S. TRETHEWEY.

Machine for Rolling and Straightening Metal Bars.

No. 199,482. Patented Jan. 22, 1878.

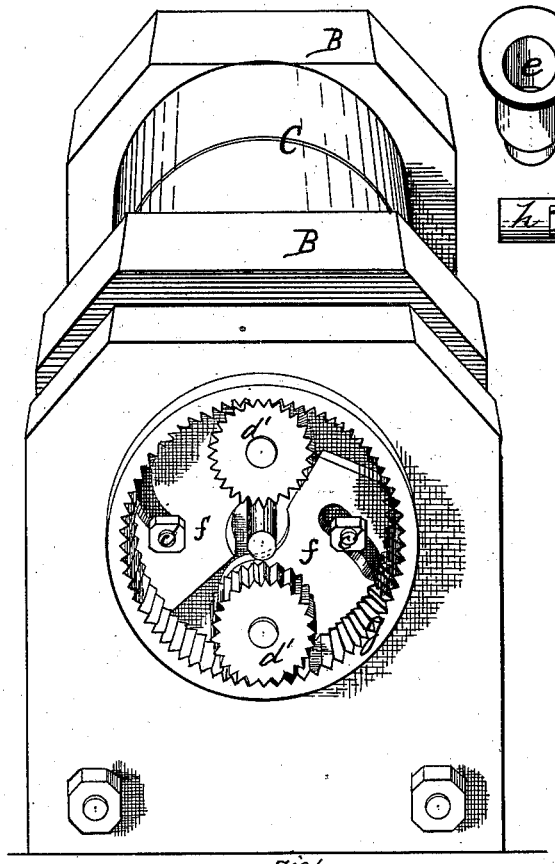

Fig. 1.

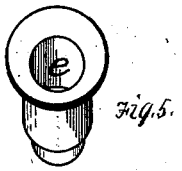

Fig. 5.

Fig. 6.

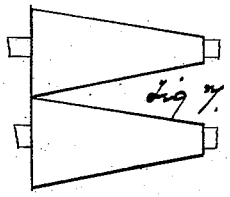

Fig. 7.

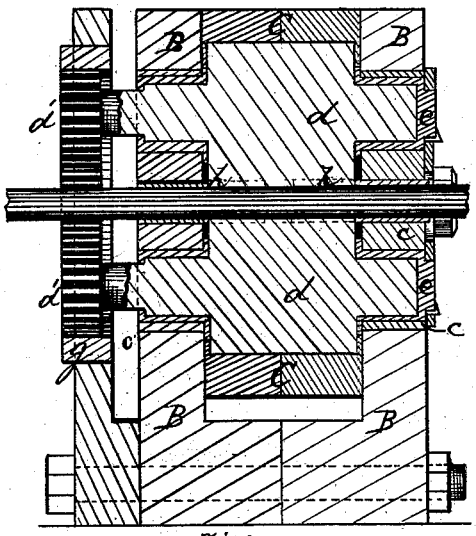

Fig. 2.

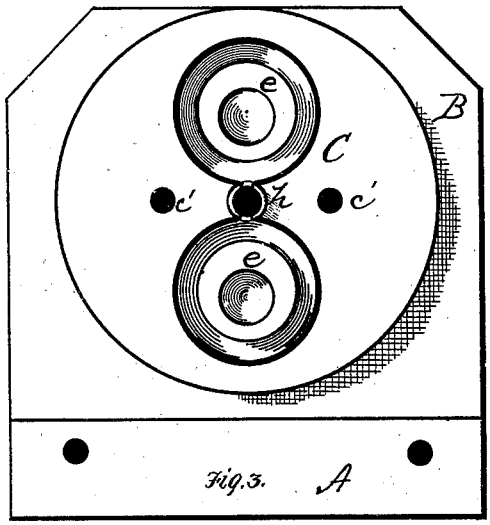

Fig. 3. A

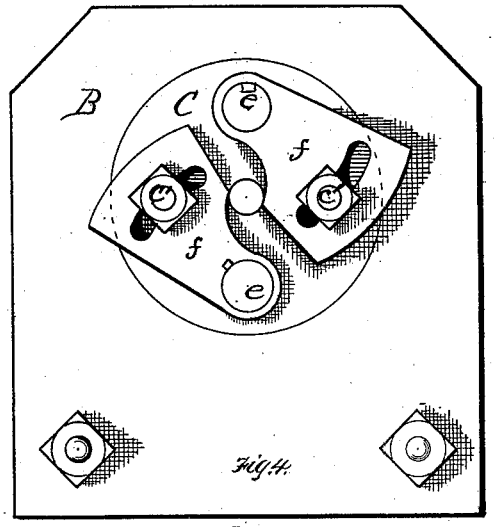

Fig. 4.

Witnesses.
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UNITED STATES PATENT OFFICE.

SAMUEL TRETHEWEY, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR ROLLING AND STRAIGHTENING METAL BARS.

Specification forming part of Letters Patent No. **199,482**, dated January 22, 1878; application filed October 26, 1877.

