

(No Model.)

3 Sheets—Sheet 1.

F. W. WOOD.
METAL ROLLING MACHINE.

No. 471,727.

Patented Mar. 29, 1892.

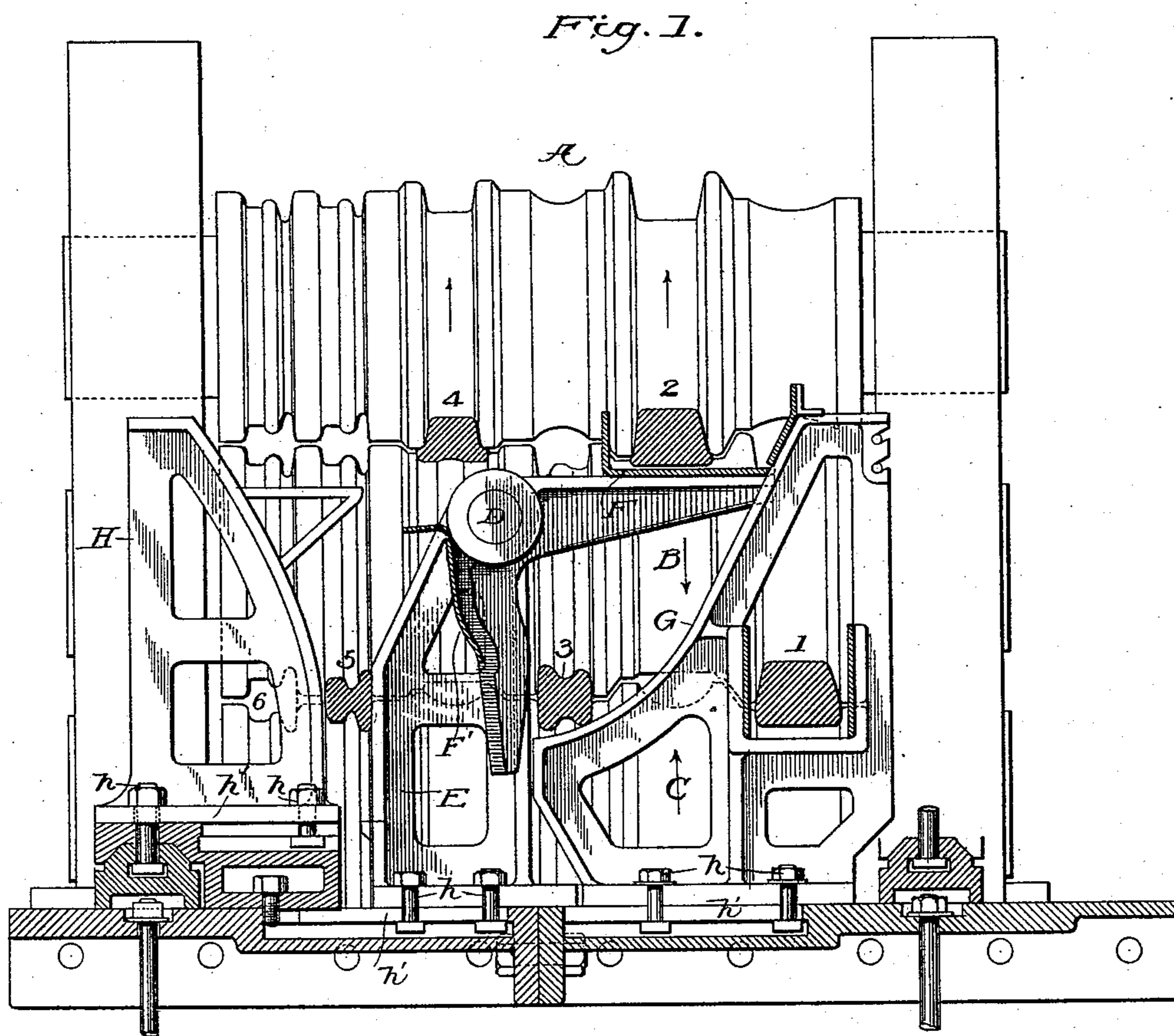


Fig. 2.

