

(No Model.)

A. D. BROGAN & A. M. MALLOCH.

APPARATUS FOR ROLLING GLASS TO PRODUCE DESIGNS THEREON.

No. 370,178.

Patented Sept. 20, 1887.

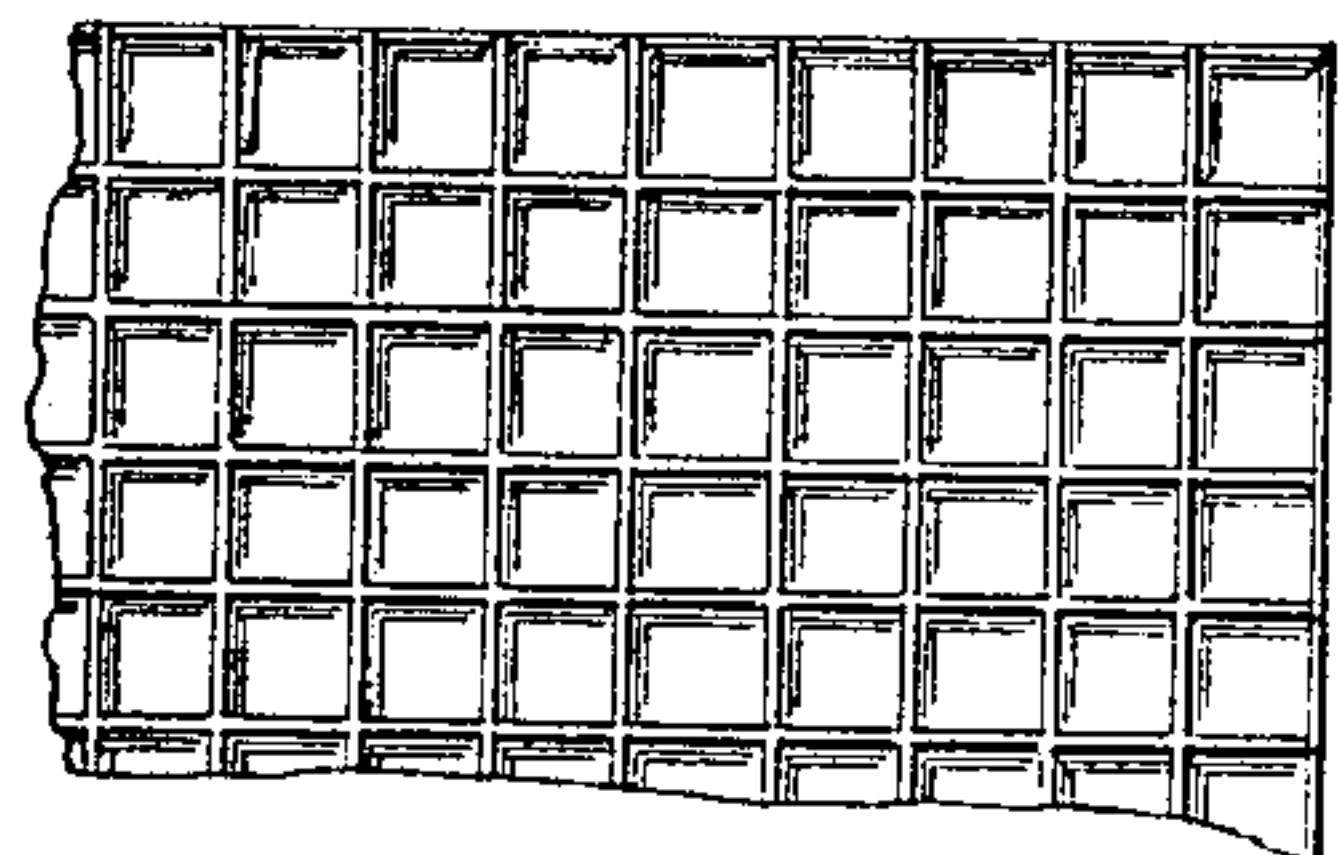
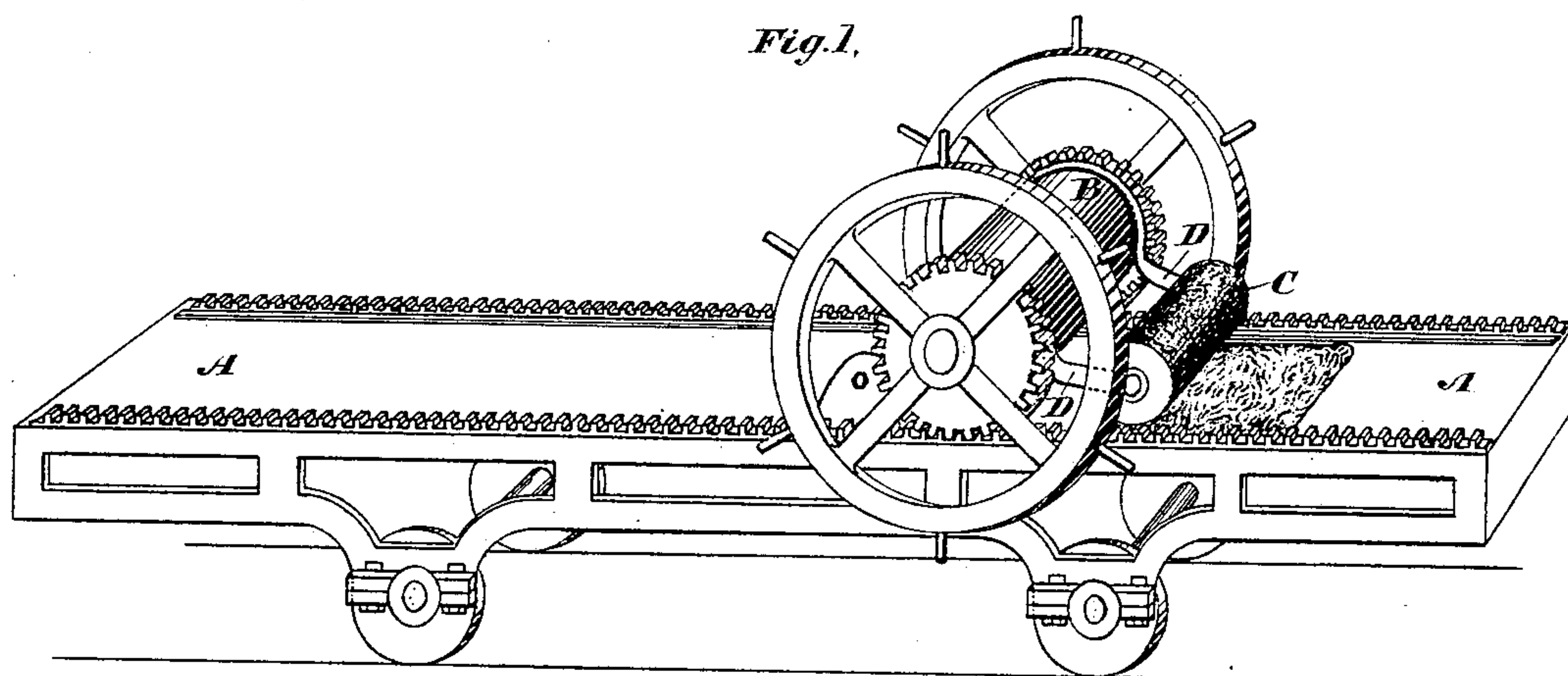