To all whom it may concern:

Be it known that I, SAMUEL TRETHEWEY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Metal-Working Machinery; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a perspective view of a machine embodying my invention. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a vertical transverse section through the rotary housing, the rolls being removed to show the position of the guides and eccentric journal-boxes of the rolls. Fig. 4 is an end elevation of the machine, showing the manner of controlling the rolls by the eccentric journal-boxes. Fig. 5 is a detached view of one of the eccentric journal-boxes. Fig. 6 is a detached view of the guides, and Fig. 7 is a diagram of cone-rolls used for rolling tapers.

Like letters refer to like parts wherever they occur.

My invention relates generally to the operation and construction of metal-working machinery, and is especially directed to mechanism for rolling, straightening, polishing, and otherwise working round and taper bars.

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

A represents a suitable bed, upon which are erected fixed housings B B for the support of rotary housing C. C indicates a rotary housing, provided with journals *c c*, resting in the fixed housings B B. The rotary housing is generally composed of two or more sections, chambered out or formed hollow for the reception of two or more work-rolls, *d d*, the sections being clamped and held together by bolts *c' c'*, or in other suitable manner. In the journals of the rotary housings are formed bearings for the work-rolls *d d*, said bearings being bushed with journal-boxes *e*, within which the journal of the roll is received. In order to adjust the rolls to or from each other, the bearing of the roll *d* in box *e* is made eccentric with the bearing of box *e* in the rotary housing, so that by turning the boxes to bring the points of greatest eccentricity to or from the axis of the rotary housing the rolls *d d* may be caused to approach or recede from each other. Keyed to the outer ends of bushings or boxes *e* are segments or quadrants *f*, having curved slots for the passage of bolts *c' c'*, which clamp the sections of the rotary housings. These quadrants are used to turn the boxes to adjust the rolls, and serve to secure the boxes when the rolls are adjusted. They may be marked with a scale to guide the operator, and are clamped by the tie-bolts *c' c'*, for which latter purpose, if desired, set-screws may be substituted.

d d indicate work-rolls so arranged and journaled in the rotary housings that their axes cross each other slightly, in order to get a spiral motion on the bar when rounds are to be rolled. One end of each work-roll projects beyond the journal of the rotary housing C, and is provided with a gear wheel or pinion, *d'*, which engages with a fixed internal gear, *g*, secured in a housing on bed A. *h h* indicate the guide, which consists of a tube or tubes slotted longitudinally upon opposite sides to correspond to the adjacent surfaces of work-rolls *d d*. This guide occupies the axis of the rotary housing C, and is introduced at one or both ends of the machine, accordingly as it is formed in one or more sections.

The rolls *d d* thus far described are plain, and their arrangement with crossing axes such as is adapted to feed a bar through the machine; but for rolling and straightening tapers the rolls employed should be conical, as shown in Fig. 8; or plain rolls should be arranged to give the same effect, the axes in the first instance, Fig. 8, being parallel, while in the latter they would, if extended, cross in the same plane.

The rolls, as rolls, form no part of the invention, and will be changed and adapted to either roll, roll and straighten, polish, or grind, as circumstances may require, being for said purposes arranged and combined according to principles well known in the art.

The power is applied to the rotary housing either by a belt, which I deem preferable, or by cog-gearing, if desired, all of which will readily suggest itself to the skilled mechanic.

The operation of my devices, when furnished with plain rolls, arranged as shown in Fig. 2,

is as follows: The eccentric bushings or boxes having been turned by means of the quadrants to adjust the rolls to the size of bar to be rolled, and secured in position, as before specified, a suitable-sized guide, *h h*, is inserted in the axis of the rotary housing. Power is then applied to the housing C to rotate the same, and the inclosed rolls *d d*, moving therewith, are caused to rotate by the engagement of pinions *d' d'* with fixed internal gear *g*. The rod or bar to be rolled or straightened is then placed in the guide in the axis of the rotary housing, and is caused to pass through the machine during its treatment by the arrangement of the axes of the rolls. As the rolls are journaled in rotary housings they revolve around the bar, which forms the axis of motion, so that if the machinery is true and properly adjusted the rod must be delivered perfectly rounded and straightened, because the axis of the bar and axis of rotation of the machinery coincide.

When the plain rolls are arranged for the purpose, or conical rolls are employed to roll and true tapering rods, it will, of course, be impossible to pass the bar through the machine. In such case the bar is fed in and withdrawn from the same end, a single section-guide being used. In all other respects the machinery employed is identical.

The advantages of my invention are that the bar can be worked at less speed, and is, therefore, not affected by centrifugal force. The machine requires less power, and is readily operated by unskilled labor.

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

1. The combination, in a metal-working machine, of fixed housings, a rotary housing, work-rolls journaled in the rotary housing and provided with pinions, and an independent internal gear for actuating the work-rolls, substantially as and for the purpose specified.

2. The combination, with the rotary housings and work-rolls journaled therein, of the axially-arranged guide or guides, substantially as and for the purpose specified.

In testimony whereof I, the said SAMUEL TRETHEWEY, have hereunto set my hand.

SAMUEL TRETHEWEY.

Witnesses:
JAMES I. KAY,
F. W. RITTER, Jr.