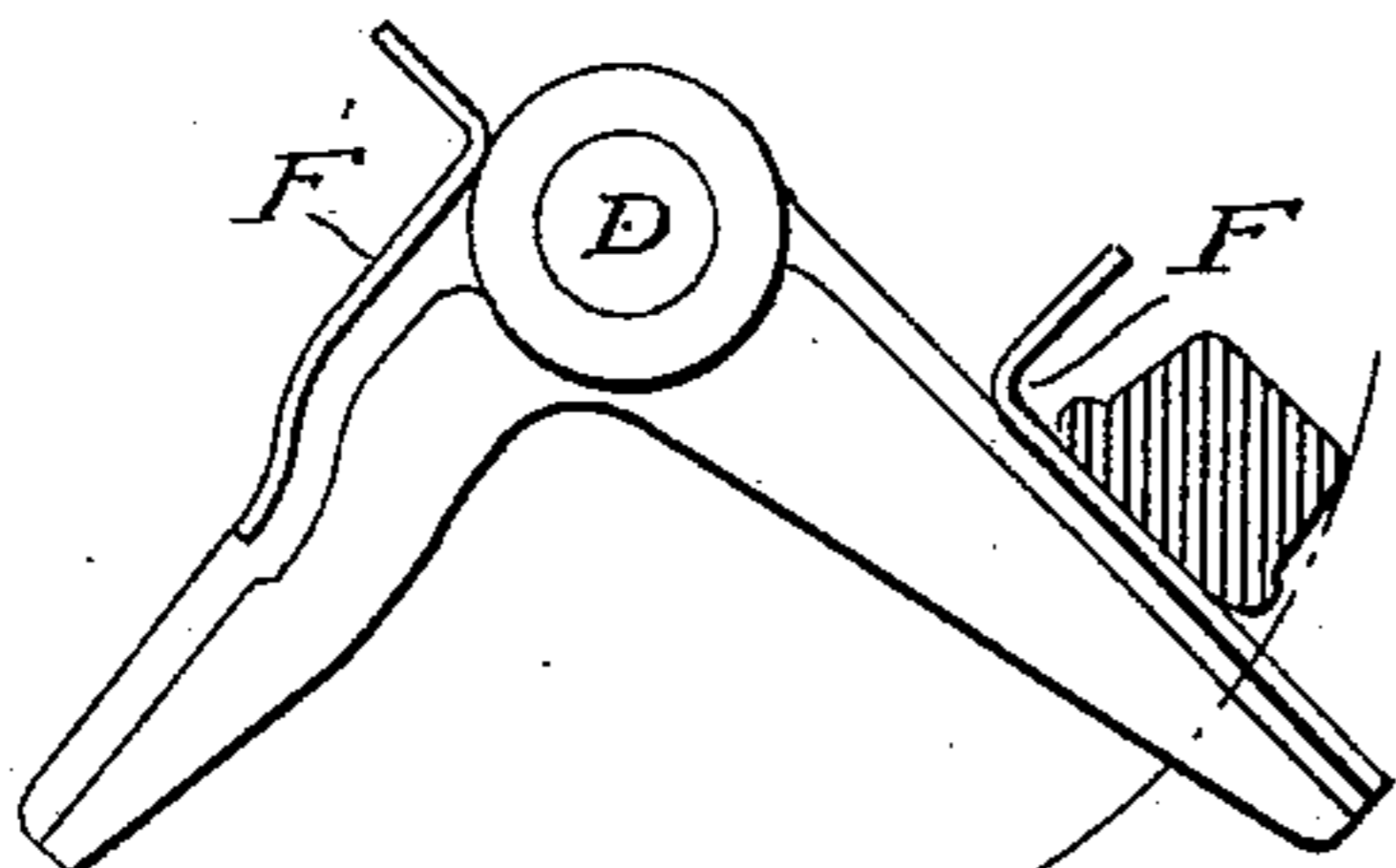
