

(No Model.)

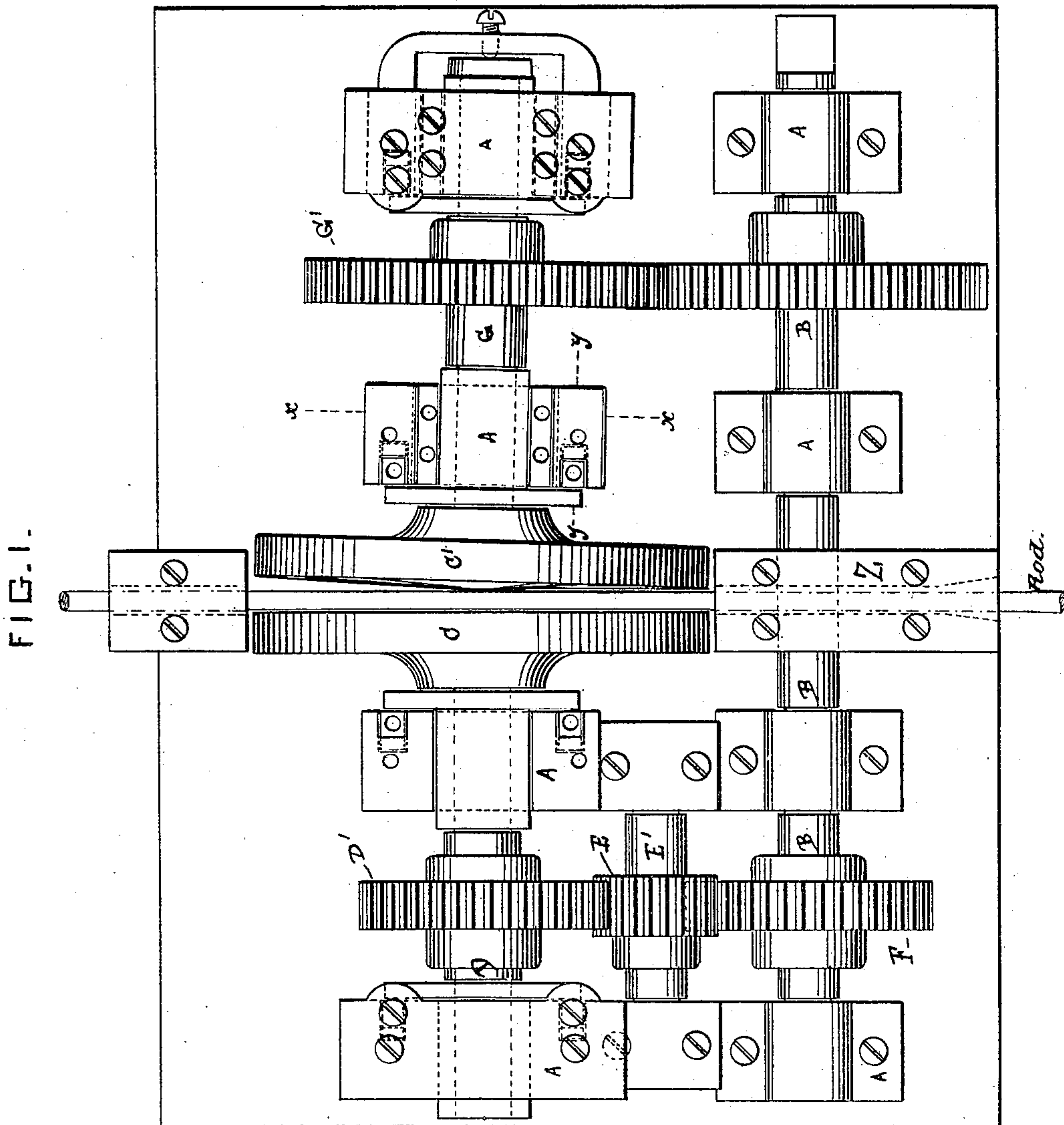
2 Sheets—Sheet 1.

J. ILLINGWORTH.

MACHINE FOR STRAIGHTENING AND POLISHING IRON, STEEL, AND OTHER  
METAL RODS.

No. 253,710.

Patented Feb. 14, 1882.



