

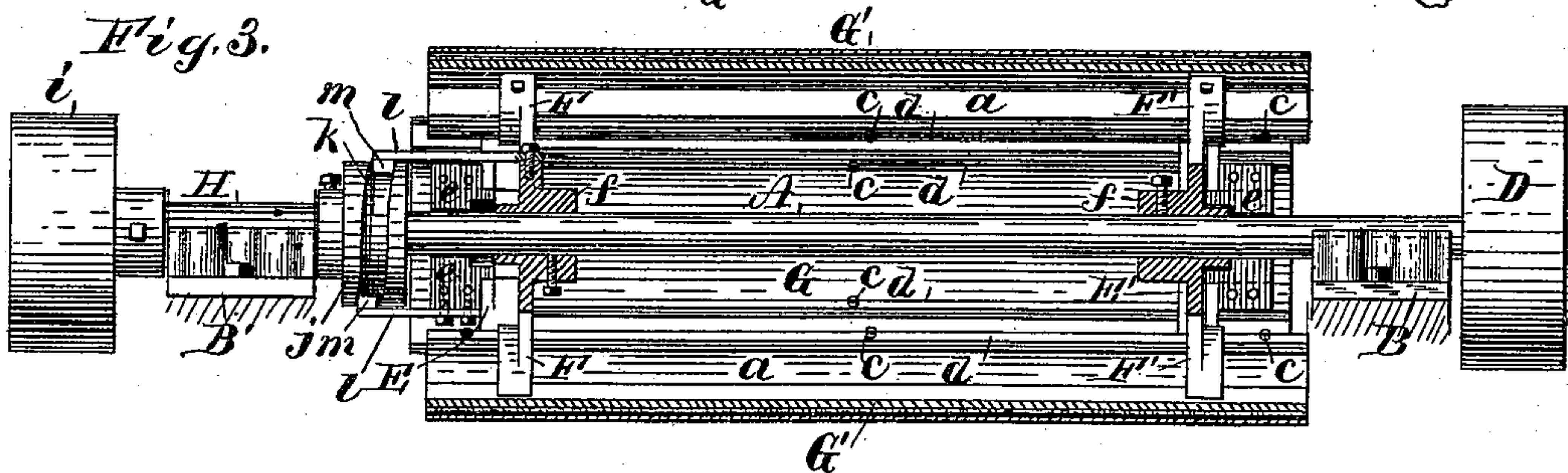
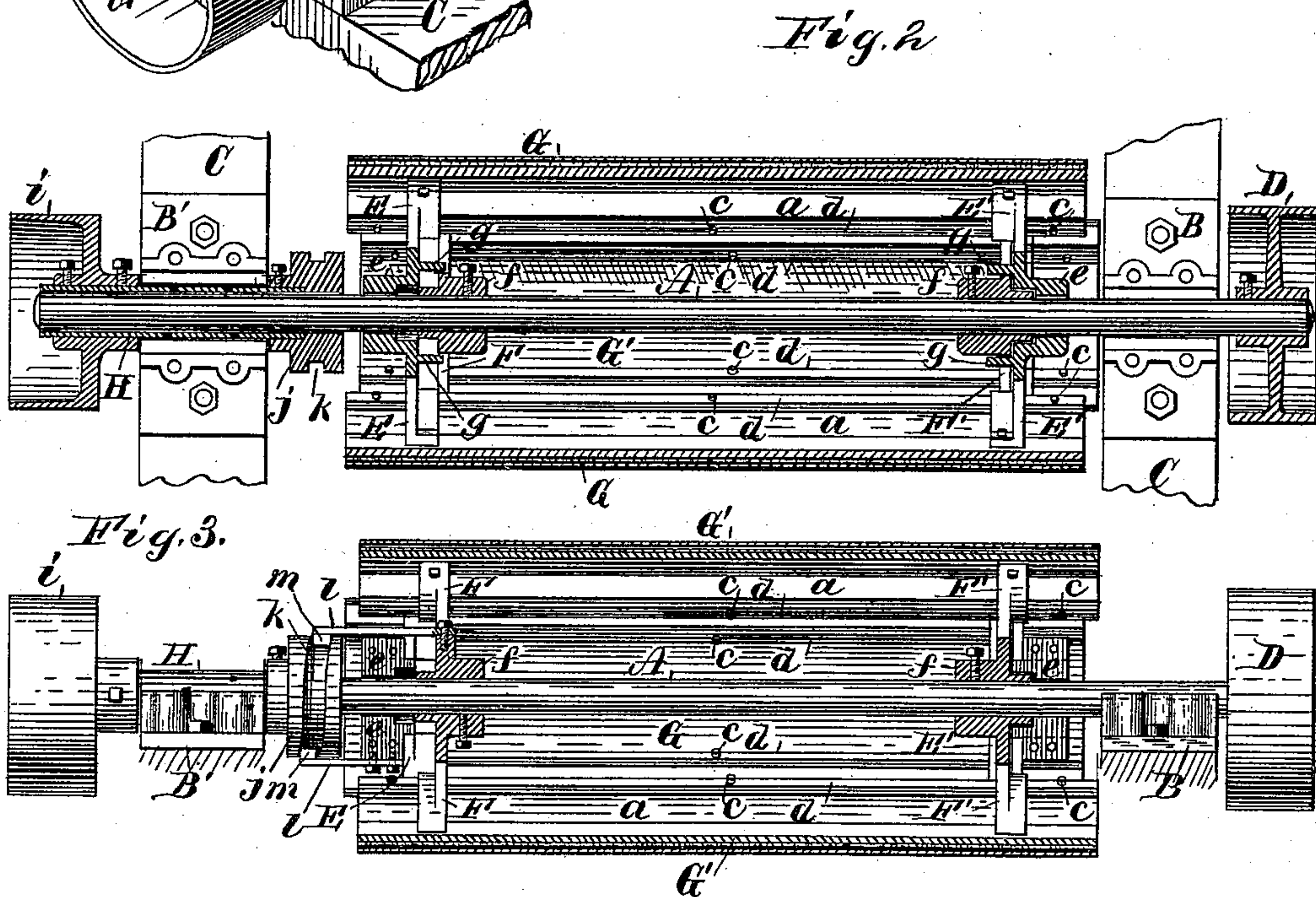