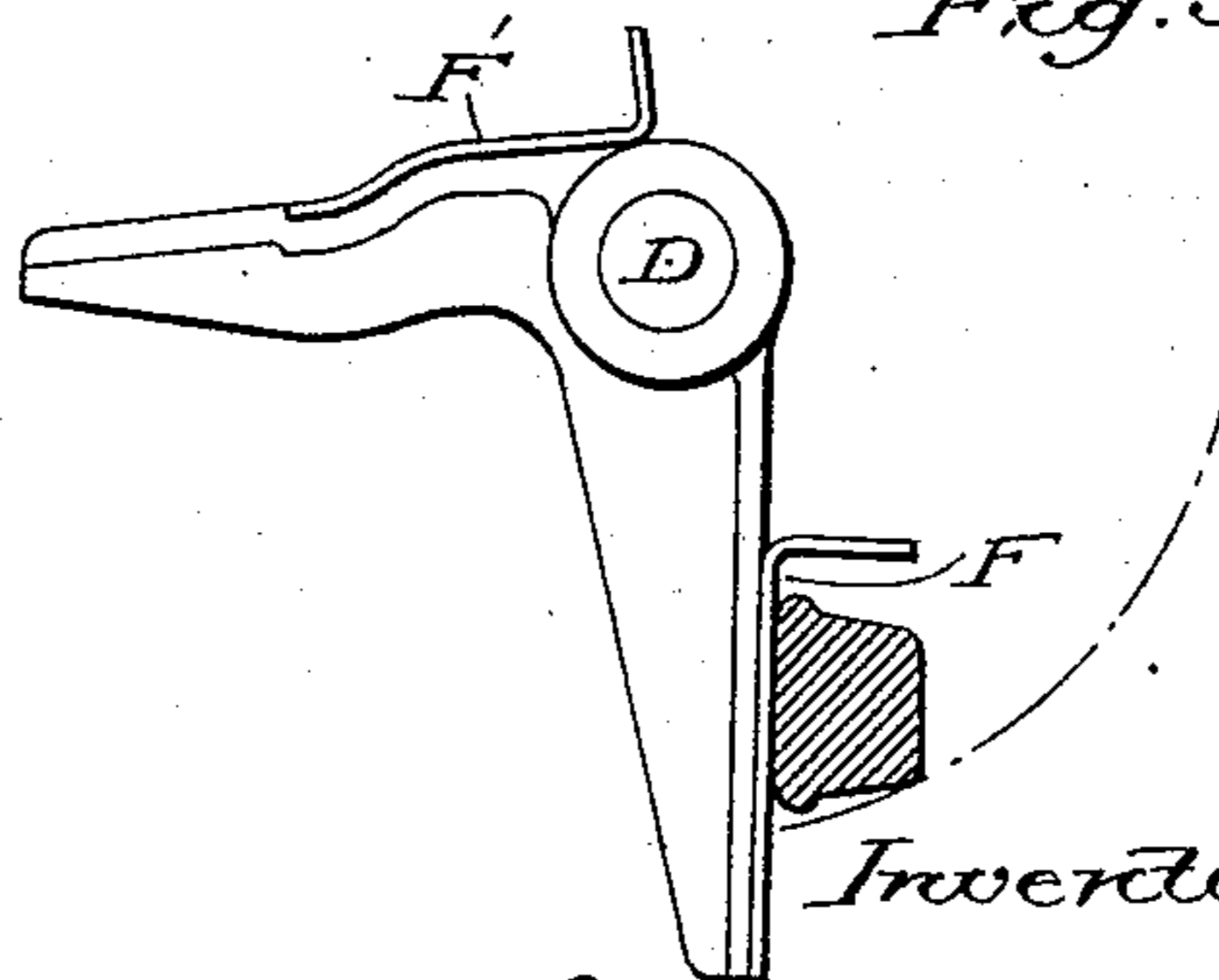


