2 Sheets—Sheet 1.

F. HICKMAN.

MACHINE FOR ROLLING HOOP-IRON.

No. 186,561. Patented Jan. 23, 1877.

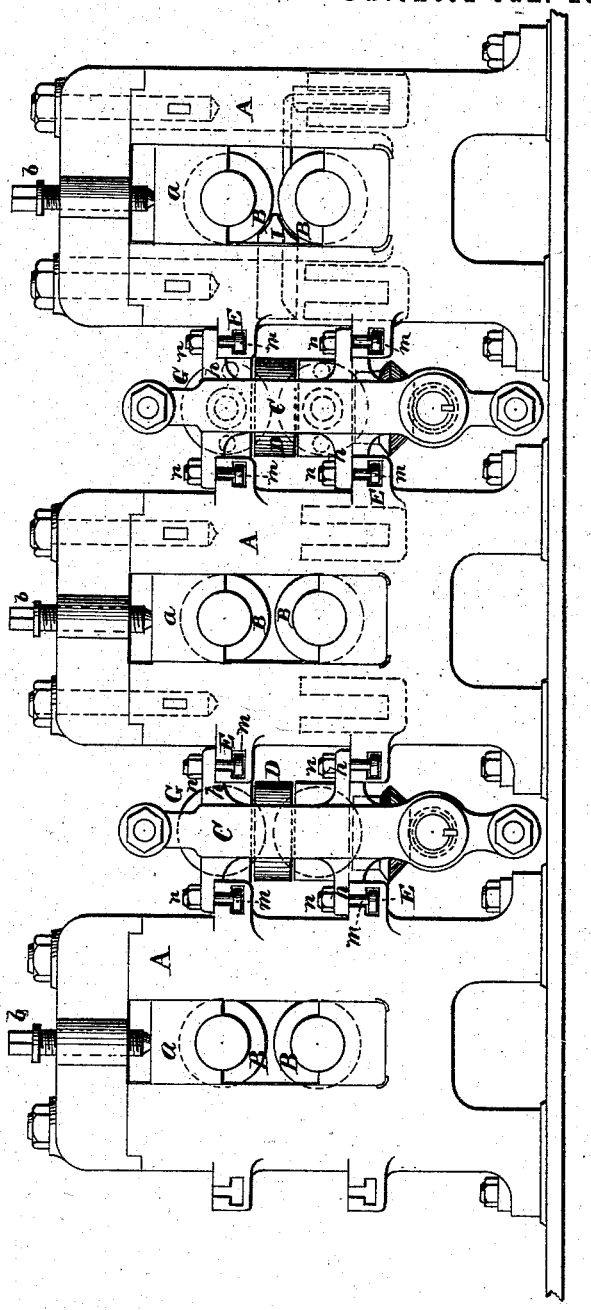

Fig. 1.

WITNESSES

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2 Sheets—Sheet 2.

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Fig. 2.

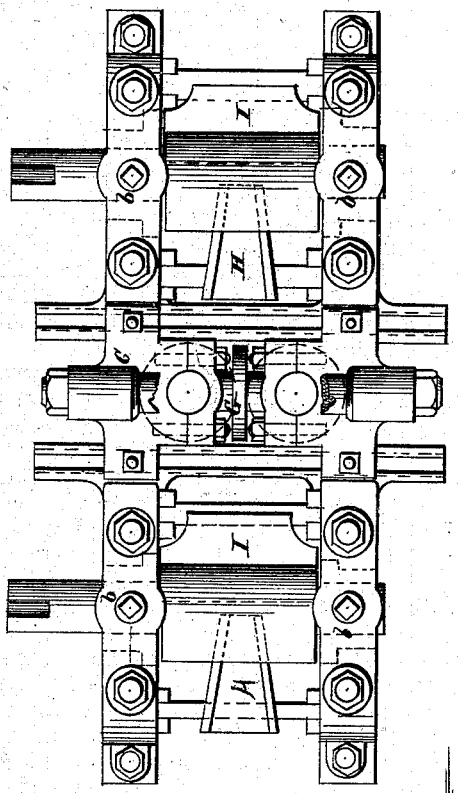
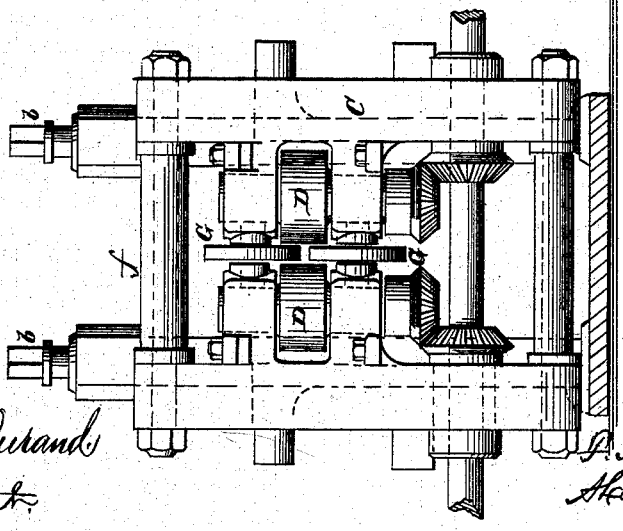


Fig. 3.



