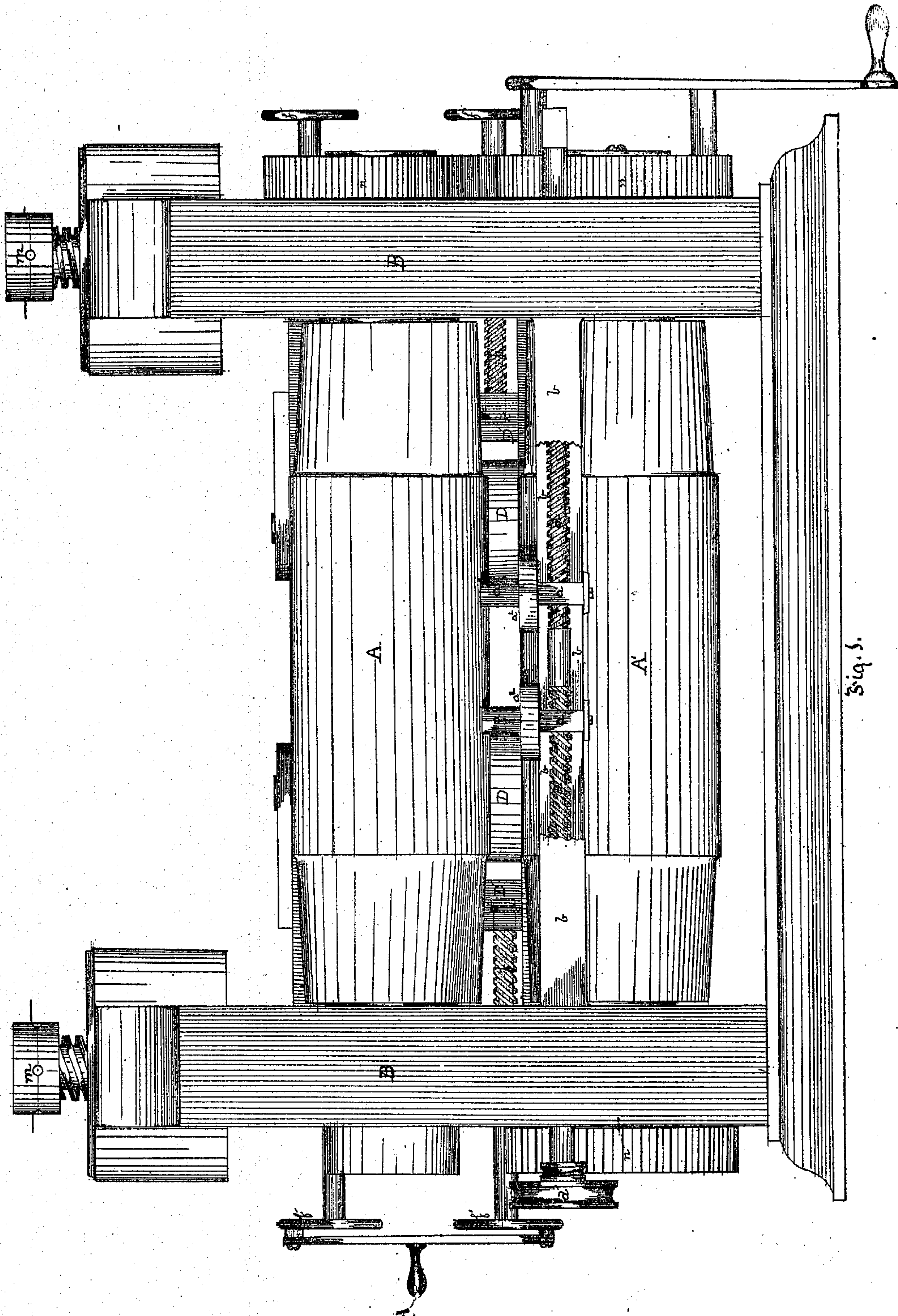


A. KLOMAN.  
MACHINE FOR ROLLING METALS.

No. 105,950.

Patented Aug. 2, 1870.



Witnesses: *Thos. Kline*  
*R. Wrenshall*

Andrew Kroman,  
by *Bakewell & Christy,*  
his Attys.



