

J. M. POOLE.
MACHINE FOR GRINDING ROLLERS.

No. 104,492.

Patented June 21, 1870.

Fig. 3.

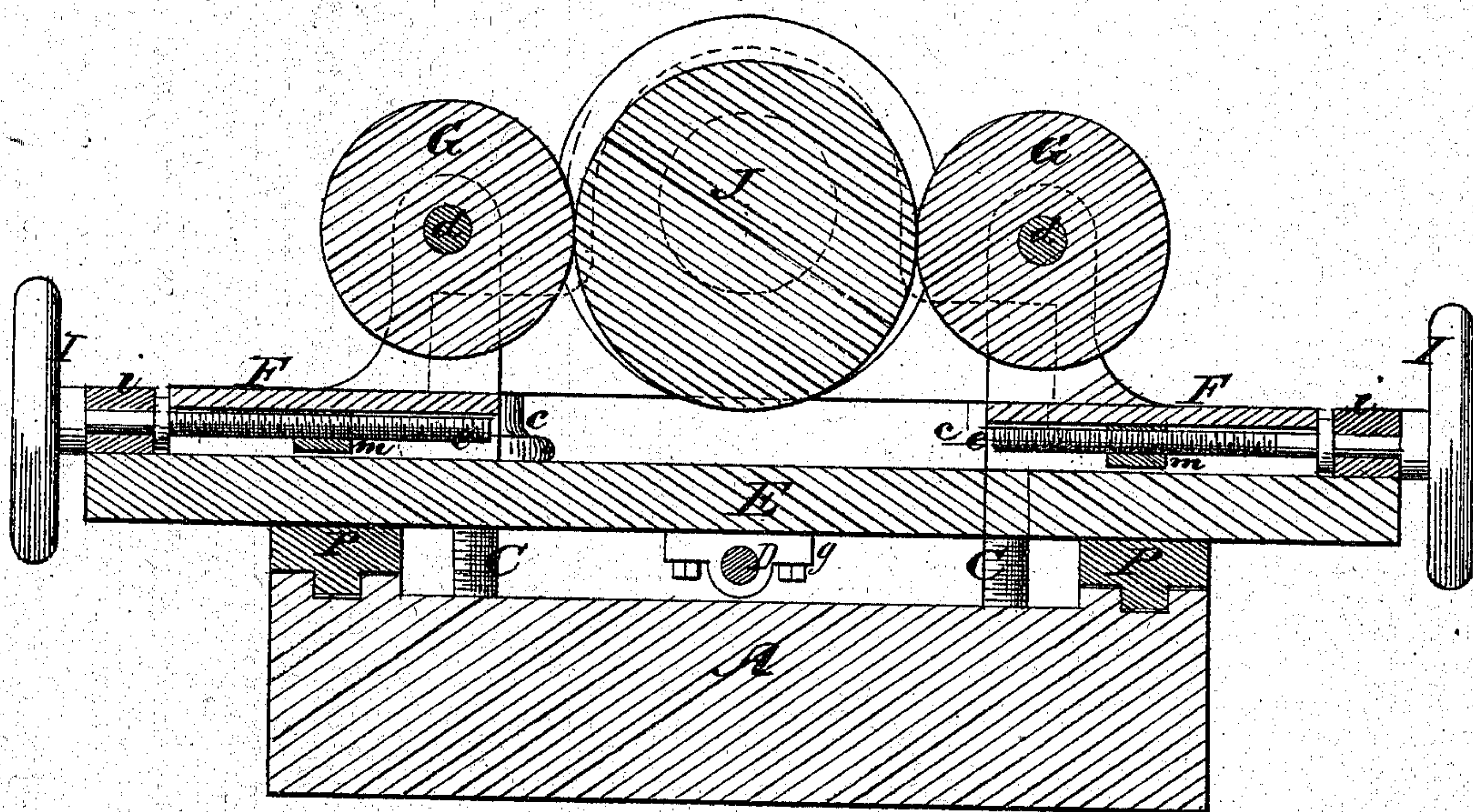


Fig. 4.

