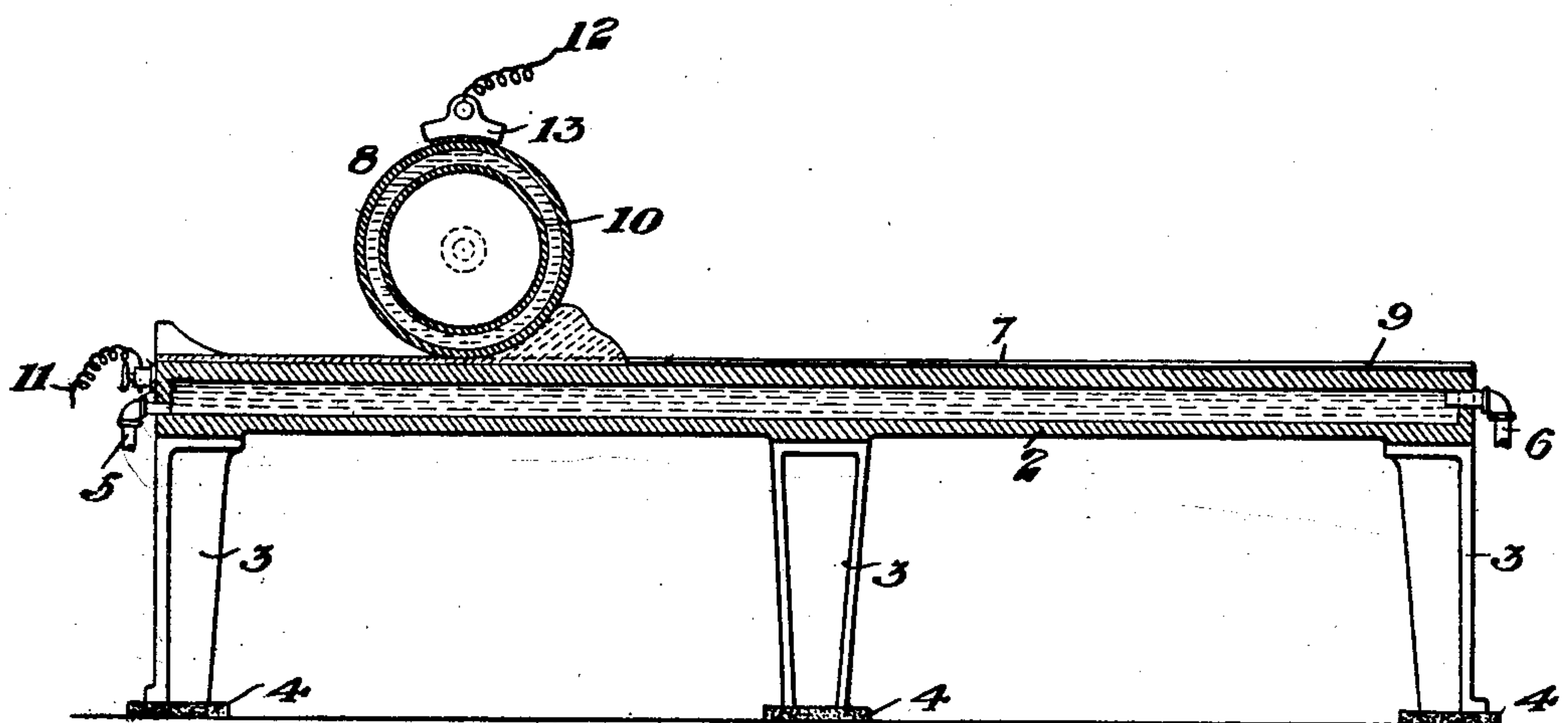