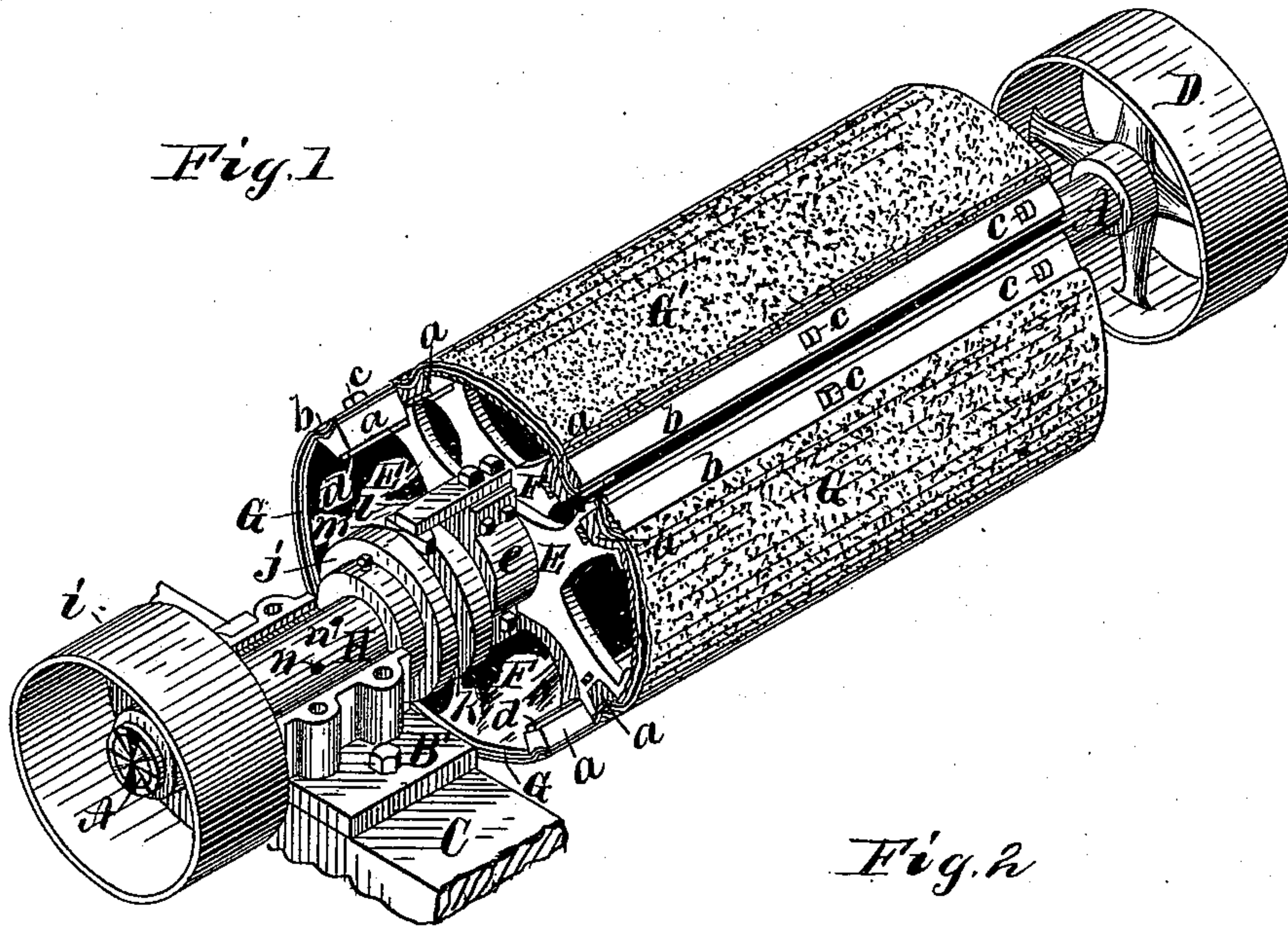
(No Model.)

