

(No Model.)

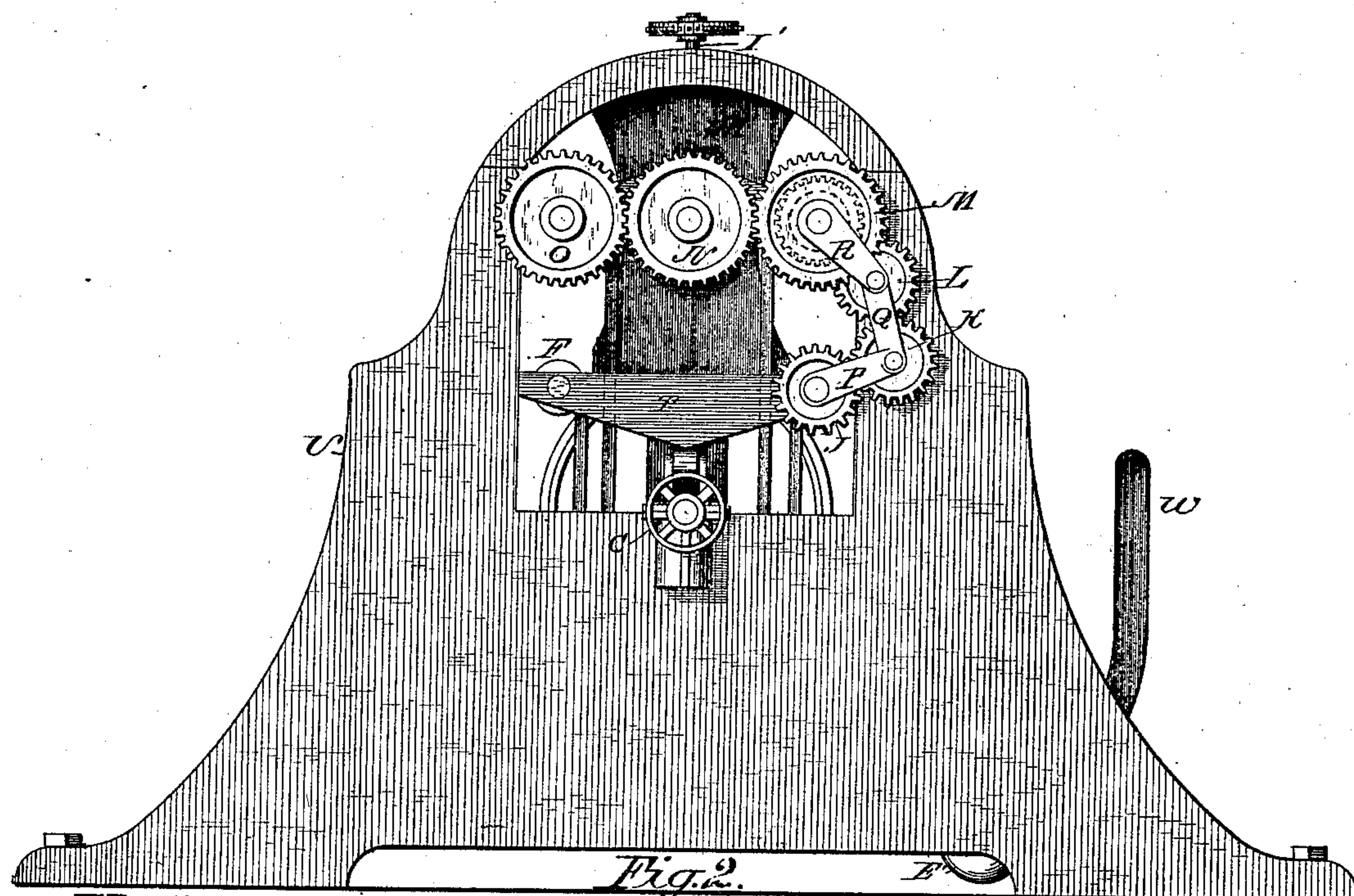