Fig. 3.



Witnesses:

M. M. Mortimer.
W. R. Kennedy.

Inventor:

F. W. Wood
By his Atty.
Phil. J. Dodge

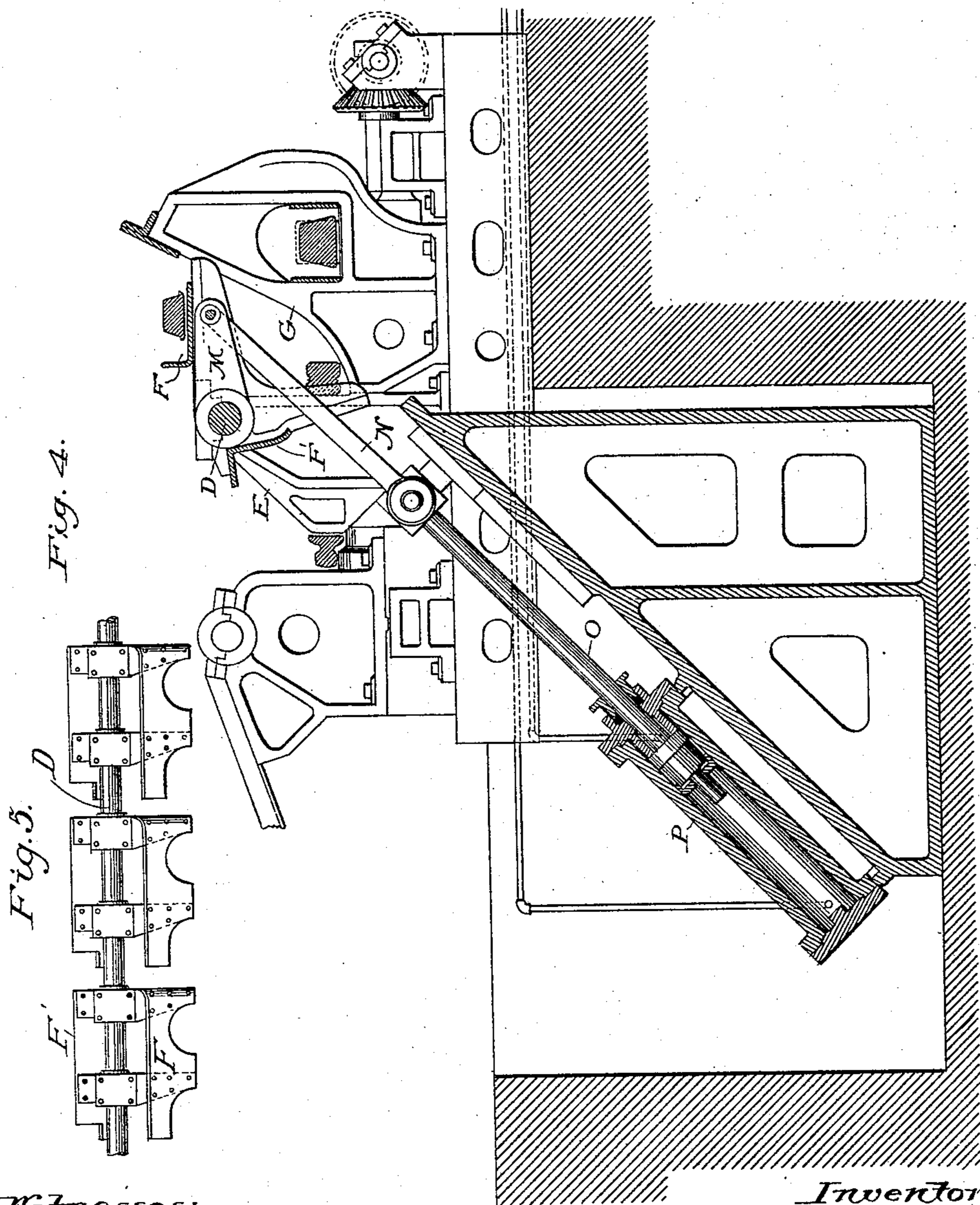
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F. W. WOOD.
METAL ROLLING MACHINE.

No. 471,727.

Patented Mar. 29, 1892.



Witnesses:

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(No Model.)

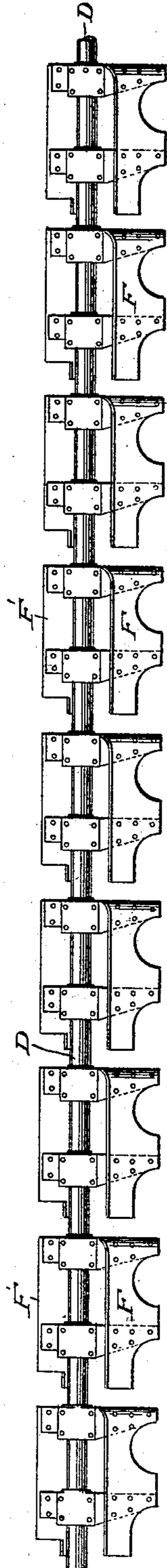
3 Sheets—Sheet 3.

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Fig. 5.



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UNITED STATES PATENT OFFICE.

FREDERICK W. WOOD, OF BALTIMORE, MARYLAND.

METAL-ROLLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 471,727, dated March 29, 1892.

Application filed June 2, 1891. Serial No. 394,888. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. WOOD, of Baltimore, Maryland, have invented certain Improvements in Rolling-Machines, of which the following is a specification.

This invention has reference to mills in which "three-high" rolls, each containing a series of passes, are employed; and it consists in improved means for delivering the metal, commonly designated "the bloom," from the upper to the lower passes, successively, on one side of the rolls, and at the same time turning the piece over, if required.

For purposes of illustration the invention is shown in connection with the roughing-rolls of a rail-mill; but it is to be understood that it may be used in connection with any other mill requiring the metal to be delivered from a pass at one level to another at a different level.

The improved means consist in a downwardly turning or swinging table to receive and lower the metal delivered from the upper pass, combined with a standard or guide, which acts on the descending metal to shift the same laterally and to give it a turning motion as its descent is completed. A single table may be used; but when the metal is to be a second time lowered from the latter passes a double table having its two sides extended on opposite sides of the horizontal axis may be employed, so as to receive metal on its two sides alternately.

