

(No Model.)

J. B. BENNETT & A. P. BOARDMAN.

VIBRATOR ATTACHMENT FOR POLISHING MACHINES.

No. 441,633.

Patented Dec. 2, 1890.

Fig. 1.

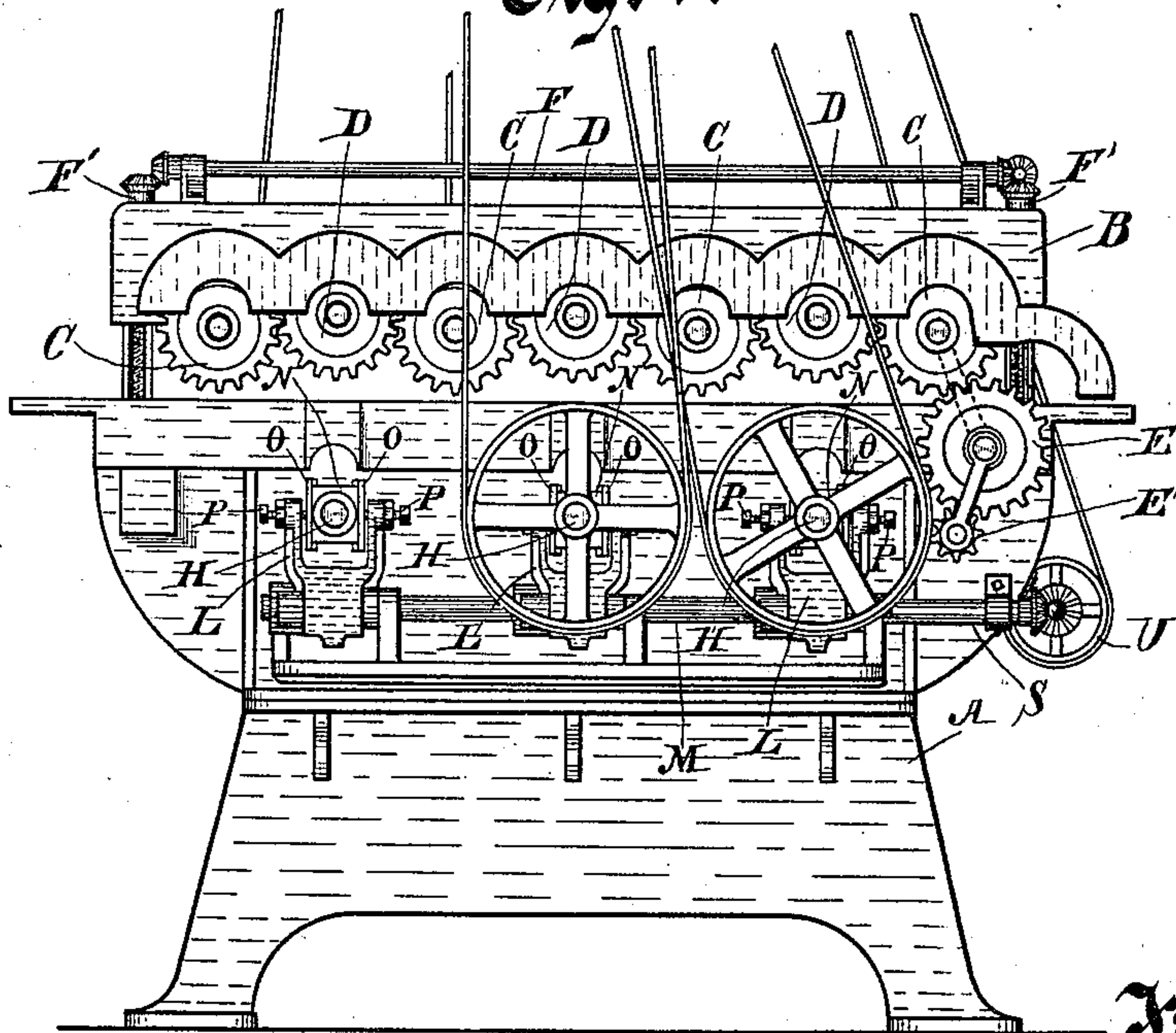


Fig. 3.