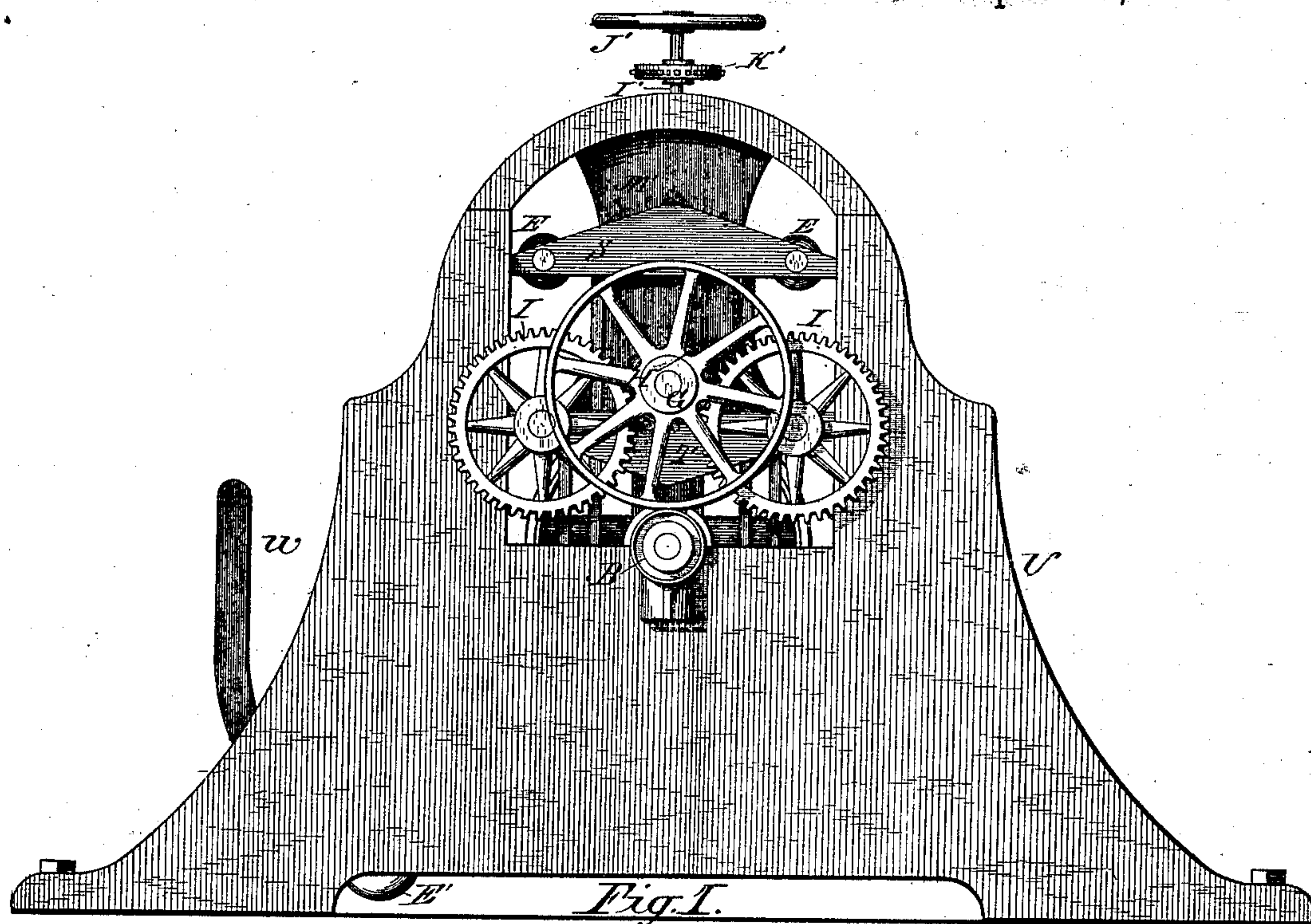
3 Sheets—Sheet 1.

