

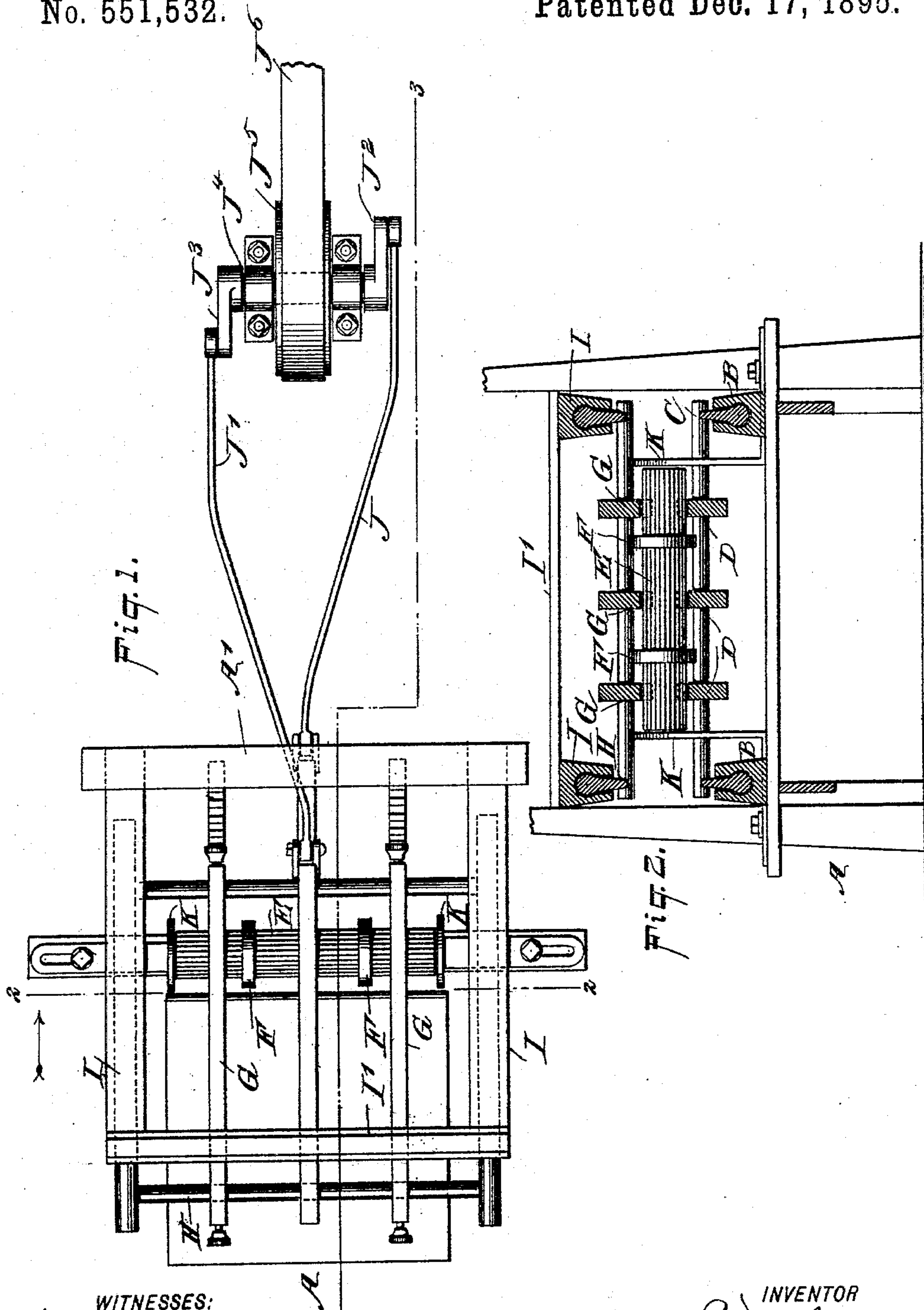
(No Model.)

2 Sheets—Sheet 1.

J. DOUGHTY.  
MACHINE FOR TREATING METAL RODS.

No. 551,532.

Patented Dec. 17, 1895.



WITNESSES:

*William Goebel*  
*W. Sedgewick*

INVENTOR

*J. Doughty*  
BY *Munn & Co*  
ATTORNEYS.