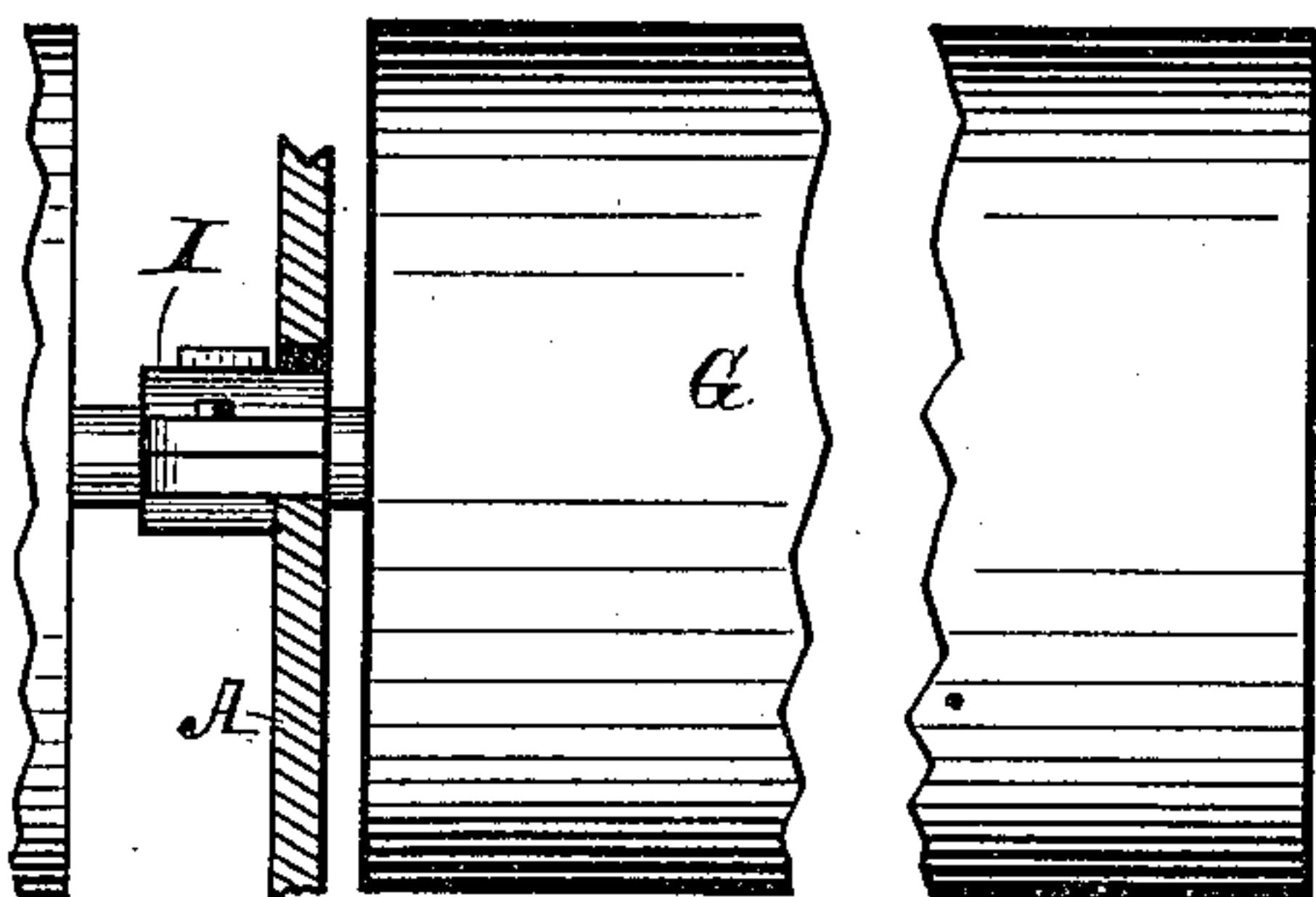


Fig. 2.

