

(No Model.)

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

APPARATUS FOR ROLLING GLASS PLATES.

No. 396,535.

Patented Jan. 22, 1889.

Fig. 1.

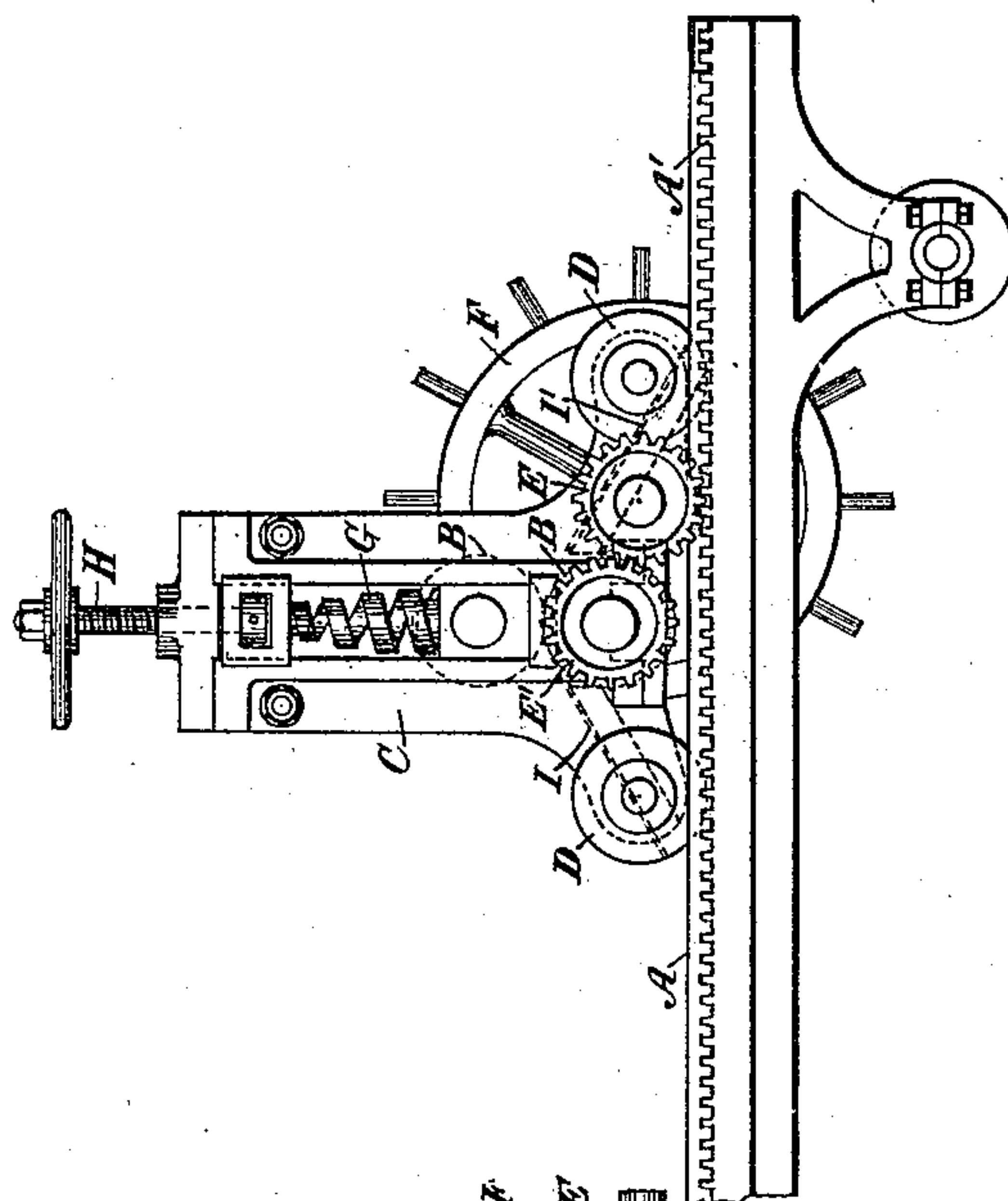