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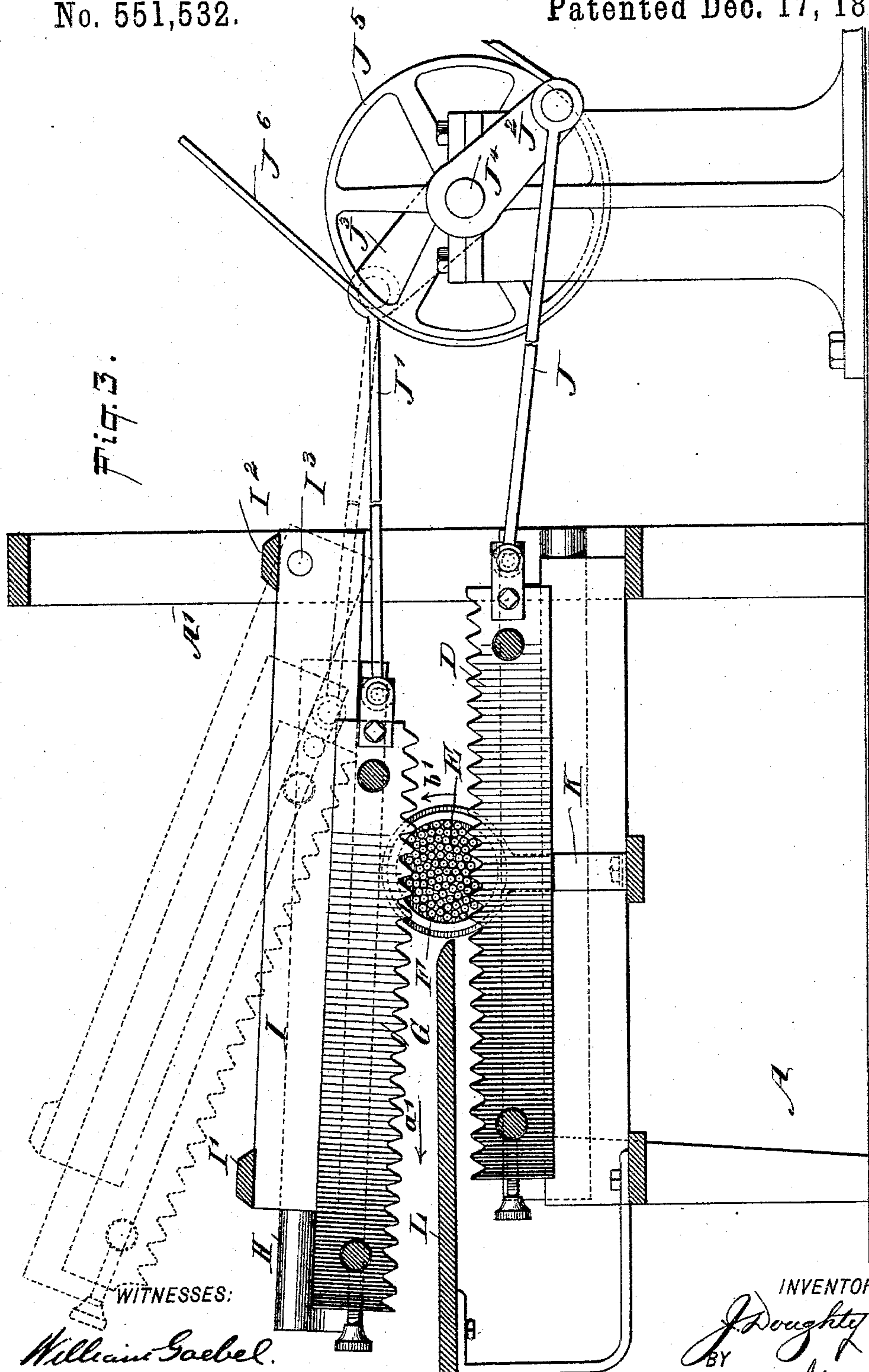
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# UNITED STATES PATENT OFFICE.

JOHN DOUGHTY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO DANIEL  
M. REDMOND, OF SAME PLACE.

## MACHINE FOR TREATING METAL RODS.

SPECIFICATION forming part of Letters Patent No. 551,532, dated December 17, 1895.

Application filed April 26, 1894. Serial No. 509,098. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN DOUGHTY, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Machine for Treating Metal Rods, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine for conveniently and rapidly tempering, cleaning, and straightening metal rods in a very simple and efficient manner.

The invention consists of certain parts and details, and combinations of the same, as will be hereinafter described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement. Fig. 2 is a transverse section of the same on the line 2 2 of Fig. 1, and Fig. 3 is an enlarged longitudinal section of the same on the line 3 3 of Fig. 1.

The improved machine for treating metal rods is provided with a suitably-constructed frame A, supporting longitudinally-extending guideways B, on which is mounted to reciprocate a rack-frame C, supporting a series of longitudinally-extending racks D, as plainly illustrated in Figs. 2 and 3. The racks D are arranged parallel one to the other and are adapted to receive a bundle of rods E to be treated, the said rods being held in rings F, which permit the rods to revolve and rub one on the other when agitated, as hereinafter more fully described.