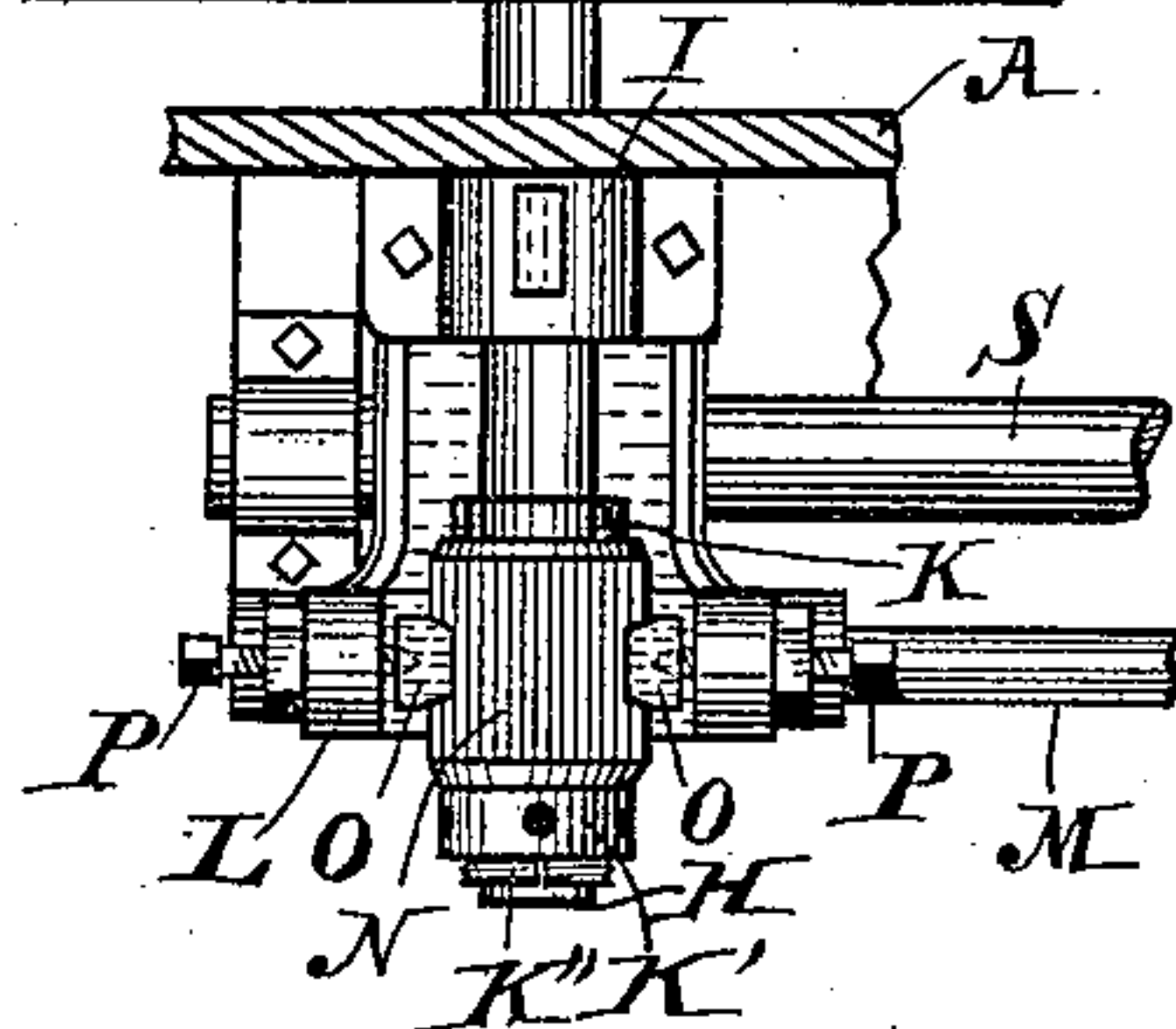