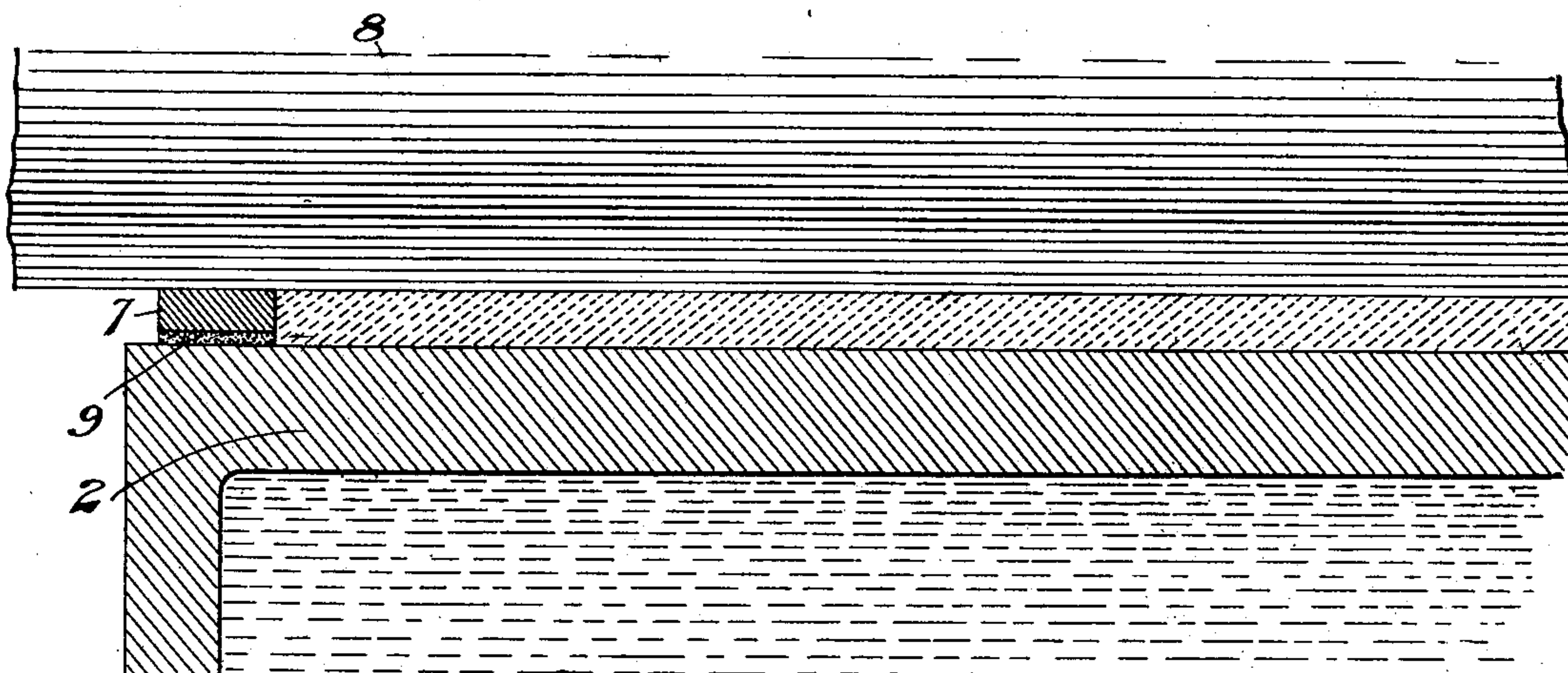