WITNESSES =

*Wm. Finckel.*  
*J. M. Yznaga.*

*John Illingworth,*  
INVENTOR =  
by atty *J. Clayton.*

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FIG. 2.

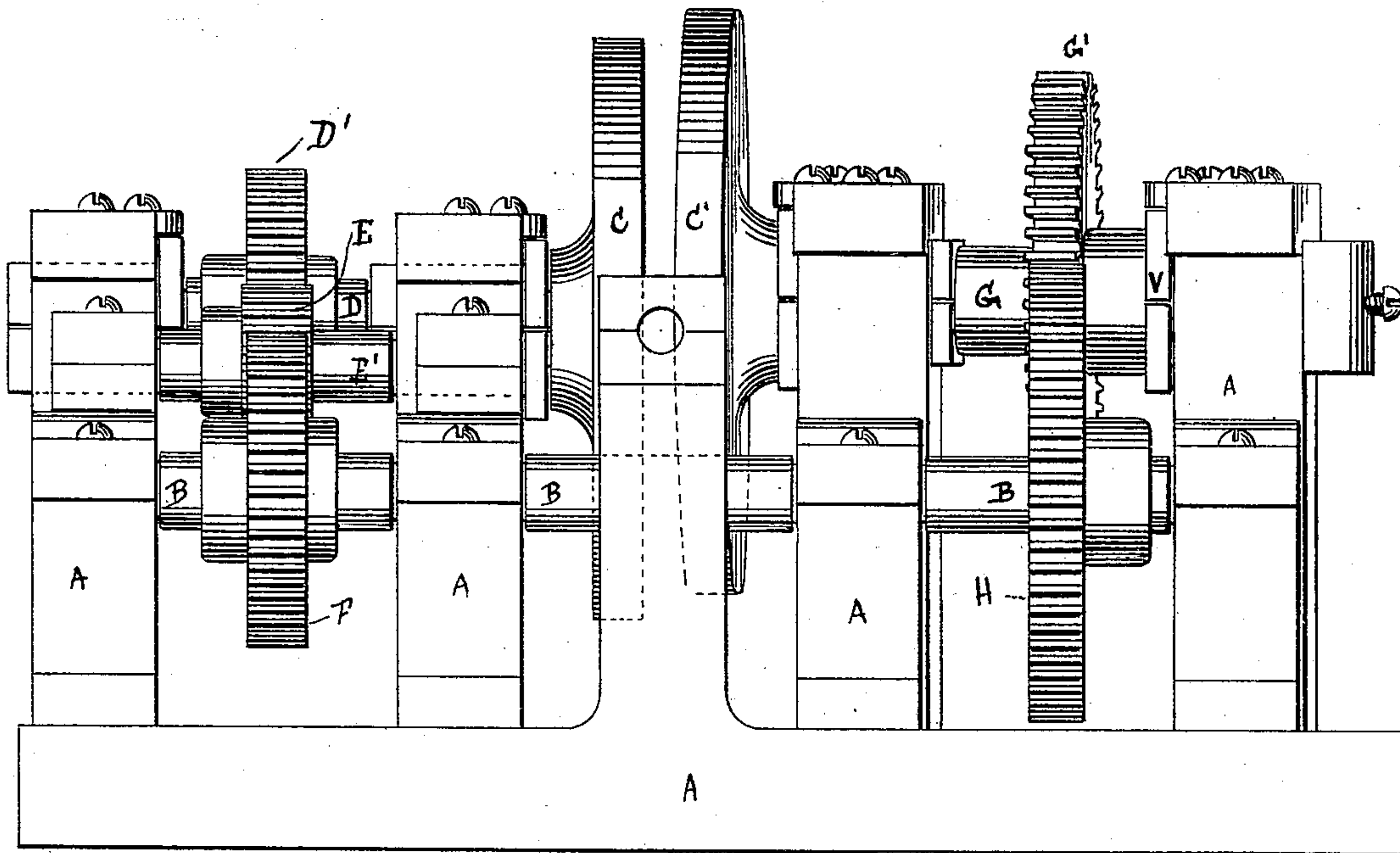


FIG. 3.