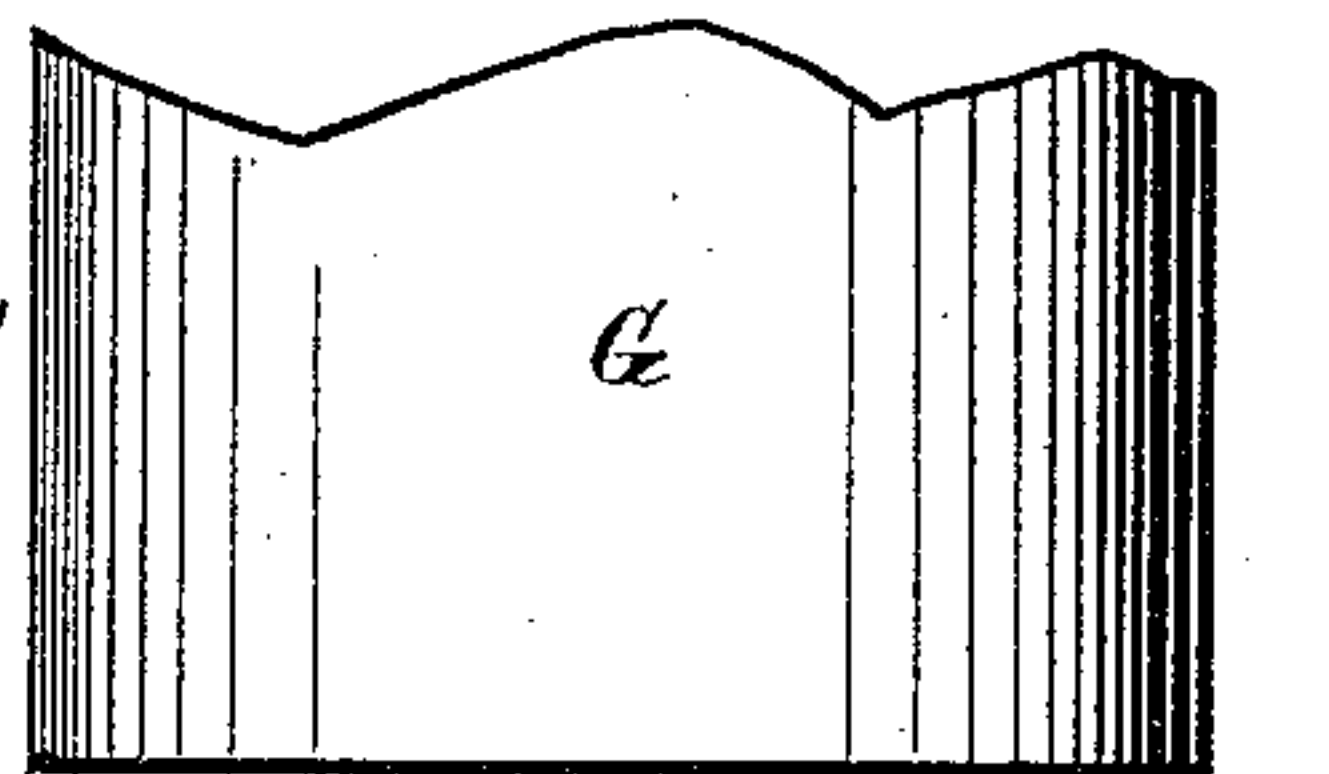
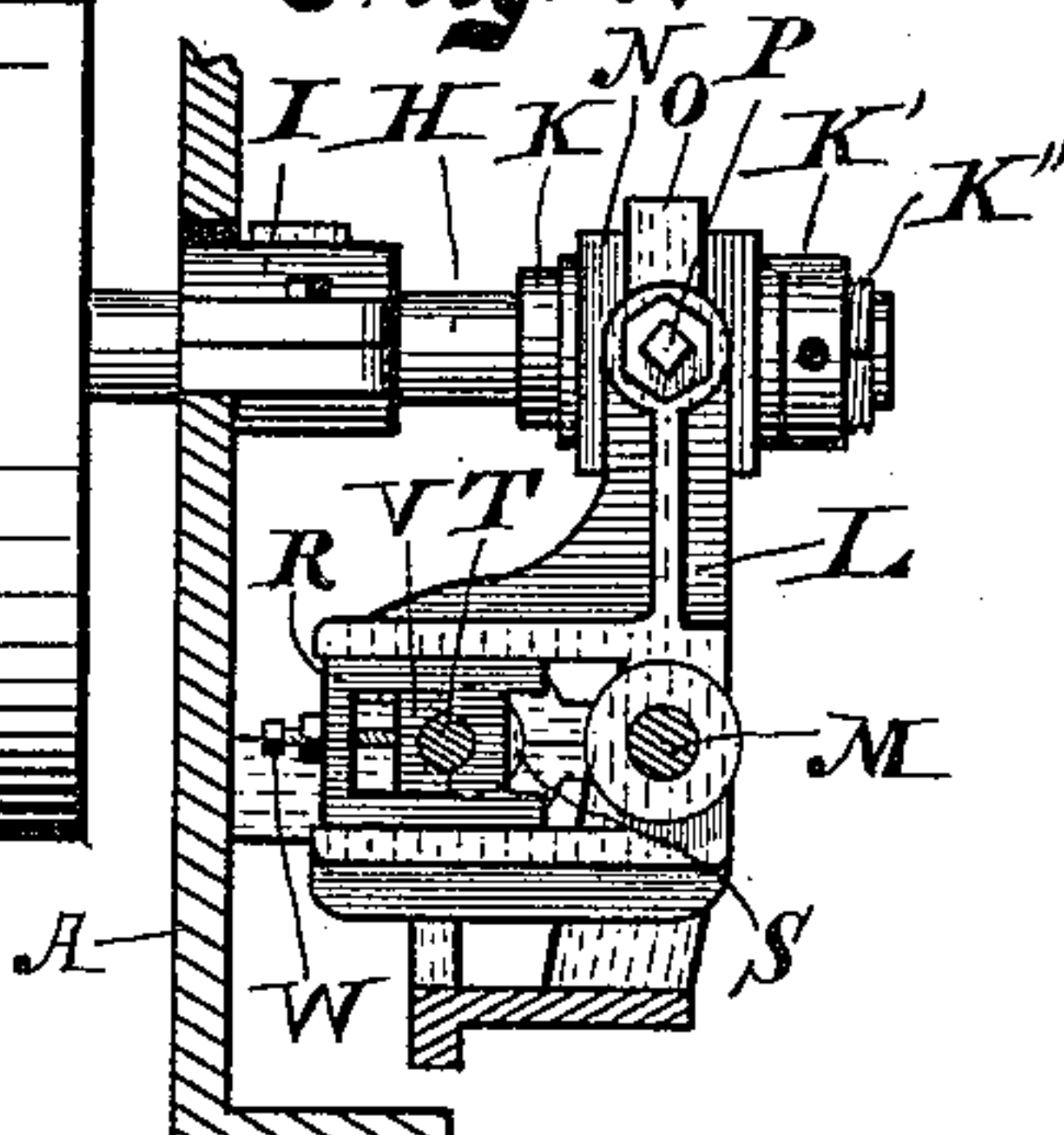
