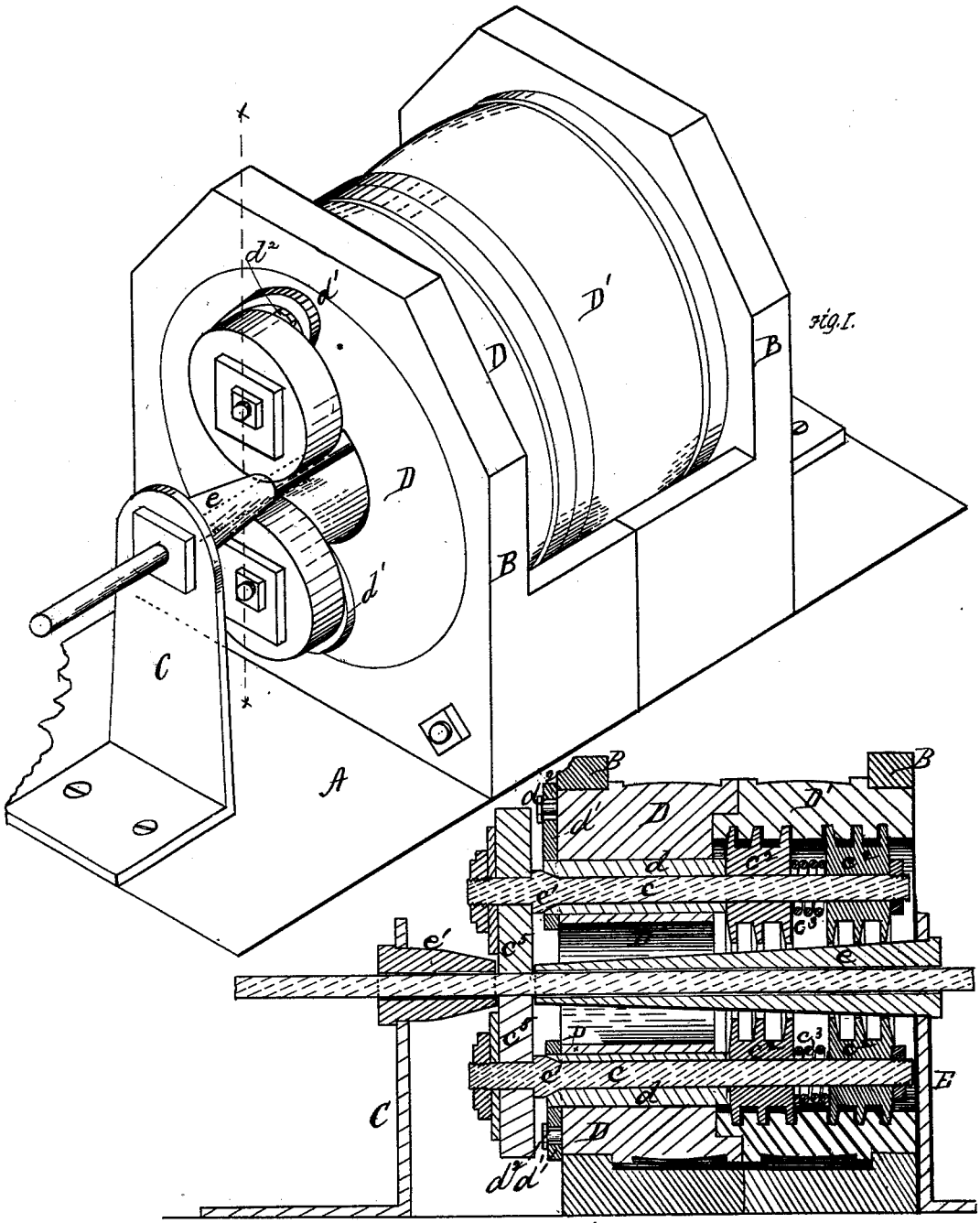
S. TRETHEWEY.

Grinding-Machine.

No. 204,393. Patented May 28, 1878.



Witnesses.

R. H. Whittlesey

John F. Smith

Inventor.

Samuel Trethewey

by Bakewell & Kerr

Atty's

UNITED STATES PATENT OFFICE.

SAMUEL TRETHEWEY, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN GRINDING-MACHINES.

Specification forming part of Letters Patent No. **204,393**, dated May 28, 1878; application filed March 7, 1878.

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 Machine for Grinding Metallic and other Rods; 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 from the working end of the machine, and Fig. 2 is a vertical central section.

Like letters refer to like parts wherever they occur.

My invention relates to the construction and operation of machines adapted to grinding metallic and similar rods, especially those where accurate rounds are desirable.