A. BRIDGMAN & J. CHALLONER.

WOOD POLISHING MACHINE.

No. 285,728.

Patented Sept. 25, 1883.



Witnesses:
C. B. Story.

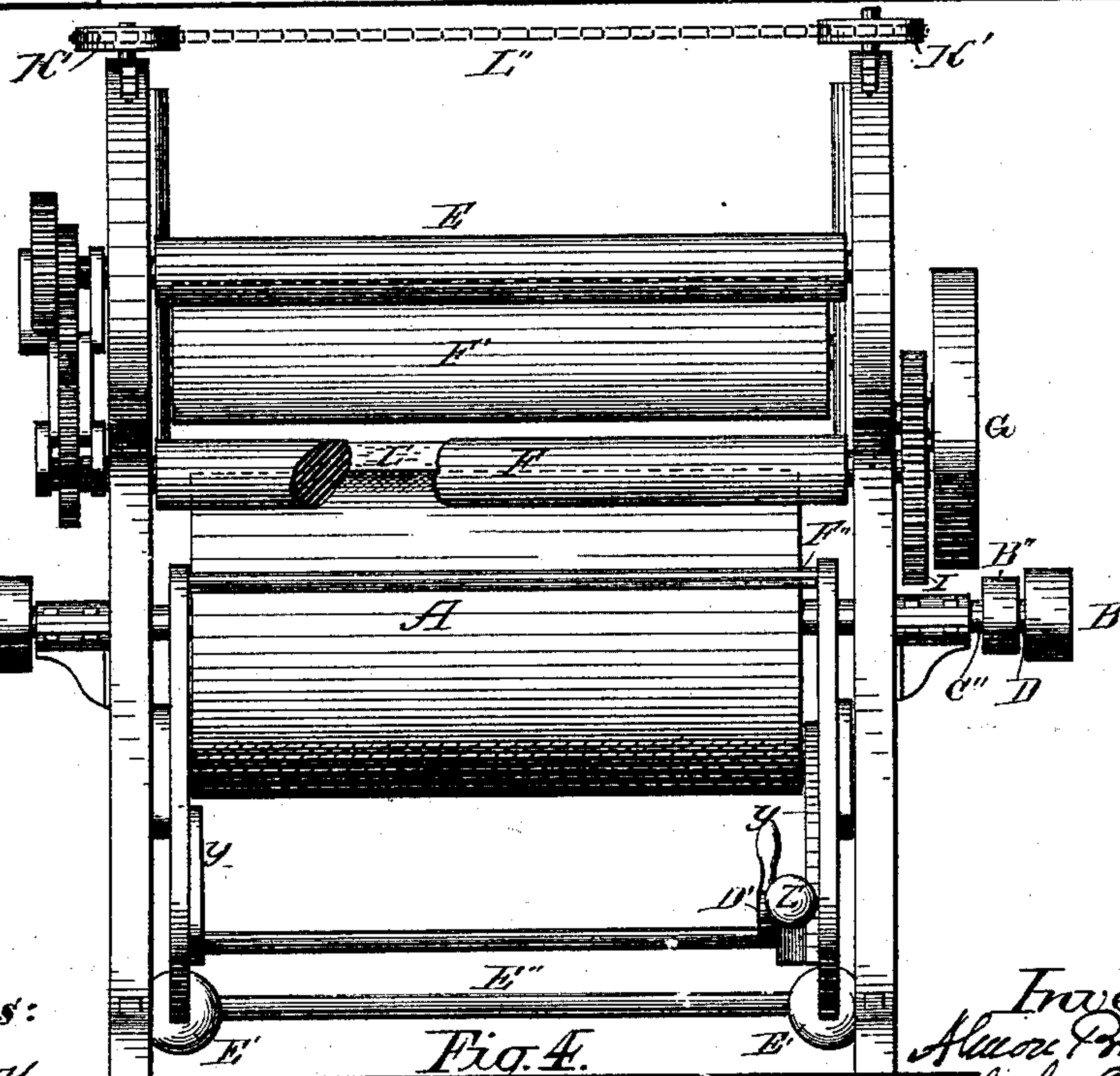
W. J. Sinnott.

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3 Sheets—Sheet 2.

WOOD POLISHING MACHINE.

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C. B. Story.

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3 Sheets—Sheet 3.