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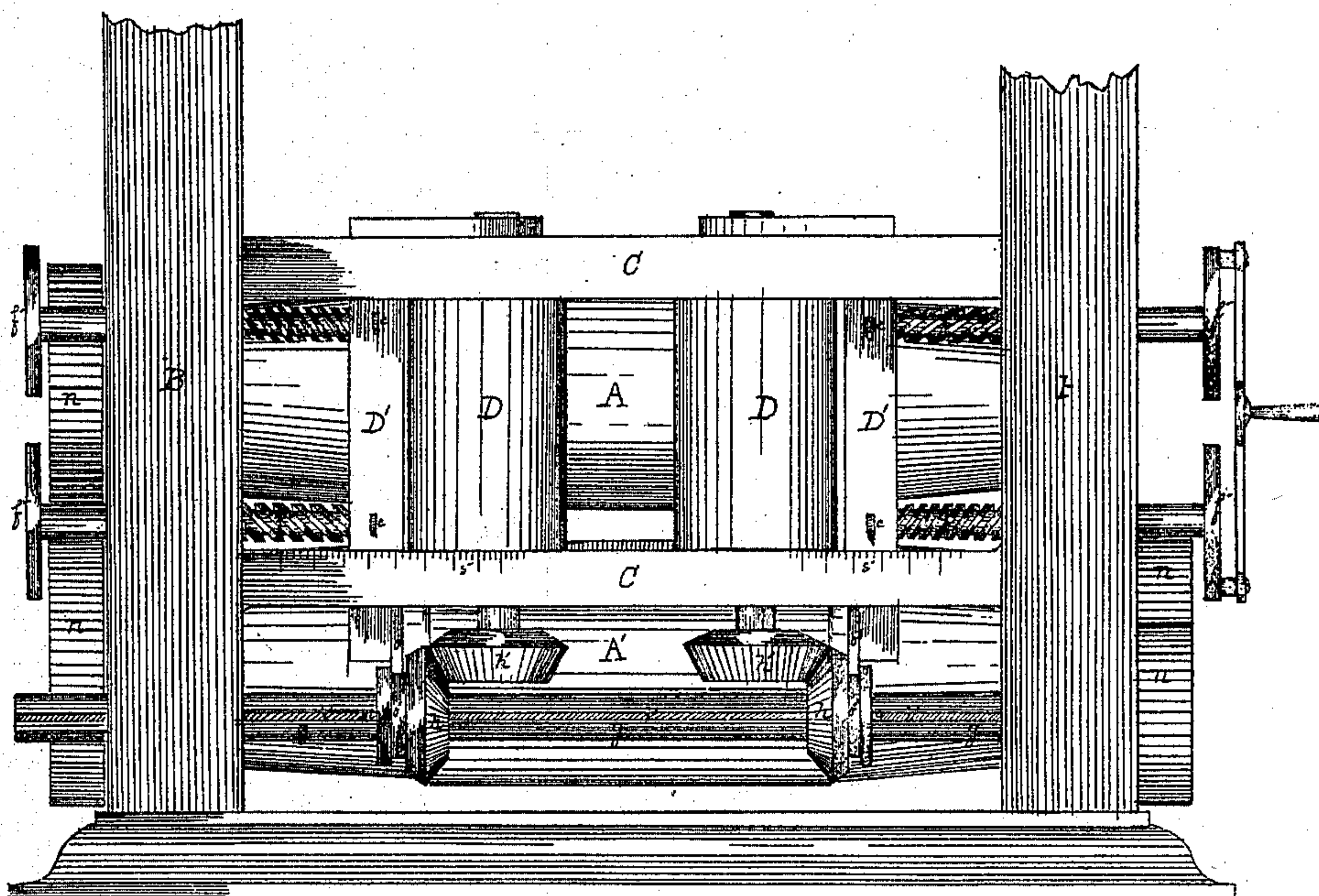


Fig. 2.