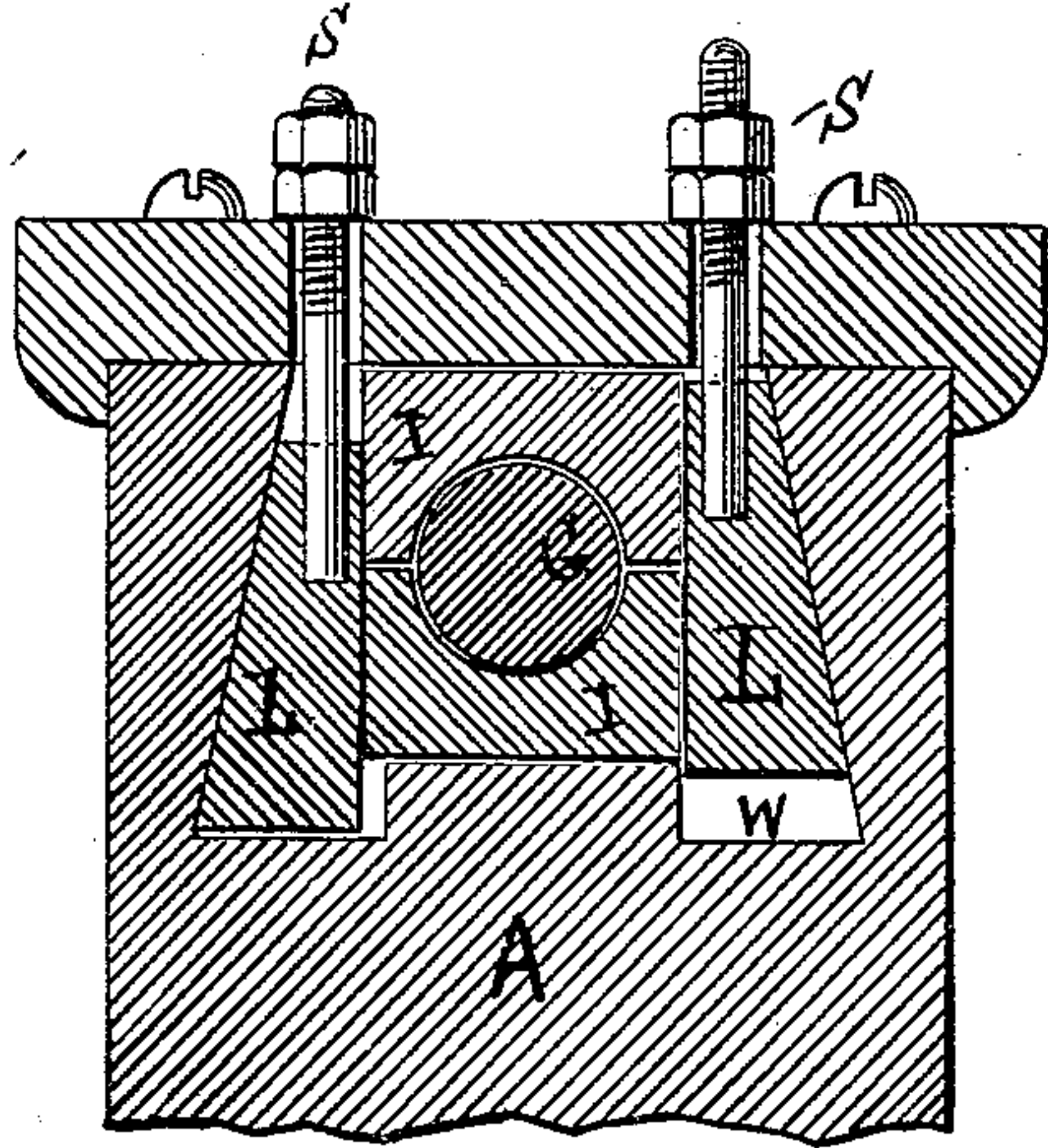
