J. REESE.

MACHINE FOR ROLLING AND STRAIGHTENING CYLINDRICAL BARS OR TUBES.

No. 190,983. Patented May 22, 1877.

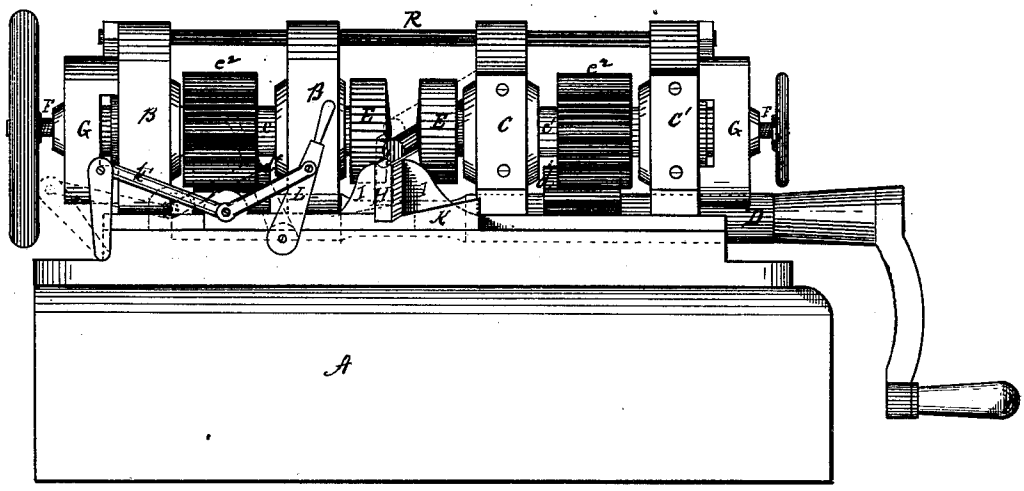

FIG. 1.

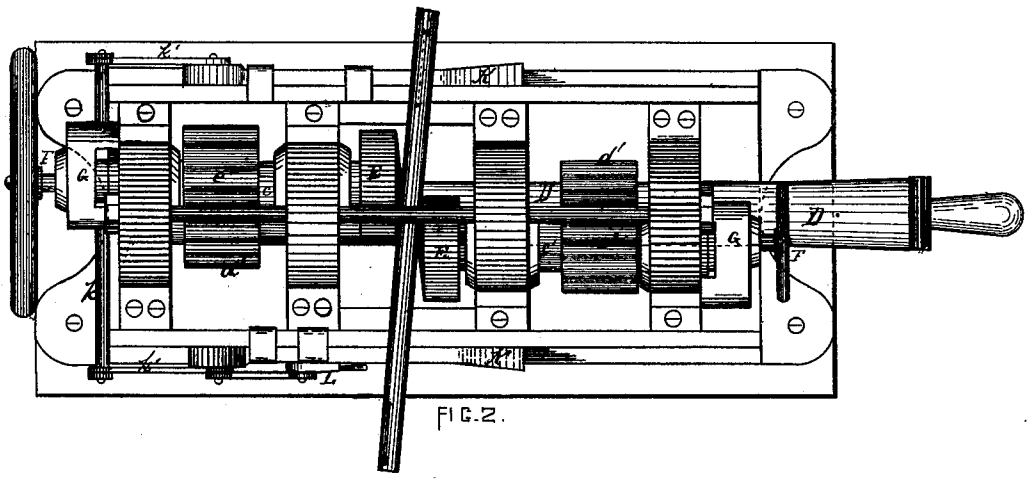

FIG. 2.

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UNITED STATES PATENT OFFICE.

JACOB REESE, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR ROLLING AND STRAIGHTENING CYLINDRICAL BARS OR TUBES.

Specification forming part of Letters Patent No. **190,983**, dated May 22, 1877; application filed April 6, 1877.

To all whom it may concern:

Be it known that I, JACOB REESE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rolling and Straightening Cylindrical Bars and Tubes of Iron, Steel, and other Metals; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a plan view of the same.

Like letters refer to like parts wherever they occur.

My invention relates to that class of machines for straightening and rolling cylindrical bars and tubes of iron, steel, and other metals for which Letters Patent No. 65,832 were granted to me on the 18th day of June, 1867.

The present invention has for its object the reversal of the feed without the reversal of the rolls, and economy of space, by the relative arrangement of the power-shaft and shafts of the rolls.

I will now proceed to describe my invention, so that others skilled in the art may apply the same.