Fig. 2

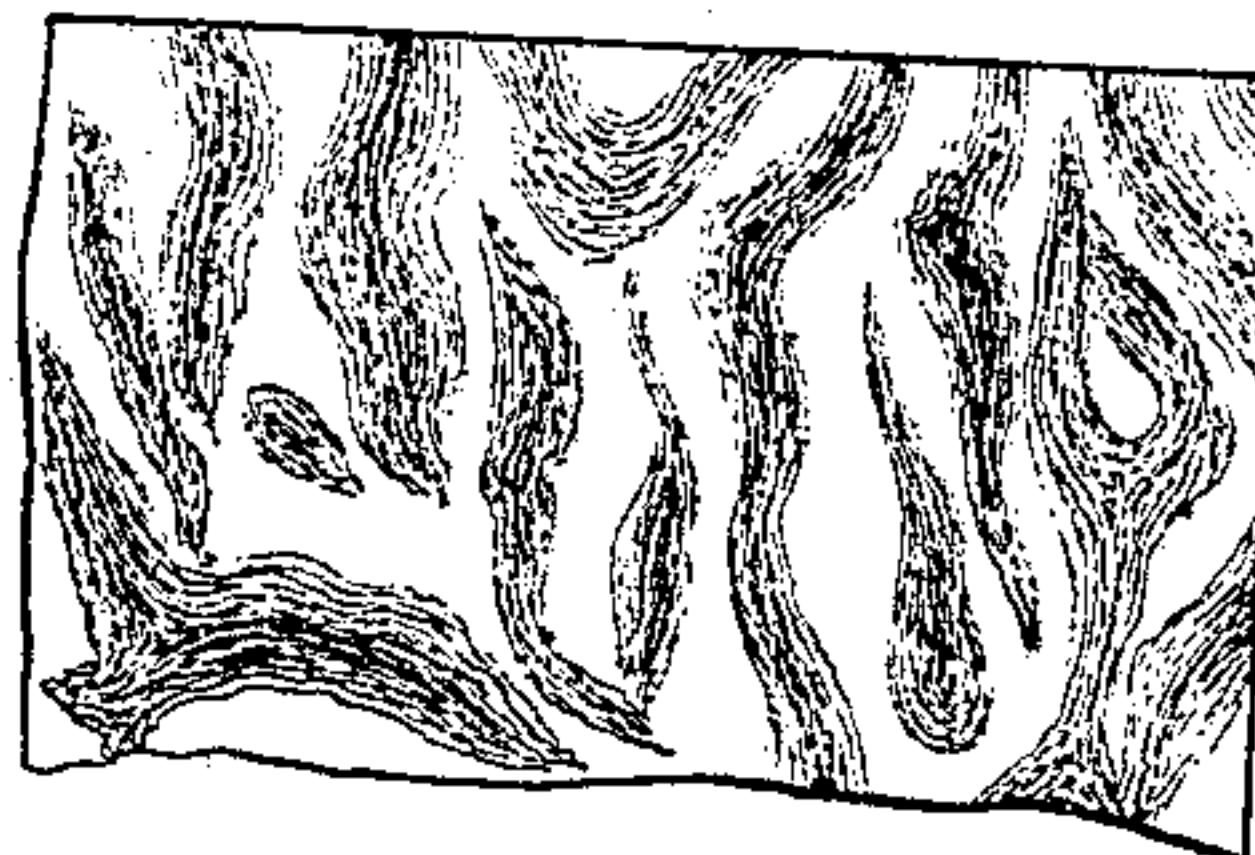


Fig. 3.

Witnesses
H. B. Knight.
Emma Arthur.

Inventors
Anthony Dixon Brogan
& Andrew Murray Malloch
by H. B. Knight Bros.
attys.

UNITED STATES PATENT OFFICE.

ANTHONY D. BROGAN AND ANDREW M. MALLOCH, OF FIRHILL, GLASGOW,
COUNTY OF LANARK, SCOTLAND.

APPARATUS FOR ROLLING GLASS TO PRODUCE DESIGNS THEREON.

SPECIFICATION forming part of Letters Patent No. 370,178, dated September 20, 1887.

Application filed March 14, 1887. Serial No. 230,879. (No model.) Patented in England December 14, 1886, No. 16,366.

To all whom it may concern:

Be it known that we, ANTHONY DIXON BROGAN and ANDREW MURRAY MALLOCH, citizens of the United Kingdom of Great Britain and Ireland, residing at Firhill, Glasgow, in the county of Lanark, Scotland, have invented new and useful Improvements in Apparatus for Rolling Glass to Produce Designs thereon; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the manufacture or art to which it relates to make and use the same.

Our invention relates to the manufacture of glass in plates or sheets having upon one surface vermicular, wave-like, or other patterns or designs produced by the action of a roller; and it consists in an improved apparatus for rolling the molten glass, whereby uniform thickness of sheet is obtained and the design or pattern is produced by a comparatively small roller, involving small outlay for engraving or impressing the pattern upon it.

In carrying out our invention we employ, in conjunction with the ordinary glass-casting table, two or more rollers, one of which is of large diameter and smooth, as in the ordinary machine, and one or more of smaller diameter, having engraved, embossed, or otherwise formed upon it or them the design or pattern to be produced upon the surface of the glass. The roller or rollers bearing the design or pattern is or are connected to the large smooth roller by suitable links attached to the spindle of the second roller and having arms passed over the larger roller, whereby, upon the larger roller being rolled over the molten glass, the smaller roller or rollers is or are drawn by it over the rolled glass. The larger and heavier roller serves to roll out and determine the thickness of the glass sheet, and the follower or followers need only be of such weight as to impress the pattern upon the surface of the soft and plastic glass.

In the accompanying drawings, Figure 1 represents, in perspective, a glass-casting table, A, provided, as above set forth, with two rollers, one, B, of which is of the usual smooth type, and the other, C, which is connected to it by links D, with the axis parallel to the other, has formed upon it the design or pattern to be impressed on the upper surface of the glass. The under surface in contact with the table remains comparatively smooth, while the upper surface, which is acted on by the roller C after being pressed out by the roller B, has the desired pattern clearly impressed upon it. By employing two or more pattern-impressing rollers the patterns upon them may be run into each other or intermingled when impressed on the glass-sheets, and patterns produced of dappled, rippled, or various forms.

Figs. 2 and 3 illustrate varieties of the patterns produced on the surface of the glass.

Having now described the invention, what we desire to claim and secure by Letters Patent is—

The combination, with the table and a smooth traversing roller, B, adapted to roll out the molten glass, of a roller or follower having a figured surface adapted to rest upon the molten glass and impress a design thereon, and links D, connecting the rollers, substantially as and for the purposes set forth.

In witness whereof we have hereunto set our hands this 1st day of March, 1887.

A. D. BROGAN.
A. M. MALLOCH.

Witnesses:

GEO. M. CRUIKSHANK,
Fel. Inst. Patent Agents, 62 St. Vincent Street, Glasgow.

WALLACE FAIRWEATHER,
Fel. Inst. Patent Agents, 62 St. Vincent Street, Glasgow.