WITNESSES.

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UNITED STATES PATENT OFFICE.

FRANCIS HICKMAN, OF READING, PENNSYLVANIA, ASSIGNOR OF SEVEN-NINTHS OF HIS RIGHT TO C. RAYMOND HEIZMANN, B. F. MORRET, AND LEWIS MILLER, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR ROLLING HOOP-IRON.

Specification forming part of Letters Patent No. **186,561**, dated January 23, 1877; application filed November 28, 1876.

To all whom it may concern:

Be it known that I, FRANCIS HICKMAN, of Reading, in the county of Berks, and in the State of Pennsylvania, have invented certain new and useful Improvements in Machines for Rolling Metal; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to that class of machines for rolling band and hoop iron in which a series of alternate horizontal and vertical rolls, arranged in pairs, are used; and the nature of my invention consists, first, in a pair of horizontal rolls arranged in the same frame or housing as and between the vertical rolls, and operating in combination with said alternating vertical and horizontal rolls; and, second, in the construction and arrangement of the frame or housing carrying the vertical rolls, whereby said rolls may be adjusted at any desired distance apart, all as hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a side elevation of a rolling-machine embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation of the frame or housing carrying the vertical rolls.

The upright frames or housings A A, which carry the plain-faced horizontal rolls B B, are of any suitable construction, and do not differ in any principle of operation from such as are common in sheet-rolling mills. Any suitable form or construction of bearing-blocks *a* and adjusting-screws *b* may be used. These horizontal rolls are arranged in pairs at a little distance apart, and with a line of feed from one to the other horizontal, or nearly so. Between the frames or housings A A are placed other frames or housings C C, each of which carries a pair of vertical rolls, D D, by means of suitable bearing-blocks. These vertical rolls are arranged at the proper distance apart for the bar, billet, hoop, or plate passing through between them to be engaged thereby, and narrowed or edged up, as may be desired, and to the desired extent, and their line of feed is in the same line with that of the horizontal rolls on each side.

To prevent the strap or plate of iron from tipping or buckling transversely, I have mounted two horizontal rollers, G G, between the vertical rollers D D in each frame or housing, and these rollers G G are so arranged that they will bear upon both sides of the strap or plate at the same time, and in the same line as the vertical rollers D D operate upon the edges of the strap or plate. These auxiliary horizontal rollers G G should be of such width that they will run close to the rollers D D without coming in contact with them, which would create unnecessary friction.

The frame or housing C is composed of two side or end pieces, connected at their upper and lower ends by rods *d* passing through them, and a sleeve, *f*, on each rod between the end pieces, the whole fastened by nuts *e* on the ends of the rods. On both sides of each end piece are projections *h*, through each of which is passed a headed bolt, *m*, from the bottom upward. The heads of the bolts *m* are inserted in T-shaped grooves made longitudinally in the upper sides of horizontal bars E secured to the main frames or housings A A, and nuts *n* are then screwed on the upper ends of the bolts *m*, whereby the frame C is firmly held to the frames A A. When it is desired to change the distance between the rollers D D for rolling straps or plates of different width, the nuts *e* and *n* are loosened, and the end pieces of the frame moved out or in, as required, the sleeves *f* changed or washers added or taken away, and the rollers G G exchanged for others of corresponding width, when the nuts are again tightened and the machine ready for work.

In front of each pair of horizontal rollers B is a guide, H, and in rear of the rollers is a delivery-platform, I.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for rolling band and hoop iron, the auxiliary horizontal rollers G G, in combination with the alternating series of pairs of vertical rollers D D and horizontal rollers B B, substantially as and for the purposes herein set forth.

2. The combination of the frames A A with grooved bars E E, the intermediate adjustable frame or housing C, carrying the rollers D D and G G, the rods *d*, bolts *m*, and nuts *e n*, all substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of November, 1876.

FRANCIS HICKMAN.

Witnesses:

J. M. MASON,

W. T. JOHNSON.