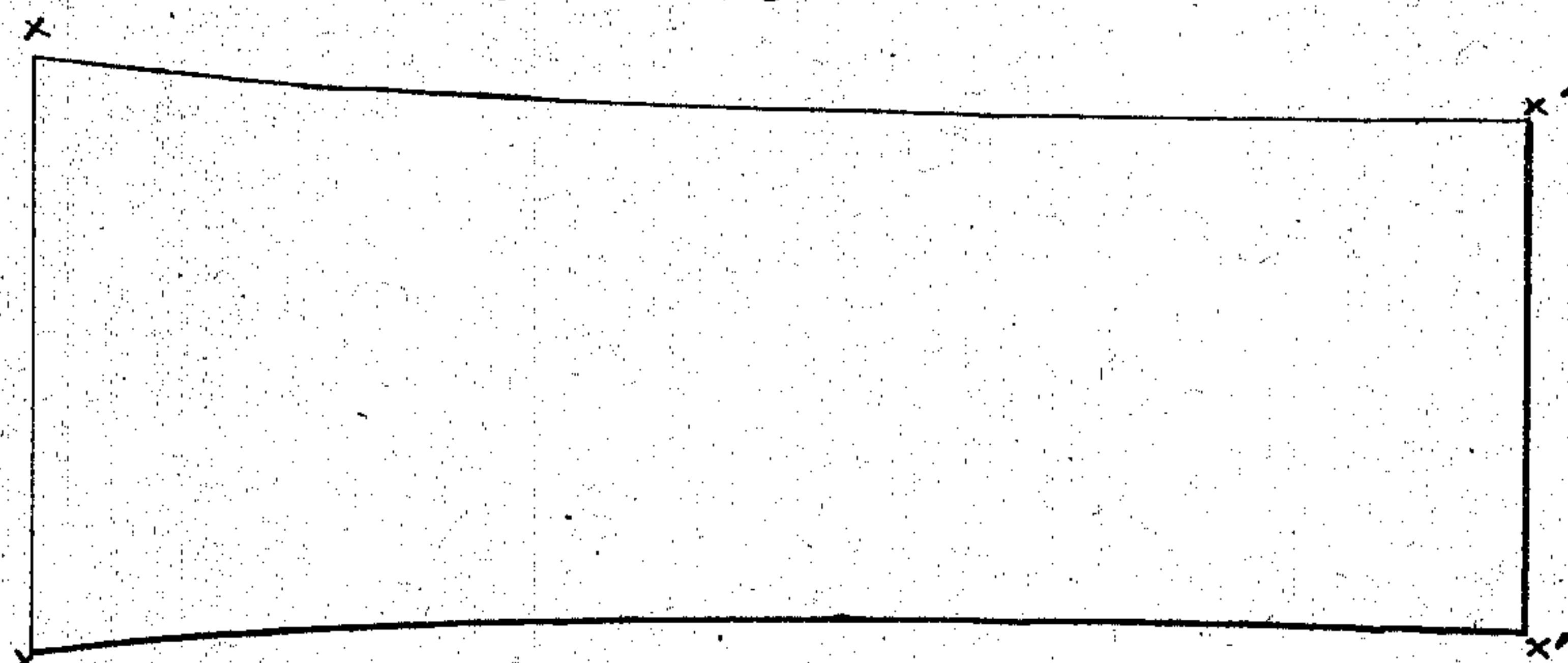