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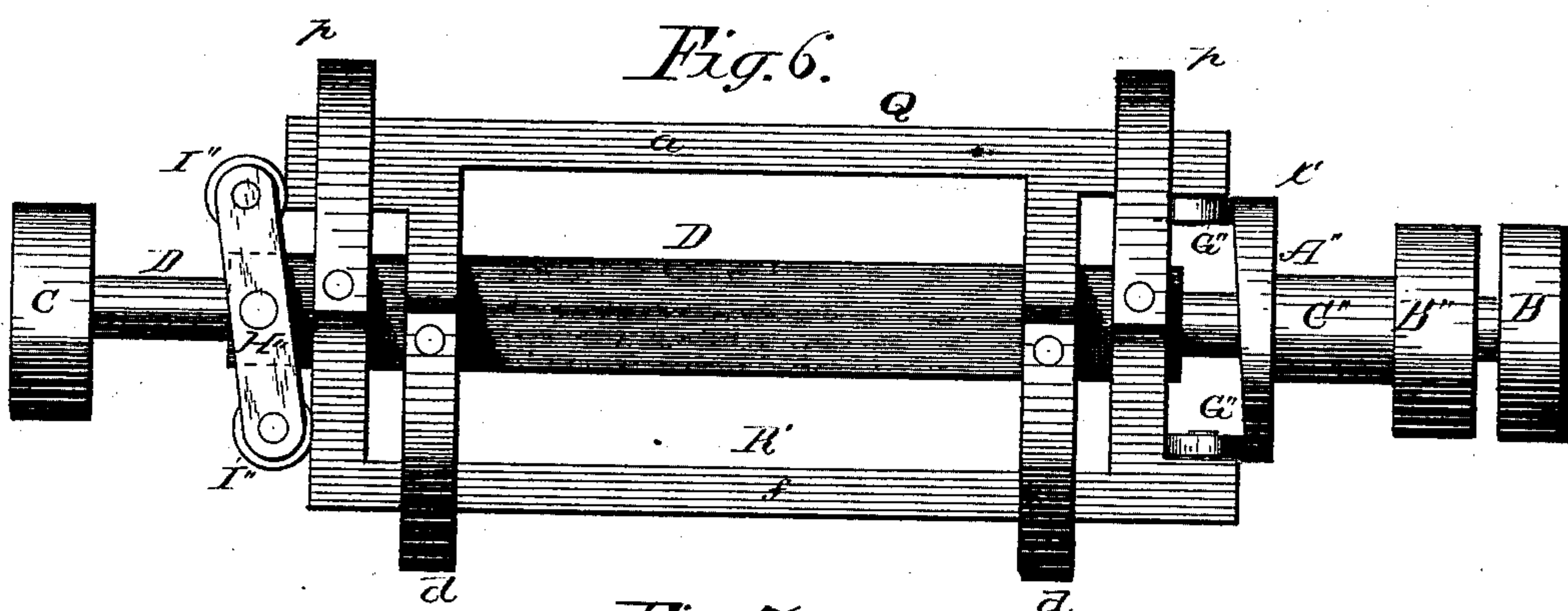