Fig. 2



WITNESSES

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INVENTOR

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UNITED STATES PATENT OFFICE.

ALEXANDER M. GOW, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-HALF TO ST. LOUIS PLATE GLASS COMPANY, OF VALLEYPARK, MISSOURI, A CORPORATION OF MISSOURI.

MANUFACTURE OF PLATE-GLASS.

SPECIFICATION forming part of Letters Patent No. 734,125, dated July 21, 1903.

Application filed November 12, 1902. Serial No. 131,009. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER M. GOW, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Improvement in the Manufacture of Plate-Glass, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional longitudinal elevation showing apparatus constructed for carrying out my invention; and Fig. 2 is a partial vertical cross-section, on a larger scale, in the rear of the roller.

My invention relates to the manufacture of plate-glass by rolling, and is designed to reduce the amount of grinding necessary by enabling a thinner plate to be made and to reduce the irregularities on the surface of the glass and the amount of contained air-bubbles.

Heretofore in rolling glass it has been teemed upon a metal table and then rolled by a heavy roller supported upon side strips whose thickness determines the thickness of the rolled sheets. With this system the chilling action between the table and the roller produces an uneven surface on the glass and air is entrained, which appears in the form of small bubbles near the surface of the glass. For these reasons it has been necessary to grind off both sides of the rolled plate to a sufficient depth to remove the irregularities and air-bubbles, and to produce a finished plate of one-quarter-inch thickness it has been necessary to roll a plate approximately seven-sixteenths of an inch thick. My invention largely overcomes this difficulty, enables a thinner sheet to be rolled or one nearer the thickness of the final sheet, and, furthermore, gives the upper side of the plate next the roller a fire-polished surface.

The invention consists in passing a current of electricity through the glass from the table to the roller, or vice versa, thereby melting the successive portions of the glass as the roller passes along the table. It is well known that as glass is heated its conductivity increases and that molten glass is a conductor of electricity, and I utilize this characteristic

to impart a better surface to the sheet during rolling.

In the drawings, in which I show one form of apparatus for carrying out my invention, 2 represents a table, whose legs 3 rest upon insulators 4. The table is shown as being hollow and water-cooled by inlet and outlet pipes 5 and 6 at opposite ends, so that a water circulation may be kept up during the rolling. The side strips 7, which support the roller 8, are shown as of metal and insulated from the table by insulating-strips 9, which extend throughout their length. I have shown the roller as provided with an annular water-cooling space 10, which connects with the trunnions, so that the water passes in at one trunnion and out through the other during the rolling. One terminal 11 is shown as connected to the upper portion of the table, while the other terminal 12 leads to brushes 13, resting upon the surface of the roller. These wires preferably lead from the terminals of a transformer which provides, preferably, an alternating current of low voltage and large amperage.

In using the apparatus glass is teemed upon the table in the usual manner and the roller is moved along, the current at the same time being cut in through the wires 11 and 12. As the roller proceeds the current of electricity will flow between the table and the roller through that portion of the glass between them and possibly through the adjacent portions. In this portion of the glass which at any moment is between the roller and the table a high degree of heat will be generated in proportion to the amount of current flowing through, and it will therefore be raised to a higher temperature and melted, being hotter than the glass in front of and behind the roller. The width of this heated portion of glass will depend on the quantity of current passing. As the roller moves forward these successive molten portions of glass are exposed to the cooling action of the air, thus giving on the top surface a "fire-finish."

The advantages of the invention result from passing currents of electricity between

the table and roller, or vice versa, since thereby the air-bubbles are reduced and a better surface is imparted. The labor and expense of grinding are therefore greatly reduced.

The insulating-supports for the roller may be dispensed with by supporting the roller over and independent of the table, and in such case the roller can be adjusted downwardly and passed back and forth over the same plate to remove irregularities which might result from a single rolling. The water-cooling may be used or not, as desired, though I prefer it in order to prevent excessive heating of the table and roller as their successive portions are subjected to the action of the electrical current.

Two or more rollers may be used instead of a roller and table, and many other variations may be made in the form and arrangement of the apparatus without departing from my invention, since I consider myself the first to heat the glass being rolled by passing a current through the successive portions in contact with the roller.

I claim—

1. The method of forming plate or sheet glass consisting in rolling glass into a plate or sheet, and passing a current of electricity through the successive portions during rolling; substantially as described.

2. The method of making plate or sheet glass, consisting in rolling the same and passing a current of electricity through the successive portions of the glass between the forming surfaces during the rolling operation; substantially as described.

3. The method of forming sheet or plate glass, consisting in passing an alternating current of low voltage and high amperage through the successive portions of the glass between the forming surfaces during rolling; substantially as described.

In testimony whereof I have hereunto set my hand.

ALEXANDER M. GOW.

Witnesses:

L. M. REDMAN,

H. M. CORWIN.