A is the bed-frame or foundation which supports the operative parts of the machine, and B B′ C C′ housings, in which the power-shaft and shafts of the disk-rolls are journaled. The power-shaft D is usually provided with bearings in the several housings, but should have bearings in the intermediate housings B′ C, said bearings being, preferably, in the central line of the housings, and low down near the bed-frame, so as to utilize waste space, and insure a compact and effective machine. The power-shaft is provided with pinions d' d', which mesh with pinions on the shafts of the disk-rolls. E E are the disk-rolls, provided with shafts e e^1, journaled in the housings B B′ C C′ above and off the vertical and horizontal planes crossing the axis of the power-shaft, the shafts E E′ being, preferably, on the same plane, and the distance between them being equal to half the diameter of the disk-rolls. The shafts e e^1 are so journaled as to be capable of end motion in the housings, and are controlled by screws F, working through brackets G, secured to the bed-frame, or to the housings, as preferred, said screws bearing upon the ends of the shafts, so that by turning the screw the disk-rolls may be adjusted to suit the different-sized cylindrical bars or tubes to be operated on, and to reduce the bar during the operation of rolling. These shafts are provided with pinions e^2, which mesh with the pinions of the power-shaft. The disk-rolls E E′ have slightly conical faces, and are in general form similar to the disk-rolls described in my former patent, (No. 65,832, to which reference is here made for a full description of these disks, and such modifications in their form as are admissible,) and are arranged with the apex of one cone opposite the circumference of the base of the other, the opposite faces of the rolls being parallel. These disk-rolls are caused to revolve in the same direction by means of the gearing previously described, and, consequently, the surfaces of the rolls opposite each other will move in opposite directions, as in Patent 65,832, while the movement imparted to a cylindrical bar or tube (in the line of its axis) passing between the disk-rolls will be in one direction when the bar is upon one side of a line drawn through the axes of the rolls, and in an opposite direction when upon the other side. H is a movable rest, supported in guides I, secured to the bed-plate, said rest being arranged between the rolls, and parallel to the operative faces thereof. On the bed-frame, and moving on ways or guides, are the inclines K K, which serve to operate the movable rest, the two inclines being coupled by a cross-bar or rod, k, and crank-arms k', so as to be moved by the same lever L.

In making the connections between the sliding inclines and the lever L it is better to adjust the several parts so that when lever L is vertical the rest will support the bar or tube opposite the center of the rolls.

The operation of this apparatus is as follows: The disk-rolls are first adjusted, by means of the screws F, to suit the diameter of the cylindrical bar or tube to be rolled or straightened; the rest is brought to its lowest position, as shown in full lines, Fig. 1; power is applied to revolve the rolls, and the cylin-

der is seized by the rolls, one of which works with a downward motion on the line of bite, and the other with an upward motion, imparting to the bar or tube a rotary motion on its axis, and at the same time a forward motion in the line of its axis in the direction of full-line arrow, when the bar is below a plane bisecting the axes of the rolls. As soon as it is desired to change the direction of the feed the lever L is thrown back, forcing the inclines H beneath the movable rest until the bar is brought above the center of the rolls, (position shown in dotted line, Fig. 1,) when, though the bar will continue to be revolved upon its axis, as before specified, the forward motion in the line of its axis will be reversed, and will be in the direction shown in the dotted arrow, thus enabling me to reverse the feed by changing the position of the rest, and without reversing the rolls. Accordingly as the bar or tube is caused to approach or recede from a line bisecting the axes of the rolls will the forward motion of the bar in the line of its axis increase or diminish in speed, being greatest when farthest from the line, the bar, when upon the line, having no movement in the line of its axis. When it is desired to reduce the pass, so as to reduce the bar while in the rolls, the screws F are turned so as to bring the faces of the rolls closer together, and thus, by means of the housing-screws and the movable rest, the cylindrical bar or tube may be rolled, reduced, and straightened by a single workman, and in one continuous operation.

If desired, the screws F may be operated together, and from a point near lever L, by means of worm-gearing, occupying the position of the tie-rod R. (Shown in the drawing.)

I am aware that the combination of two conical-faced disk-rolls of equal diameter, and geared to revolve in the same direction, and arranged with respect to each other so that the apex of one will bear against the periphery of the other, is not new, and I am aware that it has been suggested that an adjustable rest could be used with such a combination, so as to diminish or increase the speed of the feed, and I herein lay no claim to such devices or combination; but,

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

1. The combination of the conical disk-rolls, the movable rest, provided with guides, and the coupled movable inclines, substantially as described.

2. The combination of the conical disks E E′, provided with shafts journaled so as to be capable of end motion, with the screws F, bearing upon the ends of the shaft, and with the movable rest H, substantially as and for the purpose described.

In testimony whereof I, the said JACOB REESE, have hereunto set my hand.

JACOB REESE.

Witnesses:
F. W. RITTER, Jr.,
C. E. MILLIKEN.