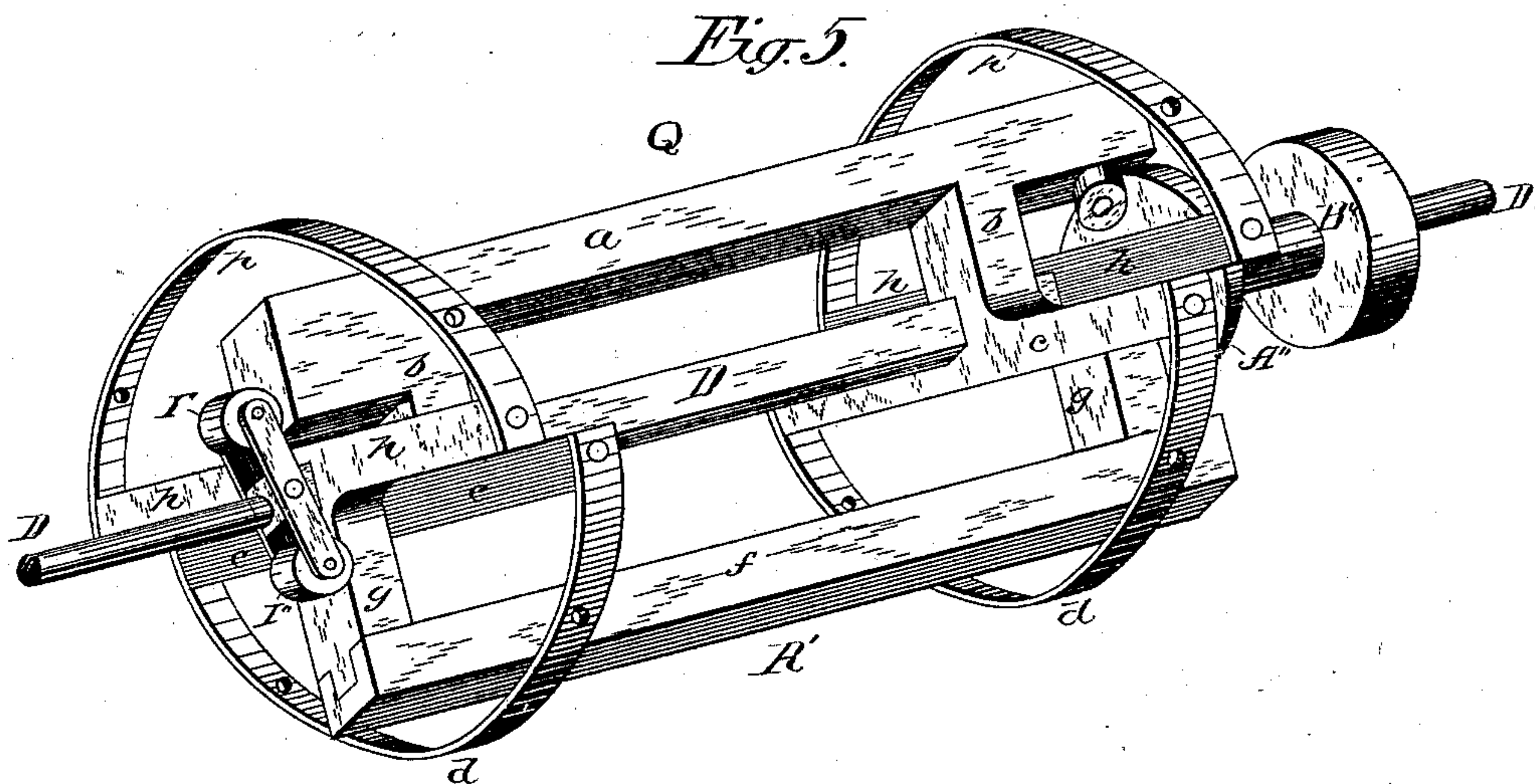
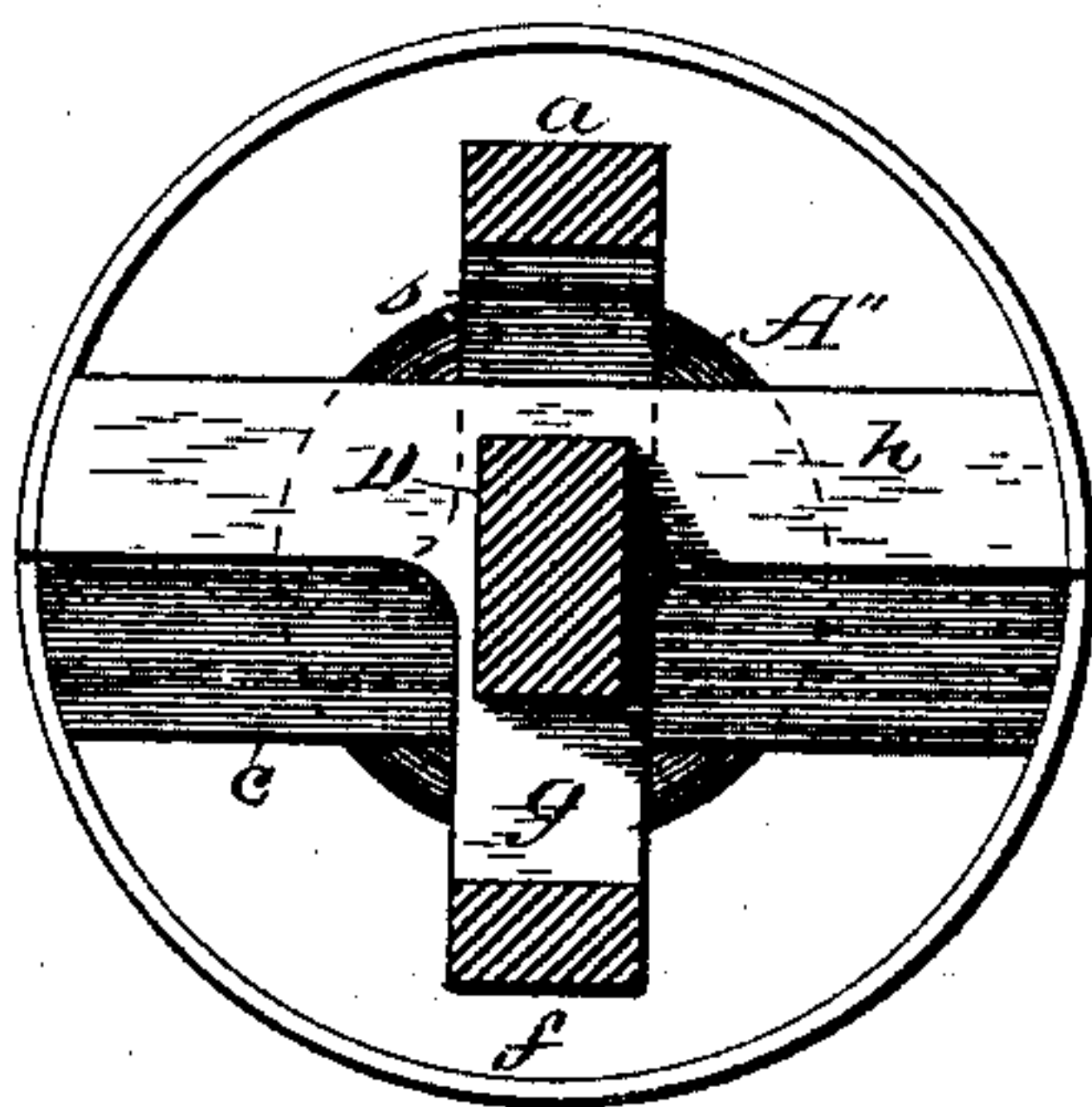