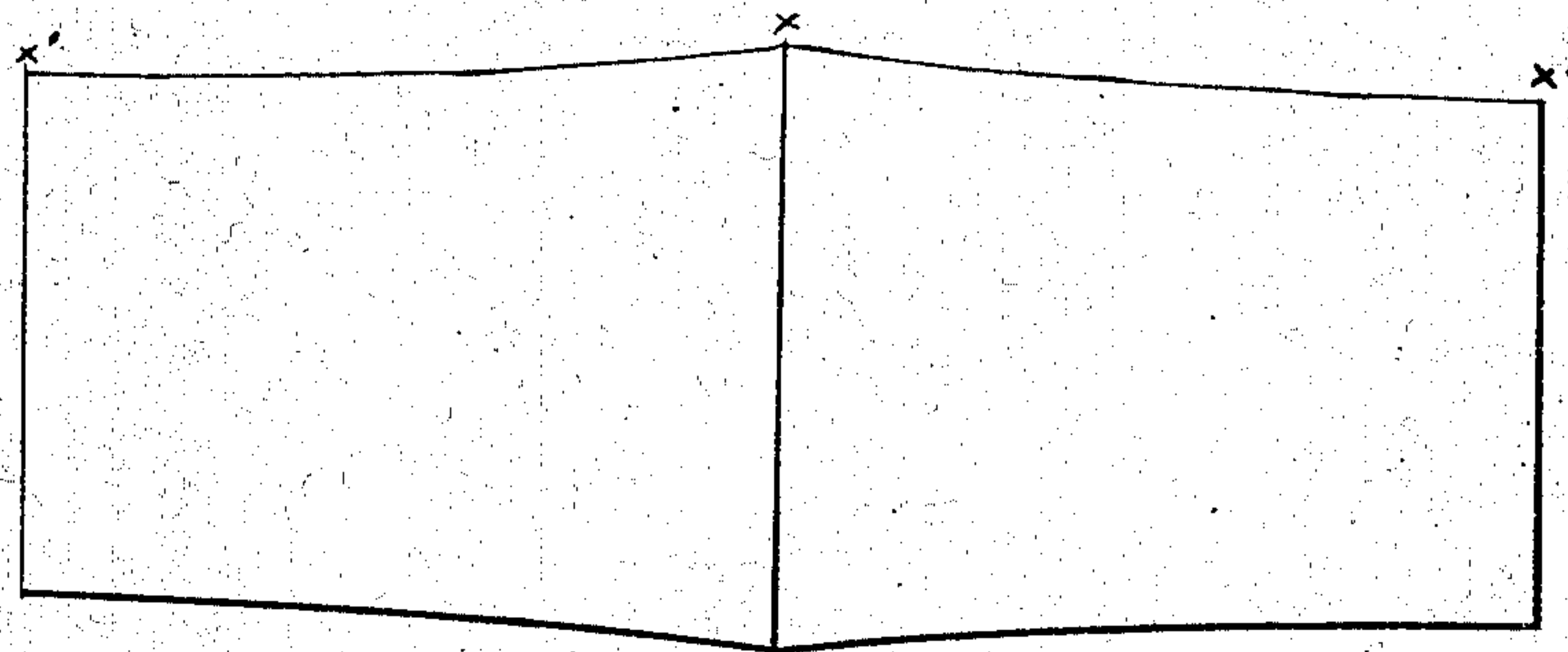