2 Sheets—Sheet 1.

A. BRIDGMAN & J. CHALLONER.
WOOD POLISHING MACHINE.

No. 352,988.

Patented Nov. 23, 1886.



Witnesses
G. M. Gridley
C. Ray Annan

Inventors
Almon Bridgman
John Challoner
By Erwin Reuschel
Attorneys

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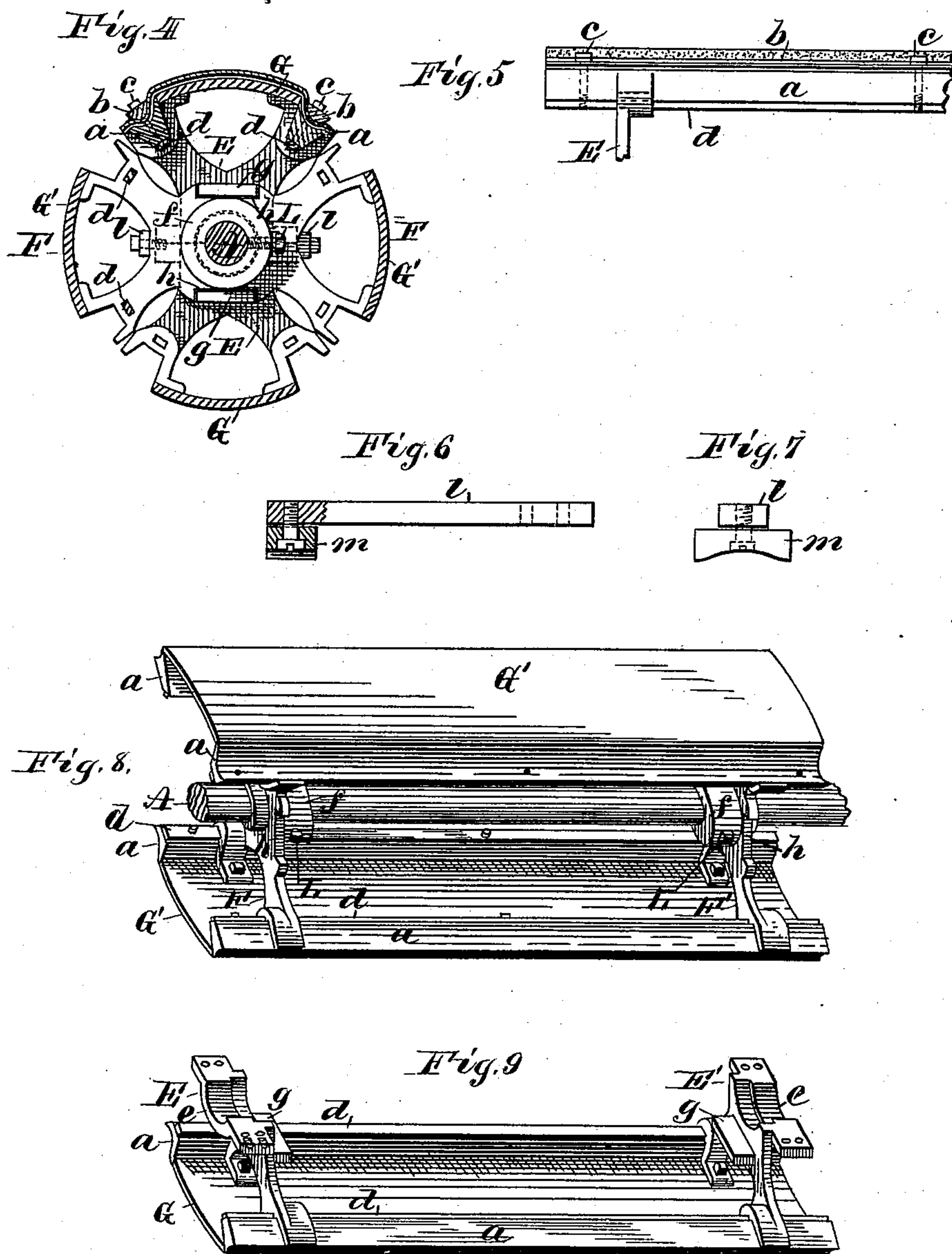
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UNITED STATES PATENT OFFICE.