In the accompanying drawings, Figure 1 is a transverse vertical section through the improved mechanism in operative relation to the rolls. Figs. 2 and 3 are elevations of the tables in different positions with the blooms thereon. Fig. 4 is an elevation of the table and operating mechanism. Fig. 5 is a top plan view of the tables and their sustaining rock-shaft.

Referring to the drawings, A, B, and C represent the ordinary roughing-rolls provided with the usual passes 1 to 5, located alternately below and above the middle roll B, as usual. The rolls are driven in the direction indicated by the arrows, and the bloom or metal is required to pass to and fro through the successive passes in the order of their

numbers, passing forward each time under the middle roll and returning above the same.

D represents a horizontal rock-shaft sustained in standards E in front of and at right angles to the rolls and provided with rigid arms, which support two beds or tables F and F', located on opposite sides of the shaft and having their surfaces in cross-section at right angles to each other. The shaft being rocked to and fro through an arc of ninety degrees, turns the two tables upward and downward alternately, each from a horizontal or receiving position downward to a vertical delivering position.

At or near the outer edge of the table F at different points in its length are rigid standards G, having their edges curved downward and inward. The bloom issuing from the upper pass 2 is received upon the table F while the latter is in its elevated horizontal position. The table is then turned downward and the bloom slides outward against the guide G, which acts not only to sustain a portion of the weight, but to give it a quarter-turn about its longitudinal axis and carry it sidewise until it stands in line with the bottom pass No. 3, to which it is delivered by any ordinary or suitable means. At the opposite end of the rolls, at the outer edge of the table F', are located two guides or standards H, curved or inclined at their inner edges toward the standards E, which are also inclined. The falling motion of table F is accompanied by the rising motion of table F', and while the latter is elevated, as in Fig. 3, it receives the bloom from the top pass No. 4. The table F' being then lowered permits the bloom to slide therefrom and fall between the guide H and standard E, whereby it is given a quarter-turn and arrested in line with and in position to enter the bottom pass No. 5.

The tables may be modified in form and size as the nature of the passes demand, may be sustained by angular arms or castings on the shaft, as shown, or by other suitable means familiar to the skilled mechanic, and may be rocked or tilted by any appropriate mechanism. I recommend, however, as a satisfactory operating mechanism an arm M, fixed on the rock-shaft and connected by pitman N to the

end of a piston-rod O, having its piston mounted in an inclined cylinder P, located below the floor-line and to one side of the rolls, where it offers no obstruction. The cylinder
 5 will be supplied with water, steam, or other actuating-fluid controlled by any ordinary valve mechanism subject to the will of an attendant, who is thus enabled to reciprocate the piston and control the rocking motion of
 10 the table at his pleasure.

The rolls are sometimes provided with a final pass No. 6, to be used in place of No. 5.

In order that the bloom may be delivered from pass 4 to pass 6 the guides are held in
 15 place on the bed-plate by bolts *h*, seated in slots *h'*, thus allowing the guide to be moved back horizontally. The standards E and G are secured in like manner that they may be
 20 adjusted to suit different rolls which may be employed.

The usual horizontal rolls or roller-tables, power-driven or not, may be used in front of the main rolls to sustain the bloom in its lower positions and admit of its being advanced
 25 easily between the rolls, and means of any suitable character may be employed behind the rolls to lift the blooms from the lower to the upper passes. As these mechanisms form no part of the present invention and have no
 30 direct co-operation with the parts herein shown, it is considered unnecessary to illustrate them herein.

While the double table F F' is shown herein, it is to be understood that either table may
 35 be used alone, in connection with its attend-

ant guides or standards, if the mill is of a character to render the second table unnecessary.

Having thus described my invention, what I claim is—

1. In combination with a set of three-high rolls, a bloom-receiving table mounted to swing downward and an adjacent guide or standard to carry the descending bloom sidewise.

2. A bloom-receiving table mounted to turn downward around a horizontal axis, in combination with a stationary standard curved to carry the descending bloom sidewise with a rolling or turning motion, whereby the bloom may be delivered from an upper to a lower
 50 pass and at the same time turned to present another side uppermost.

3. In combination with adjacent rolls, two tables mounted to turn about a common horizontal axis and receive a bloom from different passes of the rolls and guides or standards adjacent to the respective tables to control the descending blooms.

4. In combination with the bloom-receiving table F', mounted to turn downward from a receiving position, the standards H and E, arranged to receive and guide the bloom between them as the table descends.

In testimony whereof I hereunto set my hand, this 16th day of February, 1891, in the presence of two attesting witnesses.

FREDK. W. WOOD.

Witnesses:

WM. ELLIS COALE,
 WM. CUNNINGHAM.