Fig. 7.



Witnesses:

C. B. Story.

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UNITED STATES PATENT OFFICE.

ALMON BRIDGMAN, OF BERLIN, AND JOHN CHALLONER, OF OMRO, ASSIGN-
ORS TO THE YATES MANUFACTURING COMPANY, OF BERLIN, WIS.

WOOD-POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 285,728, dated September 25, 1883.

Application filed April 24, 1883. (No model.)

To all whom it may concern:

Be it known that we, ALMON BRIDGMAN and JOHN CHALLONER, citizens of the United States, residing, respectively, said BRIDGMAN at Berlin, in the county of Green Lake, said CHALLONER at Omro, in the county of Winnebago, and State of Wisconsin, have invented certain new and useful Improvements in Wood-Polishing Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in that class of wood-working machines in which the surface of the lumber is smoothed and polished by contact with the surface of a rapidly-revolving sand-covered cylinder.

Our improvements pertain, first, to the construction of the polishing-cylinder; second, to the construction of the presser-bar and devices for adjusting the same; third, to the arrangement of the feed-rollers and mechanism for operating them; and, fourth, to the general construction and arrangement of all the parts as adapted to operate together.

Our invention is further explained by reference to the accompanying drawings, in which—

Figures 1 and 2 represent elevations of the respective ends of the machine. Fig. 3 represents a vertical section with sand-cylinder removed. Fig. 4 is a front view. Fig. 5 is a perspective view of the sand-cylinder with the covering removed. Fig. 6 is a side elevation of the device shown in Fig. 5. Fig. 7 is a cross-section of the frame of the sand-cylinder.

Like parts are represented by the same reference-letters throughout the several views.

A in Fig. 4 represents the sand-cylinder covered, the uncovered frame of the same being shown in Figs. 5, 6, and 7. Motion is communicated to the cylinder A from either side of the machine as may be found most convenient through pulleys B or C and shaft D.

E E and F F are the feed-rollers, by and between which the lumber to be dressed is carried forward across the upper surface of the sand-cylinder. Motion is communicated to the lower feed-rollers, F F, through the band-wheel G, pinion H, gears I I, and from thence to the upper feed-rollers, E E, by chain of gears J, K, L, M, N, and O. The gears J, K, L, and M are connected together by links P, Q, and R, which links retain said gears in operative contact, so that motion is communicated from the lower gear, J, to the upper feed-rollers, while it permits said upper feed-rollers to be raised and lowered without stopping the machine. The rollers are provided at their respective ends with cross-heads S and T, by which they are supported and adjusted. The respective ends of the cross-heads S and T are provided with side bearings, U U, in both end pieces, V V, of the frame, against which bearings they are adapted to move upward and downward. Both cross-heads, with their rollers, are simultaneously adjusted upward or downward by the levers W W, which levers are connected with the lower cross-head, T, by the vertical bars X X, horizontal bar a', and link b', and with the upper cross-head, S, through the cam Y, link b', horizontal bar a', curved slot y, which slot is formed in the extension of said bar a', lever Z, links A', bars B' B', and rods C' C', the levers Z being pivoted to the bars a' and secured at any fixed point in said slot by the clamp-screw D'. The clamping-screw D' extends through said slot y, and is provided with a head, which is drawn against the sides of said slot as the clamping-nut is turned, whereby said lever Z and said extension are drawn firmly together and held at any fixed point desired. If, however, it is desired to adjust the upper rollers without moving the lower rollers, said adjustment may be attained by releasing the clamp-screw D' and moving the levers Z upward or downward, when motion will be communicated thereto through the link A', bar B', and rods C' C', while the levers W remain at rest. The lower ends of the levers W W are attached to the respective end pieces of the frame by bolt or rod E'', and the upper ends are connected together by rod F''