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. 352,988, dated November 23, 1886.

Application filed November 12, 1885. Serial No. 182,561. (No model.)

To all whom it may concern:

Be it known that we, ALMON BRIDGMAN, of Berlin, in Green Lake county, Wisconsin, and JOHN CHALLONER, of Omro, in the county of Winnebago and State of Wisconsin, have invented new and useful Improvements in Wood-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 letters or figures of reference marked thereon, which form a part of this specification.

Our invention, to be hereinafter distinctly claimed, relates to improvements in that class of wood-polishing machines adapted to smooth and polish lumber by the contact therewith of the sand-covered surface of a rapidly-rotating cylinder; and our invention pertains especially to the construction and means for operating this sand-covered cylinder, which is an improvement upon the cylinder secured to us by Letters Patent of the United States, of September 25, 1883, No. 285,728.

In the accompanying drawings, Figure 1 is a perspective of the cylinder and the attached mechanism for operating it. Fig. 2 is a horizontal section of Fig. 1. Fig. 3 is a vertical section of Fig. 1. Fig. 4 is a central cross-section of the cylinder. Figs. 5, 6, and 7 are details. Figs. 8 and 9 are perspectives, parts being removed to show other parts more distinctly.

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

The driving-shaft A is supported on and rotates in bearings B B' on the frame C. Motion is communicated to the shaft A by a belt from the power-supplying mechanism running upon the pulley D, which is rigid on shaft A. The polishing or sand-paper-covered cylinder is supported on and rotates with the driving-shaft A, and consists of two sets of radial arms, centrally pierced by shaft A, each set of arms being in pairs, E E' and F F', one set of double arms being at or near each end of the cylinder. These radial arms E E' and F F' support on their outer ends the segmental sectional plates G G' of the cylinder, upon which the several sand surfaces are fixed. Each segmental sectional plate is attached to the ends (on the same side of the shaft A) of the same set of arms E E' or F F', each set of arms carry-

ing two plates, one diametrically opposite the other.

Along each of the straight longitudinal edges of the several segmental plates G G' is a bar, *a*, affixed to the arms E E' or F F', the outer surface of which bar is a little within the circular contour of the surface of the plates G G', which bar is provided in its outer surface longitudinally with a groove adapted to receive a strip-like keeper, *b*. This keeper *b* is held in position by screws or bolts *c c*, passing through it and through the bar *a* into an iron retaining-strap, *d*, which strap *d* is supported in mortises in the arms E E' or F F' and runs just beneath and parallel with the bar *a*.

Over the surface of the plates G G' is placed the sand-paper covering, lined or cushioned with carpet and sheets of rubber, which carpet, rubber, and sheets of sand-paper are held in position by their ends being placed beneath the keeper *b b*, which are drawn and held down to their seats by the screws or bolts *c c*.