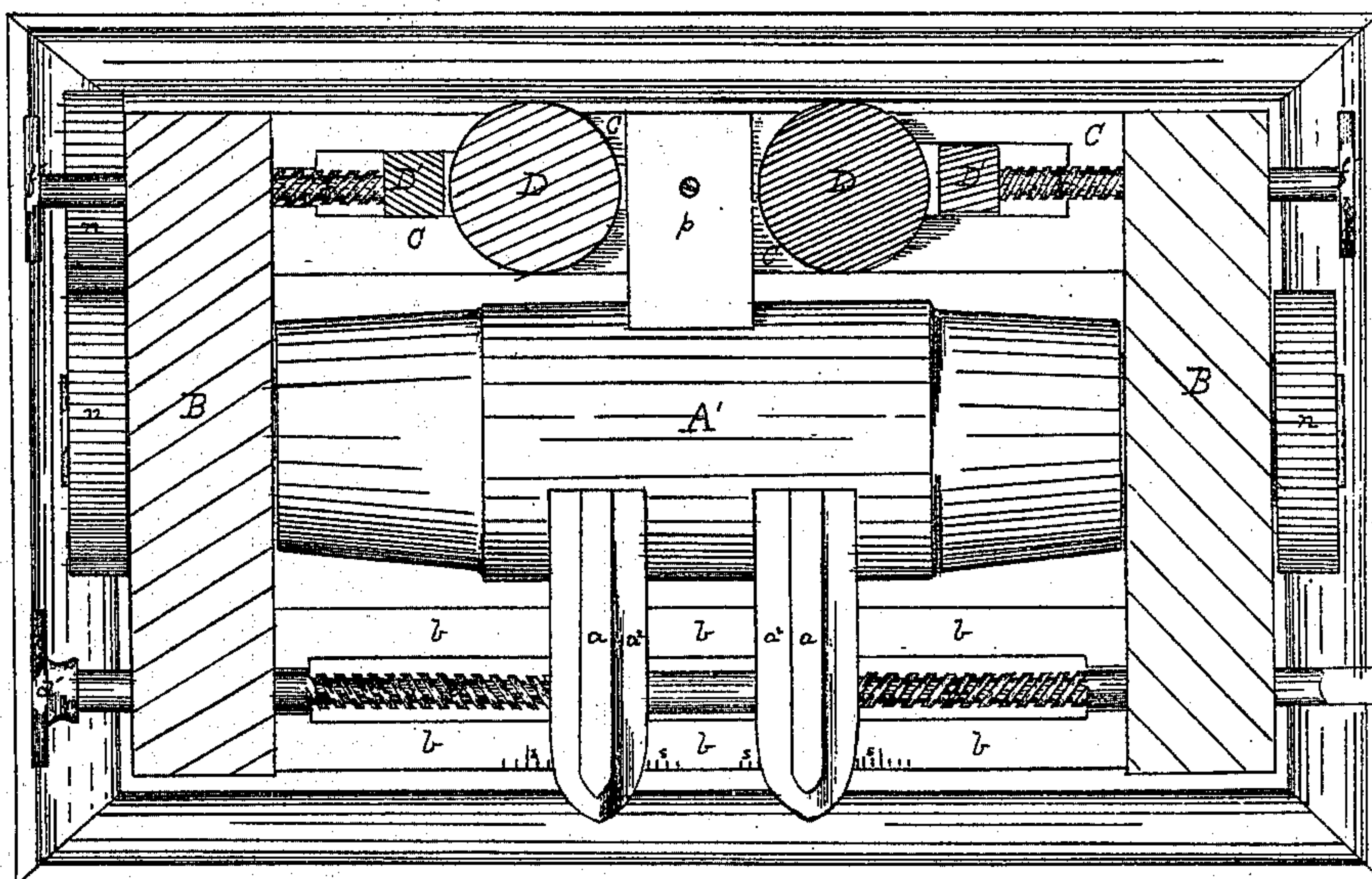


Fig. 3.

Witnesses:  
R.C. Wrenshaw

Thorntons

Andrew Kloman,  
by Bakewell Lehnish,  
his Atty.



# United States Patent Office.

ANDREW KLOMAN, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 105,950, dated August 2, 1870.

## IMPROVED MACHINE FOR ROLLING METALS.

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, ANDREW KLOMAN, of Pittsburg, in the county of Allegheny and in the State of Pennsylvania, have invented a new and useful Improvement in Machine for Rolling Iron; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, in two sheets, making a part of this specification, in which—

Figure 1 is a front elevation of my improved machine;

Figure 2 is a rear elevation thereof; and

Figure 3 shows a horizontal section as formed by a plane passing through the machine just beneath the upper horizontal roll.

Like letters of reference indicate like parts in each.

My invention consists in the construction of an improved machine for rolling flat plate iron of any desired width and thickness.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and mode of operation.

The horizontal rolls A A', of the usual or any desired construction, are mounted in the housings B in the usual way.

The upper roll A is so set in its bearings that it may be adjusted up or down by means of a screw, *m*, and by a counterpoise, so as to give a greater or less opening between it and the lower roll A'. In this way the rolls are adjusted, so as to roll plates of the desired thickness, or to reduce them in thickness at each successive pass.

In front of the rolls, extending from one housing to the other, is a guide-rest, *b*, consisting of two parallel bars, properly set with reference to the plane of the "part" of the rolls. On this is set a pair of guides, *a*, at *a*<sup>1</sup>, on the lower face of each guide *a*, passing down between the bars of the guide-rest *b*, and engaging their lower face.