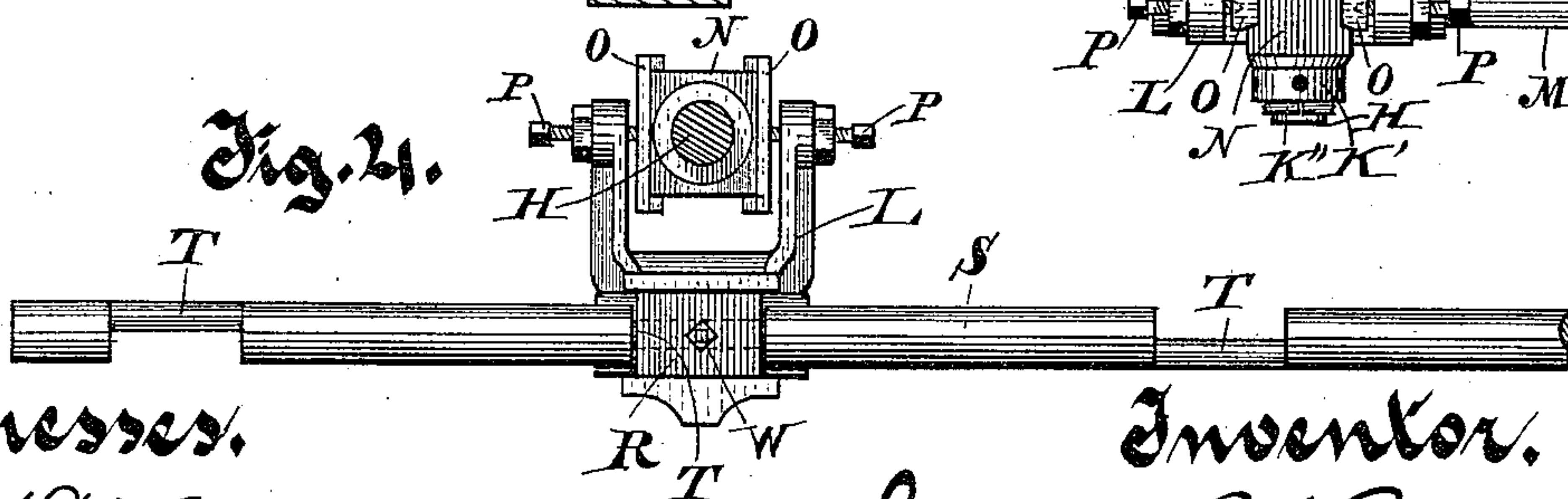