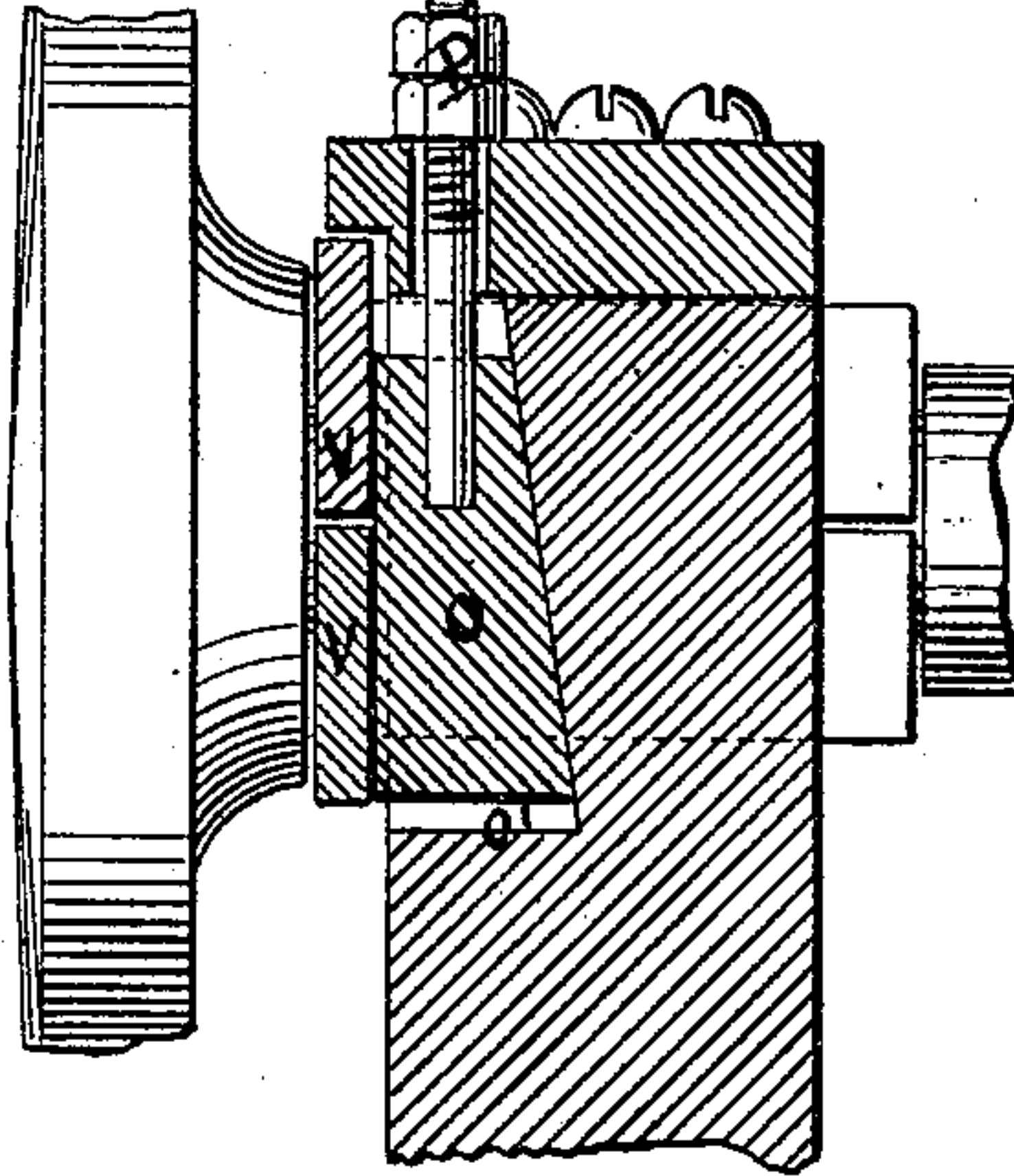