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

In the drawing, A indicates a suitable bed, on which are erected fixed housings B B, and a bracket or rest, C, for a guide. Mounted in the fixed housings B B are rotary housings D D′, adapted to journal in each other as well as in the fixed housings.

One of the rotary housings D is much heavier than its fellow D′, and is bored to form seats for boxes *d*, controlled by segments d^1, which can be fixed in any desired position by set-screws d^2.

Journaled eccentrically within the boxes are shafts *c*, which carry the grinding (preferably emery) rolls or wheels c^5, said shafts being tapered, as at c^1, so as always to insure a true and even bearing and proper adjustment of the grinding mechanism.

The shafts *c* project from the rotary housing D and enter the rotary housing D′, where they are provided with two or more friction-wheels c^2, beveled in reverse directions, and are held apart by an interposed coiled or other suitable spring, c^3. D′ indicates the second rotary (or driving) housing, which is simply a cylinder having a series of beveled grooves on its interior, the bevel of one half being in reverse direction to the other half, said grooves adapted to receive the beveled friction wheels or gear c^2.

In lieu of the friction driving-gear, cog-gearing may be employed; but by the construction of the gearing and rotary housing, as shown, it will be found that the spring between the gearing will keep them in contact with the sides of the grooves in the rotary driving-housing, so that though the shafts *c* may be caused to approach in the adjustment of the grinding-wheels, and the periphery of the gears c^2 are lifted away from the bottom of the grooves, yet the side bearing will insure the proper driving of the work-rolls. E indicates a bracket or standard arranged on the axial line of the rotary housing, said standard forming the support of a tubular or equivalent guide, *e*, which projects through the machine (or rotary housings) up to within a short distance of the periphery of the grinding rolls or wheels. On the opposite side of the grinding-wheels, and close to the peripheries, is a receiving-guide, *e′*, supported in a bracket or rest, C, said guide being also arranged in true axial line with the rotary housings. These fixed guides, arranged with relation to the grinding mechanism, as specified, give a rigid unchanging bearing or support throughout for the article operated upon, which overcomes the tendency of the rod to spring and insures a true center of rotation for the grinding mechanism.

A second housing (not shown) may be erected on the bed A, in which may be journaled feed-rolls, the bar being held stationary thereby, or, in other words, prevented from turning, for which purpose feed-rolls are preferred, though the bar may be fed by hand, if desired.

The peripheries of the rotary housings D D′ are formed, as shown in the drawings, so that the housings may be driven by belting; but gearing may be substituted therefor, if preferred, and in order to give a reverse motion to one of the housings its driving-belts will usually be crossed.

The operation of my devices is as follows: The bar to be ground, having been inserted in the axial guide *e*, is fed forward by appropriate mechanism (or by hand) until it is in the bight of the grinding rolls or wheels c^5. Power having been applied to the rotary housing D, the grinding-wheels are caused to move around the bar to be ground, acting on the surface

thereof, and at the same time power by cross-belting or otherwise having been applied to rotary housing D′, it moves in reverse direction to D, doubling the speed of wheels c^5, through driving-wheels c^2 and shaft *c*. The bar is thus held upon a fixed axis while the grinding mechanism revolves around it, and as the bar is fully ground and trued at one point before it is advanced in the guide it will be accurately rounded throughout its entire length.

In my machine, the axis of the rod being stationary and the grinding mechanism revolving around the same, true circles must be described on the periphery of the bar, and a true round is necessarily obtained. The method of gearing and driving the rolls greatly increases the accuracy and capacity of the machine.

I am aware that a polishing-machine has been heretofore devised wherein flexible revolving polishing-pads, revolving on their own axes and also around the stick being polished, were employed, and that in said connection axial guides rotating with the polishing mechanism were used, and therefore do not herein claim such subject-matter; but

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

1. In a machine for grinding rods, &c., the combination of fixed housings B B, rotary housings D D′ journaled therein, one or more grinding-wheels mounted on shafts adjustably journaled in the rotary housings, and an axially-arranged fixed guide or guides, substantially as specified.

2. The combination of the fixed housings, the two rotary housings journaled on each other, and adapted to be driven in reverse directions, the internal driving-gear, and a grinding wheel or wheels adjustably journaled in the rotary housing, substantially as specified.

3. In a machine of the class specified, the combination of the internally-grooved rotary housing with the bevel friction-gear and the spring for preserving the contact of the gear and housing, to permit the adjustment of the rolls or grinding-wheels, substantially as specified.

4. In a grinding-machine having fixed and rotary housings, the axially-arranged fixed guide *e e′* projecting through the rotary housings and arranged as described with relation to the grinding-wheels, substantially as and for the purpose specified.

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

SAMUEL TRETHEWEY.

Witnesses:
R. H. WHITTLESEY,
JOHN K. SMITH.