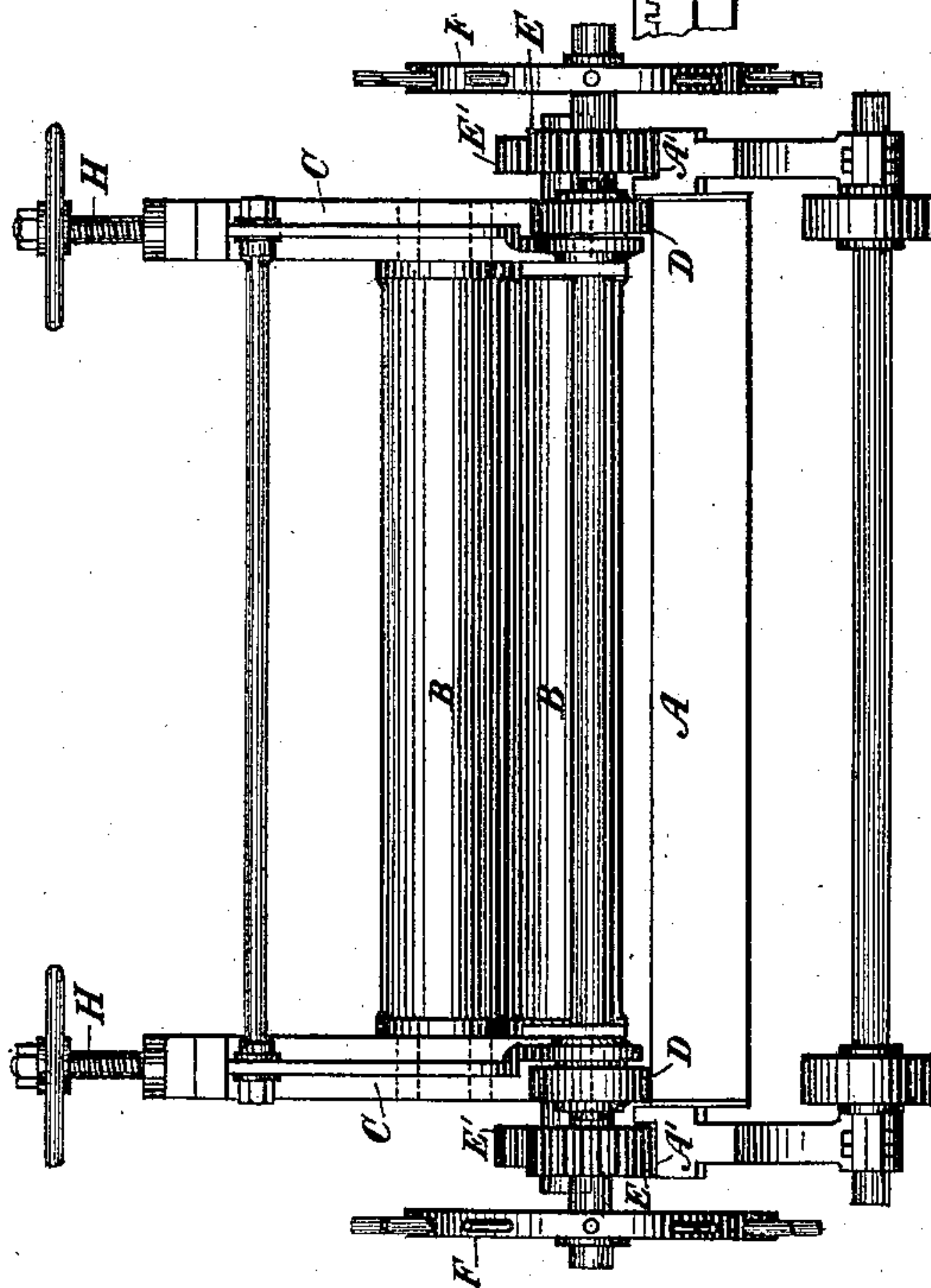


Fig. 2.



attest.  
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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR ROLLING GLASS PLATES.