FIG. 4.



WITNESSES:

Wm. H. Finckel  
J. M. Yzaga.

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# UNITED STATES PATENT OFFICE.

JOHN ILLINGWORTH, OF NEWARK, NEW JERSEY.

MACHINE FOR STRAIGHTENING AND POLISHING IRON, STEEL, AND OTHER METAL RODS.

SPECIFICATION forming part of Letters Patent No. 253,710, dated February 14, 1882.

Application filed September 13, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN ILLINGWORTH, of the city of Newark, Essex county, in the State of New Jersey, have invented certain new and  
5 useful Improvements in Machinery for Polishing and Straightening Iron, Steel, and other Metal Rods, of which the following is a specification.

In the drawings, Figure 1 is a plan view.  
10 Fig. 2 is a side elevation. Fig. 3 is a detail showing lateral adjustment of main shaft. Fig. 4 is a detail showing end adjustment of main shaft.

My invention relates to a simple, strong, and  
15 efficient construction of that class of rolling-machines in which revolving disks are used to straighten and polish rods of iron, steel, or other metal.

I am aware of the Letters Patent granted to  
20 Reese in 1867 and to Brooksbank in 1874, and do not claim any features shown by them.

A is the frame-work and foundation; B, the main shaft; C C', the disk-rolls; D, the shaft of roll C, and also carries its pinion D', which  
25 engages with small pinion E on independent shaft E'. F is a driving-pinion on shaft B, and imparts motion to pinion E.

Disk-roll C' has its independent shaft G and large pinion G', which engages with the main  
30 pinion H on main shaft B. The gearing is so arranged that the disk-rolls C C' revolve with equal velocity in opposite directions—that is, their centers and peripheries do so revolve. Roll C has a plane face. Roll C' has a conical  
35 face, so that its face of contact with the rod from center of disk to its periphery is longer than corresponding part of the face of roll C. From this it results that a forward-feeding motion, in addition to the rotary motion, is im-  
40 parted to the rod grasped between the two disk-rolls.

My construction, consisting of one conical-faced disk operating in connection with one plane-faced disk, has important advantages  
45 over a machine having either two plane-faced disks or two conical-faced disks, and especially when, as in my machine, all of the shafting and gearing are in parallel lines, as shown

in the drawings, the parallel arrangement securing steadier and better action. Experience 50 in the use of such machinery has taught me that when two plane-faced disks are geared together in the manner shown by me the rods will be broken off in lengths equal to one-half the disk-diameter, so that the machine is prac- 55 tically useless unless another and inferior system of gearing is adopted. I do not philosophize as to the cause of this peculiar action of the two plane disks—I merely state the fact. When two conical-faced disks are geared to- 60 gether the rod passing through has too much play and is liable to become bent and come out bent or crooked instead of straight; and the parallel system of gearing is not available. In my machine the long (whole diameter) plane 65 face of the one disk remains at all times in contact with the passing rod, affording a constant resistance from that side of the machine. At the same time the conical disk, from its center to its periphery, (that face of it which 70 is parallel to the plane disk,) is holding the rod against the plane disk by a parallel pressure, thus securing the rod in such a way that it shall pass out of the machine in a straight line and in a straight form. I prefer a low 75 cone, just conical enough to readily admit entry of rods between the two disks.

By means of wedges operated in wedge-boxes by set-screws, proper end and lateral adjustment is given to the disk-roll C'. This is fully 80 shown in Figs. 3 and 4, in which G is the shaft of roll C', and revolves in journal-boxes I, housed in the standards A. Abutting against opposite sides of boxes I are the adjustable wedges L, which play up and down by means 85 of set-screws S in the wedge-boxes W, so as to secure a lateral adjustment of shaft G, and thus secure the desired angle at which roll C' shall revolve with relation to roll C.

In Fig. 4 is shown the device of securing 90 end adjustment of shaft G and its disk-roll C', according to the thickness of the rod to be rolled. In this case wedges O are operated in wedge-boxes O' by set-screws P against a collar, V, on shaft G. As the wedges are raised 95 by the screws the collar and its shaft G and

disk C' are forced outward toward disk C. These modes of securing lateral and end adjustment are exact, strong, and simple.

5 Z is the guide which receives the heated rod to be rolled.

The drawings are so complete that further description is unnecessary.

10 It will be noticed that roll C' has its shaft somewhat above the shaft of roll C. This contributes to the forward feed of the rod.

Having thus described my invention, what I claim is—

The combination, with the plane-faced disk C, of the conical-faced disk C', arranged as and for the purpose set forth.

15 In testimony that I claim the above improved machine I have hereunto set my hand this 12th day of September, 1881.

JOHN ILLINGWORTH.

In presence of—

DAVID A. RYERSON,  
CLINTON G. HALSEY.