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOSEPH B. BENNETT AND ANSON P. BOARDMAN, OF WATERTOWN, ASSIGN-
ORS, BY MESNE ASSIGNMENTS, TO THE BERLIN MACHINE WORKS, OF
BELOIT, WISCONSIN.

VIBRATOR ATTACHMENT FOR POLISHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 441,633, dated December 2, 1890.

Application filed April 10, 1889. Serial No. 306,667. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH B. BENNETT and ANSON P. BOARDMAN, of Watertown, in the county of Jefferson and State of Wisconsin, have invented new and useful Improvements in Vibrator Attachments for Polishing-Machines; and we do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of our invention is to provide means for producing a reciprocal endwise or vibratory movement of the sand-paper-covered cylinders of a polishing-machine.

In the drawings, Figure 1 is an elevation of a polishing-machine in which our newly-invented device is embodied. Fig. 2 is an elevation of a cylinder, part being broken away, in connection with a side elevation of our newly-invented device for producing the vibratory movement of the cylinder. Fig. 3 is a top view or plan of the same newly-invented device shown in Fig. 2. Fig. 4 is an inside elevation of the device for producing the vibratory motion of the cylinder, being the same device shown in Figs. 2 and 3, in connection with the shaft having eccentrics by which the bell-crank is tilted.

The same letters refer to like parts in all the views.

In the drawings, A is the frame of the machine, and B is an independent top part of the frame, having some vertical movement with reference to the frame A. The cog-wheels C C are rigid on the ends of shafts of feed-rollers, and the intermediate cog-wheels D D, meshing with the wheels C C, are adapted to communicate motion from the right-hand cog-wheel C to the other cog-wheels C C, the right-hand cog-wheel C being driven by power supplied through the cog-wheels E and E', respectively, which are driven by connection with other parts of the machinery. There are other feed-rollers located directly below the rollers C C and having their bearings in the frame A, which feed-rollers are not shown in the drawings, as they form no part of the invention.

The shafts F and F', connected by gearing at their ends, are adapted for raising and lowering the top B, and have no connection with the device invented by us, and hereinafter to be more specifically described.