Fig. 5.



Witnesses.
R. J. Campbell
J. N. Campbell

Inventor
J. Morton Poole
by
Mason Fennell & Co.

United States Patent Office.

J. MORTON POOLE, OF WILMINGTON, DELAWARE, ASSIGNOR TO HIMSELF,
WILLIAM T. PORTER, AND THOMAS S. POOLE, OF SAME PLACE.

Letters Patent No. 104,492, dated June 21, 1870.

IMPROVEMENT IN MACHINE FOR GRINDING

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, J. MORTON POOLE, of Wilmington, in the county of New Castle, and State of Delaware, have invented a Machine for Grinding and Reducing Rollers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1, plate 1, is a section through the machine, taken longitudinally, centrally, and in a vertical plane, showing a roller which has been reduced from its ends to its middle.

Figure 2, plate 1, is a top view of the machine, and a roller reduced from both ends to its middle.

Figure 3, plate 2, is a section taken transversely and vertically through the machine.

Figure 4 shows a roller which has been reduced from one end to the other.

Figure 5 shows a roller which has been reduced from the middle of its length to both ends.

Similar letters of reference indicate corresponding parts in the several figures.

In the construction of various kinds of machinery, such, for instance, as machinery for rolling sheet-metal, the rollers are required to be slightly smaller in the middle than at their ends, so that, when they expand by heat, they will be straight or cylindrical.

Also, in machinery for calendering paper, the lower rollers in the stack are slightly larger in the middle than at the ends, to compensate for their bending under the immense weight and pressure they are required to sustain.

The object of my invention is to construct a machine which will reduce rollers so as to taper them either from one end to the other, from their ends toward the middle of their length, or from the middle of their length to their ends.

To enable others skilled in the art to understand my invention, I will describe one practicable mode of carrying it into effect.

In the accompanying drawing—

A represents the horizontal bed of the machine, which may be constructed of any required length and width, and which should be substantially supported upon a frame or stand, somewhat after the manner of constructing the frame or stand of a turning-lathe.

Upon this bed, and moving in suitable guide-ways W W, which are parallel to one another, is a horizontal slide-rest, E, arranged transversely across the upper surface of the bed, and moved in a direction with the length of the latter by means of a screw, D.

This screw D is supported by bearings *a a*, passes through a nut, *g*, on the bottom of the slide-rest E, and may be turned so as to feed the latter by any

suitable mechanism operating in harmony with the grinding or reducing mechanism.

Upon the slide-rest E, and held in place by suitable guides *f f*, are two tool-rests F F, which carry grinding-rollers or wheels G G, or other suitable reducing devices.

The wheels or reducing devices G G are fixed to shafts *d d*, on which belt-pulleys *b b* are applied, so that rotary motion can be given to said devices at the same time that they are moved with the slide-rest from one end to the other of the bed A.

The tool-rests F F are arranged on opposite sides of the longitudinal center of the machine, and can be adjusted nearer to or further from each other, by means of screws *e e*.

These screws have hand-wheels I applied to their outer ends.

They are supported in and prevented from having endwise motion by the bearings *i i*, and they pass through nuts *m m* on the bottoms of the tool-rests, as shown in fig. 3.

At or near the extremities of the bed A, and sustained by screw-supports C C, having hand-wheels *c c* on them, are the bearings B B, for the object to be operated on.

These bearings are vertically adjustable, and are adapted for receiving and affording substantial supports to the ends of the object J, as shown in the drawing.

In practice the journal-boxes in the bearings B B should be pivoted, or otherwise so constructed as to accommodate themselves to the different angles of inclination from a horizontal plane, which it may be desired to give to the object J to be operated on.

Provision should also be made for giving the object J rotary motion while being reduced by the devices G G.

Operation.

To produce the roller shown in figs. 1, 2, and 3, I raise one end of the roller J above, and the other I depress a like distance below a horizontal plane passing through the axis of the grinding devices G G, and grind the roller until the devices G G move tangent to the circumference of the roller from one extremity to the other, or from end to end.

To grind the roller shown in fig. 5, I elevate one end of the roller in such manner that its axis will intersect a plane passed horizontally through the centers of the grinding devices G G only at one extremity of this roller. If, in this position, I commence to grind the roller, it will be more reduced in diameter at the end which has not been elevated than at the opposite end, and I continue to reduce it in this way

till the grinding-wheels will move tangent to its circumference from the middle of its length to one extremity.

By repeating this process with the opposite end of a roll, I reduce the same as represented by fig. 5. If, instead of repeating the process with the opposite end of the roll, as just described, I continue to grind until the grinding-wheels move parallel to the circumference of the roll, from one end to the other, I produce the roller shown by fig. 4.

Having described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

The manner of reducing the surface of a cylindrical object by means of one or more grinding or reducing devices, moving parallel to a vertical plane passing through the axis of said object, but inclined to a plane passing horizontally through its axis, substantially as described.

Witnesses:

J. MORTON POOLE.

WILLIAM HAYES,

ALFRED D. POOLE.