SPECIFICATION forming part of Letters Patent No. 396,535, dated January 22, 1889.

Application filed July 23, 1888. Serial No. 280,775. (No model.) Patented in England December 13, 1887, No. 17,125.

*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 Plates to Produce Rippled, Dappled, Vermicular, Checkered, or other Patterns or Designs thereon, (which has not been patented in any country except Great Britain by Letters Patent dated December 13, 1887, No. 17,125;) 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.

This invention relates to the manufacture of rolled plate-glass having rippled, dappled, vermicular, checkered, or other patterns or designs produced *in rilievo* or *in intaglio* upon its surface by means of engraved or similarly-prepared rollers; and the improvements have for object to make provision whereby the desired impression may be imparted to the surface or surfaces of the glass during or immediately after the usual operation of rolling on the casting-table and before removal from the table, reheating of the rolled plate to bring it to a plastic state for receiving the impression being dispensed with.

To that end we employ, as represented in side and end elevation at Figures 1 and 2 of the accompanying drawings, a casting-table, A, on which are fitted, in addition to the usual plain roller, which is not shown, a pair (or two or more pairs) of rollers, B B, carried in bearings in a movable framing, C, fitted on guide-wheels D, and adapted to travel over the table A in rear of the plain roller, the surface of the glass plate, which is rolled out smooth by the plain roller in the usual way, being impressed by passing through between the pair (or each pair) of said auxiliary rollers B B. The auxiliary rollers are fitted one vertically over the other, and in rolling the glass to impress it it is raised from the table and led between the rollers B B by means of an inclined guide-plate, I, secured

between "guns" on the framing, and it is thence led over a similar guide-plate, I', at the rear and back onto the table. One or both of the pair (or of each pair) of rollers B B is or are engraved or formed with a rippled, dappled, or other surface corresponding to that of the design or pattern to be produced on the surface of the glass; but by preference the lower roller B alone is so formed, in order that the lower side of the glass plate, which is roughened by contact with the casting-table, may have the desired pattern or design impressed upon it, while the upper side is rolled smooth.

The framing, with the auxiliary rollers, is traversed upon the table by toothed wheels E, centered in the framing and gearing with the usual rack, A', on each side of the casting-table, the said toothed wheels E being rotated by hand-wheels F, or by cranks or like means, and imparting rotatory motion in the reverse direction to the impressing-roller B, on whose axis are toothed wheels E', in gear with the wheels E, gearing into the racks A', while the upper roll is driven by frictional contact with the glass, on which it bears by its own weight alone or by the aid of weights or of springs G, the pressure of the springs being regulated by hand-screws H. The framing C, carrying the impressing-rollers, may, however, be traversed over the table (independently of the usual casting-roller) by means of chains or bands passing round pulleys at either end, or by other means; or it may be connected by links or otherwise to the casting-roller in such a manner as to be drawn over the table in rear of the casting-roller.

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

1. In conjunction with a casting-table for rolling glass, a pair or pairs of rollers carried on a framing adapted to be traversed over said table, the said rollers being operated so that the glass plate rolled upon the table is drawn through between them and thereby impressed with a surface-pattern.

2. In combination with the casting-table A, the framing C, carrying pattern-impressing rollers B B and adapted to be traversed over



the table, substantially as and for the purpose set forth.

3. In conjunction with a casting-table for rolling glass, pattern-impressing apparatus  
5 composed of the following elements in combination, to wit: the framing C, roller B B, guide-plates I I', and gearing, such as E E', for driving the rollers, substantially as described.

10 In witness whereof we have hereunto set

our hands and seals this 1st day of June, 1888.

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