Both sets of arms E E' and F F' are provided with rigid collars *e* and *f*, respectively surrounding the shaft A. The arms of one set, F F', are made rigid to the shaft A by means of set-screws L L through the collars *f f*, turning against the shaft, while the other set of arms, E E', and their supported devices have a short lateral reciprocal movement on the shaft A. To permit of this reciprocal movement of one set of arms carrying two of the sectional segmental plates, the arms E E' of this set are located outside of and a little distance from the arms F F' of the other set, and the arms E E' are each provided with rigid lugs or guides *g g*, projecting inwardly, which guides *g g* enter corresponding grooves or recesses, *h h*, in the arms F F', which recesses are adapted to receive and permit said guides to slide freely therein, whereby while said arms E E' are permitted to reciprocate freely on shaft A they are caused to rotate with the arms F F', which are rigid on the shaft. The object of this reciprocating movement is to cause the microscopic lines made by the sand-cylinder on the surface of the material being polished to cross and recross each other, whereby a smoother surface is produced than could otherwise be obtained. To get this reciprocating movement, we provide a sleeve,

H, encompassing the shaft A at its end opposite the pulley D, in which sleeve the shaft rotates freely, and which sleeve in turn rotates freely in the bearing B'. On the outer
 5 end of this sleeve H is the fast band-pulley *i*, by and through which motion is communicated to the sleeve from the power-supplying mechanism. On the inner end of the sleeve H is the collar *j*, rigid to the sleeve H, the collar *j*
 10 and pulley *i* being so adjusted on the sleeve H as not to permit any lateral motion of the sleeve in the bearing B'. About the collar *j* in its periphery there is a continuous inclined or cam groove, *k*. The arms E and F are each
 15 provided with an arm, *l*, rigid thereto and projecting outwardly therefrom and diametrically opposite to each other, each of which arms carries on its outer end a swiveled button or traveler, *m*, adapted to enter and travel
 20 in the groove *k*, by means whereof, when the sleeve H revolves somewhat slower or faster than the sand-cylinder, as it is intended to do, the segmental sections of the cylinder are caused to reciprocate laterally slowly, one set
 25 on and the other set with the shaft A.

The segmental sectional plates G G and G' G' are supported in pairs, each pair being on the outer ends of the same arms, one plate of each pair opposing or balancing the other
 30 plate of the same pair, so that an equilibrium, not only of weight, but of centrifugal motion, will be constantly maintained. For this purpose we preferably construct our cylinder in four parts, on two sets of double arms; but the
 35 same objects might be attained in substantially the same manner by three or more sets of double arms, with a corresponding number of sections or segmental plates, which would be merely a modification of the form shown in
 40 the drawings.

For convenience in constructing and making repairs, the outer arms, E E', are each made in halves and bolted together at the center, as shown in Figs. 1, 3, and 9. The sleeve
 45 H is provided with apertures *n n*, for lubricating the shaft A therethrough.

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

1. In a wood-polishing machine, a rotating
 50 polishing-cylinder formed in longitudinal sections, which sections are connected together

in pairs rigidly, the sections in each pair being diametrically opposite each other, and at least one pair of these sections being free to
 55 move longitudinally on its driving-shaft, and being connected with mechanism whereby a reciprocal lateral motion is given to such sections, all substantially as described.

2. In a wood-polishing machine, a rotating
 60 polishing-cylinder formed in longitudinal sections in pairs, each of which pairs has diametrically-opposite sections, in combination with a sleeve, H, having a cam-groove, *k*, rotating on the shaft of the cylinder and making less
 65 or more revolutions than the cylinder, said pairs of sections being each connected with and guided by said cam, whereby a lateral alternating reciprocal movement of the pairs of sections is secured, substantially as and for
 70 the purpose set forth.

3. In a wood-polishing machine, the radial
 75 arms F F', in pairs rigid on shaft A, and provided with recesses *h h*, in combination with the radial arms E E', sliding on shaft A, and provided with guides *g g*, substantially as described.

4. In a wood-polishing machine, the cylinder-carrying driving-shaft A, provided with
 80 pulley D, in combination with sleeve H, provided with pulley *i* and collar *j*, and the collar *j* provided with a cam-groove, *k*, whereby a differential motion between said sleeve and said shaft and a reciprocal motion to be given to mechanism connected with said sleeve and
 85 rotating on said shaft is provided for, all substantially as described.

5. The combination of radial arms E and F, rotating with shaft A, and rigid projecting
 90 arms *l*, having travelers *m m*, with sleeve H, having rigid collar *j*, provided with cam-groove *k*, rotating freely on shaft A, substantially as described.

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

ALMON BRIDGMAN.

JOHN CHALLONER.

Witnesses to Bridgman:

A. D. MCINTYER,

H. G. BRIDGMAN.

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J. A. MARKLEY,

O. B. OSBORN.