in such a manner that any motion communicated to either one of said handles is transmitted to the other, whereby both ends of the feed-rollers are simultaneously adjusted.

5 One end of the lever *Z* projects past the slot *y* and forms a handle, *Z'*, by which said levers *Z* are operated independently of levers *W* *W*.

10 *E'* *E'* are weights adjustably secured upon the levers *W*, which, acting through said levers, cause the feed-rollers *F* *F* to press upward against the lower side of the lumber as the same is being fed forward over the sand-cylinder.

15 *F'* is a presser-bar, which is nearly cylindrical in shape, the lower surface, however, being slightly flattened, that it may present a broader surface to the lumber upon which it is adapted to press as the same is being moved over the sand-cylinder. The respective ends of the presser-roller *F'* are provided with closely fitting movable journal-boxes *G'*, which hold the roller when adjusted and prevent it from being turned by contact with the lumber

20 passing beneath it. Said boxes are adapted to be adjusted upward or downward in the guideways *H* *H* by the vertical adjusting-screws *I'* *I'*. One of said adjusting-screws *I'* is provided with hand-wheel *J'*, by which

30 it is turned. Motion is communicated from one screw to the other through the sprocket-wheels *K'* *K'* and sprocket-chain *L''*, whereby both ends of the presser-bar are simultaneously adjusted as the hand-wheel *J'* is turned.

35 *L'* is a bed-plate, upon which the lumber rests as it is being moved forward by the feed-rollers across the upper surface of the sand-cylinder. The lower surface of said bed-plate is chamfered to conform to the surface of the sand-cylinder, the central part of the same being cut through sufficiently to permit the periphery of the sand-cylinder to project through and slightly above the upper surface of said bed-plate, whereby it may be brought in contact with the surface of the lumber. The bed-

40 plate *L'* is held in position by the end plates, *M'* *M'*. The plates *M'* *M'* are secured to the end pieces, *V* *V*, of the frame by bolts *N'* *N'*, which pass through slots in the frame *V*, whereby the lower ends of said plates *M'* *M'* with the bed-plate *L'* are adapted to be nicely adjusted relatively to the sand-roller and the lower feed-rollers as occasion may require by means of set-screws *O'* *O'* and *P'* *P'*. Prepara-

50 tory to adjusting the end pieces, *M'* *M'*, the bolts *N'* *N'* are slightly loosened, when said plates *M'* *M'* are thrown toward the right or left by turning down or releasing said adjusting-screws, as will be understood, until the proper adjustment is made, when the bolts *N'* *N'* are tightened, thereby rigidly retaining said parts when adjusted.

65 The sand-cylinder *A* is formed in two parts, the separate frames *Q'* and *R'* of which are shown in Figs. 5 and 6. Both parts *Q'* and *R'* are supported and revolved upon the same shaft *D*. The object of forming said cylinder