Through the shanks *a*<sup>1</sup> of the T-shaped guide *a*, a right and left-hand screw, *d*, is operated, by means of a hand-wheel, *d*<sup>1</sup>.

It is then obvious that by turning the hand-wheel *d*<sup>1</sup> the guides *a* may be readily and accurately set at any required distance apart, and that such distance can be almost instantly changed.

For convenience, the inner faces of the guides *a* may be shouldered as at *a*<sup>2</sup>, the horizontal face of the shoulder being even with the upper face of the lower roll A'.

On the rear side of the rolls A A', and extending from one housing to the other, is a frame-work, C, of such construction that the horizontal rolls D D, set therein, by means of adjusting blocks, D', may be adjusted to or from each other at pleasure.

To this end a pair of screws, *f* *f*', operate through each housing, with their forward ends attached by means of keys, *c*, and grooves, *c*', to the adjusting blocks D'. Then, by turning the screws *f*, by means of their heads *f*', or by means of gearing connected therewith, the vertical rolls may be set to or from each other, as may be desired.

By connecting the screws *f* with a common source of power, they may, like the guides *a*, be each adjusted simultaneously and uniformly, and with equal accuracy.

These upright rolls form the edge of the bar or plate to be made.

The power to operate the the vertical rolls D D is communicated through any suitable arrangement of gear-wheels, *n* *n*, to the shaft *g*, on which, by a key, *i*, and groove, *i*', or in other equivalent manner, the miter-wheels *h* are set, so that they are adjustable forward and back on the shaft *g*.

This adjustment is effected by means of a yoke, *o*, attached to the adjusting blocks D', the end of each yoke *o* entering a groove, *o*', in the hub of each gear-wheel *h*. Then, as the adjusting blocks are moved forward and back, they carry the miter-wheels *h* with them, so that all points of adjustment the latter will mesh into the corresponding miter-wheels *h*', on the ends or necks of the vertical rolls D D, and so communicate motion to them.

The adjusting blocks D' and necks of the vertical rolls D may be connected by straps or other suitable bearings.

The billet, bloom, or pile to be rolled, being first heated, is fed in between the guides *a*, the guides being set to the width of the billet, bloom, or bar, as it is passed in, the horizontal rolls being adjusted so that they will reduce it the desired amount at the first pass, and the vertical rolls being adjusted so that they will engage the edges of the bar or plate as it comes through. With the devices heretofore in use, it has taken so long a time to readjust the rolling and feeding devices, that before the rolling out of a single plate could be effected, it had lost so much of its heat that the rolling had to be suspended, with a consequent loss of time and waste of fuel, while the plate was taken to the furnace and reheated.

Nor do I know of any machine heretofore in use in which the guides *a* could receive an instantaneous, simultaneous, and accurate and variable length of throw to or from each other; and this element constitutes one of the important features of my invention.

While the bar or plate is being passed from the rear side of the rolls back to the front, for another pass between the rolls, the operator in charge, by turning the hand-wheel *d*<sup>1</sup>, can almost instantaneously,



and with most perfect accuracy, set the guides *a* to the width of the bar or plate, so as to feed it in such position that both its edges will be again engaged by the vertical rolls, which are likewise adjusted in the manner already described. I am thus enabled to save one or two or more heats in the rolling out of a bar or plate, and, also, secure greater uniformity in the work produced.

If found desirable, the guides *a* may be set in each case a distance apart, a little in excess of the width of the bar or plate, and then tightened up a little as soon as the bar or plate is introduced between them. This is especially the case with the first pass of a pile or fagot, since, in heating and handling, it is liable to become twisted or get out of shape. In such case, the guides may be opened to receive the pile, and then closed sufficiently to feed it through at the proper joint for it to be rolled on both edges by the upright rolls.

Also, the front rest *b* may be graduated as at *s'*, and likewise the frame-work *C* on the rear of the machine,

as at *s'*, for greater convenience and accuracy in setting the guides *a* and vertical rolls *D*.

In connection with the guides *a*, I do not limit myself in my invention to a right and left-hand screw, *d*, but include in my invention other mechanical devices of like function, such as a cam, eccentric, &c., which, being connected with the guides *a*, will give to both a throw simultaneous as to time, uniform in extent, and variable at pleasure as to length.

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

The parallel-faced guides *a*, simultaneously adjustable to or from each other, as described, in combination with the horizontal rolls and the adjustable vertical rolls, substantially as set forth.

In testimony whereof, I, the said ANDREW KLOMAN, have hereunto set my hand.

ANDREW KLOMAN.

Witnesses:

JOHN GLENN,  
G. H. CHRISTY.