The sand-paper-covered cylinders G G G, of which there are three in the machine shown in Fig. 1, are each supported on a shaft H, which shaft has bearings in the pillow-blocks I I in the frame A of the machine. The shaft H is so constructed and supported in the pillow-blocks as to have an endwise movement therein as well as a rotary movement. To accomplish the vibratory movement of these cylinders, bell-cranks L L—one opposite each shaft—are pivoted at their angles severally on the frame by a rod M, supported therein. The upper arm of each bell-crank is bifurcated, forming a yoke, within which is a movable collar N about the shaft H, which collar has vertical lateral edges, and is provided with a recess in each lateral edge, in which is fitted a gib O, which gibs on each side are held in place by the set-screws P P, turning through the arms of the yoke of the bell-crank against the gibs O O, respectively, about opposite to the center of the shaft H, whereby the box N, with the gibs O O, is pivoted in the yoke of the bell-crank arm in such manner that the reciprocal force which produces the vibratory movement of the cylinders is delivered to the shaft opposite to the center of the shaft. A collar or shoulder K, rigid to the shaft H, bears against the box N on the inside, and a collar or ring K', provided with a screw-thread, turns on a screw-threaded split ring K'' on the shaft H, the collar K' bearing loosely against the box N on its outside. The lower horizontal arm of the bell-crank L is also bifurcated, and a movable pillow-block R rests therein and is adapted to move therein out and in from and toward the pivotal point of the bell-crank.

A horizontal shaft S, supported in bearings in the frame A, is cut and reduced to an eccentric-bearing T, opposite the several shafts H H, and these several eccentric-bearings T are received and fit in the pillow-block R, whereby as the shaft S is rotated the pillow-block R is moved in and out in the arm of

the bell-crank L and raises and depresses this arm of the bell-crank, whereby the upper arm of the bell-crank is tilted laterally, by which means the shaft H and cylinder G thereon are reciprocated endwise. The shaft S is rotated by means of gearing with a wheel U, driven by a belt running to the power-supplying mechanism. The pillow-block R has a movable bar V for one side of the journal held up to the journal or released by the thumb-screw W, and when released the shaft S may be inserted or removed from the pillow-block R. In the machine shown in Fig. 1 there are three cylinders G, and these are caused to vibrate alternately by the construction of the shaft S, in which the eccentrics T T T are each in a different radius from the others in the shaft S.

It will be understood that the material to be polished is run through the machine from one end to the other between the upper and lower feed-rollers and above the polishing-cylinders, so that the material is polished by the rotary and vibratory movement of the cylinders combined.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a polishing-machine, the combination, with a rotating polishing-cylinder supported and having endwise movement in the frame, of a tilting bell-crank pivoted at its angle on the frame, and a rotating shaft having an eccentric, which eccentric bears against one arm of the bell-crank, whereby the crank is tilted as the eccentric rotates, the other arm of the crank being movably connected to the shaft of the cylinder, substantially as described.

2. In a polishing-machine, the combination, with a polishing-cylinder on a shaft supported in bearings to have rotary and endwise movement, of a bell-crank pivoted on the frame of the machine, a movable box in one arm of the bell-crank riding on the shaft of

the cylinder between collars on the shaft, a block in the other arm of the crank, and an eccentric on a shaft, on which eccentric the block rides and by the rotation of which eccentric the bell-crank is tilted, substantially as described.

3. The combination, with the shaft of a cylinder of a polishing-machine supported and adapted for endwise movement therein, of a tilting bell-crank pivoted on the frame, a box riding on the cylinder-shaft between collars thereon, and a pair of gibs adapted for ways on which the box about the shaft travels, the gibs and box being secured pivotally to the arm of the bell-crank, substantially as described.

4. In a polishing-machine, a bell-crank pivoted on the frame, one arm of which bell-crank straddles the shaft of a cylinder between collars thereon, so as to move the shaft endwise when the bell-crank is tilted, in combination with a shaft having an eccentric and a movable pillow-block in which the eccentric has bearings, the pillow-block being fitted and traveling in ways in the other arm of the bell-crank, substantially as described.

5. In a polishing-machine, the combination of several polishing-cylinders supported to be capable of endwise movement therein, with tilting bell-cranks, one crank opposite each cylinder pivoted on the frame, and a rotating shaft having several eccentrics, one for each bell-crank, and on which one arm of each bell-crank rides, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOSEPH B. BENNETT.
ANSON P. BOARDMAN.

Witnesses:

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GEO. HAWKINS.