in two parts is to provide for a slight lateral reciprocating movement of said parts in opposite directions to each other, whereby the sand-lines of the polishing-surfaces of the respective halves of said cylinder will be caused to continuously cross and recross each other upon the surfaces of the boards passing in contact therewith. To accomplish this desired end the frames *Q'* and *R'* are made movable upon their supporting-shaft *D*. Both halves of the frame *Q'* and *R'* are substantially the same in construction. Frame *Q'* consists of the longitudinal bar *a*, radial arms *b* *b* and *c* *c*, and semicircular plates *d* *d*. Frame *R'* consists of the longitudinal bar *f*, radial arms *g* *g* and *h* *h* *h* *h*, and semicircular plates *p* *p*. The central part of the shaft *D* is rectangular in shape, and a rectangular opening is provided for the reception of said shaft *D* through said radial arms at their common centers, as shown in Fig. 5, said radial arms being loosely fitted thereto, and are adapted to move laterally thereon while they are rotated thereby. The object of the bars *a* and *f* is to counterbalance the semicircular plates *p* *p* and *d* *d*, and the sand-paper covering secured thereto. The weight of said bars and the covering which forms the periphery of the cylinder being equal, it is obvious that the centrifugal force of said bars and said periphery when revolved, being in opposite directions upon opposite sides of the shaft, they will counteract each other, and the tendency of the respective halves of the said cylinder to separate will be thereby overcome. The lateral reciprocating movement of the respective halves of the cylinder *Q'* and *R'* is caused by the action of the cam *A''*, which is driven by a separate pulley, *B''*, with a slightly accelerated movement. Thus as the cam gradually gains a revolution upon the sand-cylinder the widest part *x'* of the cam pass and repass the respective halves of the cylinder, while the narrow part *y'* in said cam passes the opposite half of said cylinder. The respective frames *Q'* and *R'* are provided with anti-friction rollers *G''* *G''*, against which said cam *A''* bears. As the wider portion of said cam *A''* approaches either of the respective halves of the cylinder they are gradually moved thereby toward the left. When acting through the lever *H''*, the opposite half of said cylinder is driven toward the right, and the lower anti-friction roller, *G''*, is caused to follow up and bear against the receding surface of said cam. Thus it is obvious that the respective halves of said cylinder are caused to gradually reciprocate in opposite directions to each other, while they are both driven rapidly forward together. The respective ends of the lever *H''* are provided with anti-friction rollers *I''* *I''*, which rollers have bearings against the frames *Q'* and *R'*.

The cam *A''* is connected to the driving-pulley *B''* by the sleeve *C''*. Said last three mentioned parts all move freely together upon the shaft *D*. The circumference of the pulley *B''* is slightly less than that of pulley *B*, and it is

thereby consequently rotated with an accelerated movement, as mentioned. It is obvious that the same result may be attained by making pulley B slightly smaller than pulley B", when, by the accelerated movement of the respective halves of the cylinder past said cam, said halves or sections will, in like manner, be caused to reciprocate in opposite directions past each other, as mentioned.

10 Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a wood-polishing machine, a polishing-cylinder formed in sections separated longitudinally, secured to a rotating shaft, upon which said sections are adapted to reciprocate longitudinally as they revolve, in combination with operative mechanism for communicating such reciprocating motion to said sections as the cylinder is rotated, substantially as and for the purpose specified.

2. In a wood-polishing machine, a polishing-cylinder formed in sections, separated longitudinally, secured to a rotating shaft, with and upon which it is revolved, in combination with a cam and pulley adapted to revolve upon said shaft at a differential rate of speed, in contact with the respective sections of said cylinder, and means for holding the sections of the cylinder in contact with the cam, whereby said sections are caused to reciprocate in opposite directions to each other as they rotate, substantially as and for the purpose specified.

3. In a wood-polishing machine, the combination and arrangement of shaft D, cylinder A, formed in sections, separated longitudinally, with cam A", sleeve C", pulleys B and B", and lever H", said pulleys B and B" being of different diameters, and adapted to revolve said shaft and cam at differential rates of speed,

said cam A" and lever H" co-operating to communicate a reciprocating movement to the respective sections of said cylinder as they rotate, substantially as and for the purpose specified.

4. In a wood-polishing machine, the combination, with the respective ends of the feed-rollers E E, of the head-blocks S S, vertical bars C' C', horizontal bars B', links A", and levers Z, said feed-rollers being adapted to be raised, lowered, and adjusted by said levers Z, substantially as set forth.

5. In a wood-polishing machine, the combination, with the respective ends of the lower feed-rolls, F F, of the head-blocks T T, vertical rods X X, blocks a' a', links b', and levers W W, substantially as and for the purpose specified.

6. In a wood-polishing machine, the combination, with the respective end pieces, V V, of the frame and the respective ends of the bed-plate L', of the plates M' M', adjustably secured to said end pieces, V V, by retaining and adjusting bolts, as set forth.

7. In a wood-polishing machine, a cylinder formed in sections, severally secured to a common central rotating shaft, each section having a counter-weight located upon the opposite side of said shaft, whereby the centrifugal force of the respective sections, when rotating, is counteracted by the centrifugal force of said counter-weights, substantially as set forth.

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

ALMON BRIDGMAN.
JOHN CHALLONER.

Witnesses:

N. FRANK,
P. B. YATES.