The rods E are placed sufficiently loose in the rings F, so that the lowermost readily pass between the teeth of the racks D, it being understood that the teeth of the racks register with each other, so as to hold the bundle of rods straight and at right angles to the racks. The uppermost rods E in the bundle are adapted to be engaged by the teeth of racks G, preferably arranged directly opposite the lower racks D, the said racks G being held in a frame H, mounted to reciprocate in guideways I, connected with each other by cross-bars I' and I<sup>2</sup> and fulcrumed at

I<sup>3</sup> in standards A', forming part of the main frame A. The racks D and G are pivotally connected by pitmen J and J', respectively, with crank-arms J<sup>2</sup> and J<sup>3</sup>, respectively, extending in opposite directions and secured on a transversely-extending shaft J<sup>4</sup>, journaled in suitable bearings, as plainly illustrated in Figs. 1 and 3.

On the shaft J<sup>4</sup> is secured a pulley J<sup>5</sup>, over which passes a belt J<sup>6</sup>, connected with suitable machinery, so that rotary motion is given to the said pulley J<sup>5</sup> and the shaft J<sup>4</sup> to turn the crank-arms J<sup>2</sup> and J<sup>3</sup>, whereby a reciprocating motion is given by the pitmen J and J' to the racks D and G, held on the frames C and H, respectively, reciprocating in the guideways B and I, respectively.

It will be seen that as the crank-arms J<sup>2</sup> and J<sup>3</sup> stand in opposite directions one to the other, the racks D and G move in opposite directions, so that the bundle of rods E, engaged between the racks D and G, is rotated without being moved forward or backward, it being understood that the individual rods on the bottom and top of the bundle are engaged by the teeth of the racks D and G. Thus when the rack G moves forward in the direction of the arrow a' and at the same time the rack D moves backward in the inverse direction of the said arrow, then the bundle of rods E is rotated in the direction of the arrow b', and when the motion of the said racks is reversed then the motion of the bundle of rods E is likewise reversed—that is, the bundle turns in the inverse direction of the arrow b'.

In order to prevent lateral movement of the bundle of rods E, I provide the end plates K, against which abut the ends of the rods E, the said plates K being held transversely adjustable on the main frame A, so as to move the plates K suitable distances apart corresponding to the length of the rods under treatment. The rods E in the bundle are of uniform length and consequently are prevented from lateral movement by the plates K. A feed-table L extends between the two racks D and G, so that the bundle of rods E can readily be moved over the said feed-table L onto the racks D or removed therefrom at the time the connected guideways I, with the



frame H and racks G, are swung into an uppermost position, as indicated in dotted lines in Fig. 3, it being understood that the said guideways I swing on the points I<sup>3</sup> as their fulcrum. The individual racks D and G are held transversely adjustable on their frames C and H, respectively, so as to move the said racks in proper position, according to the position of the rings F and the length of the rods.

Now for tempering metal rods, for instance, the rods to be treated and already hardened in the usual manner are taken from the oil-tank usually in a crooked state and then mixed with a number of previously-heated rods, after which the rings F are slipped over the said rods, and then the bundle thus formed is rolled or pushed over the feed-table L onto the racks D at the time the racks G are raised, after which the latter are lowered to engage the uppermost rods. The shaft J<sup>4</sup> is then rotated, as previously described, to impart a reciprocating motion to the racks D and G in opposite directions to agitate the bundle of rods in the manner described. Now it will be seen that by the rubbing of the rods to be treated on the previously-heated rods the oil of the rods from the oil-tank gets on fire by coming in contact with the hot rods, so that the hardened rods are not only annealed but are made straight and kept straight by the other rods. After the rods are properly annealed the racks G are swung upward, the bundle is removed from the racks D and a new one substituted, and the above-described operation is repeated. For cleaning rods in a bundle or bunch they are agi-

tated by the racks D and G, as above described, and sand, emery or other cleaning material may be fed on the rods while in motion in the machine.

The cleaning material greatly assists in freeing the rods of any impurities adhering to the outer surface. It is understood that the rods on being agitated in the manner described rub one on the other, so as to remove rust or other impurities adhering to their peripheral surface.

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

1. A machine for treating metal rods, comprising frames having racks and adapted to move in opposite directions, the racks being adapted to receive between them the bundle of rods to be treated, means, substantially as described, for imparting a reciprocating motion to the said racks, end plates adapted to engage the ends of the bundle of rods and a feed table extending between the said racks and terminating adjacent to said end plates, substantially as shown and described.

2. A machine for treating metal rods, comprising a frame provided with a rack and mounted to reciprocate in stationary bearings, a second frame provided with a rack and having a reciprocating motion, and pivoted bearings for the said second rack frame, substantially as shown and described.

JOHN DOUGHTY.

Witnesses:

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HARRY J. FRANZ.