

(No Model.)

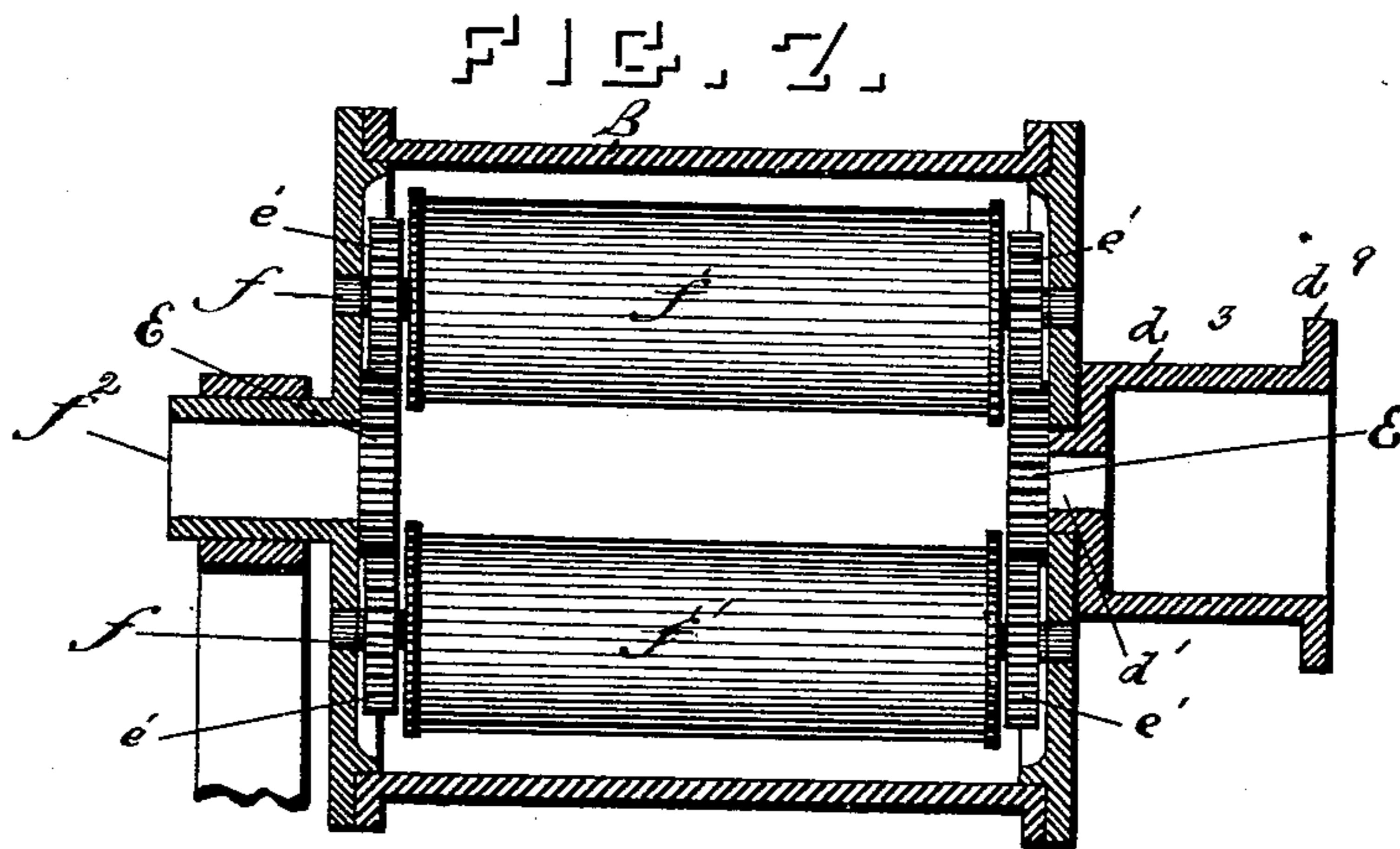
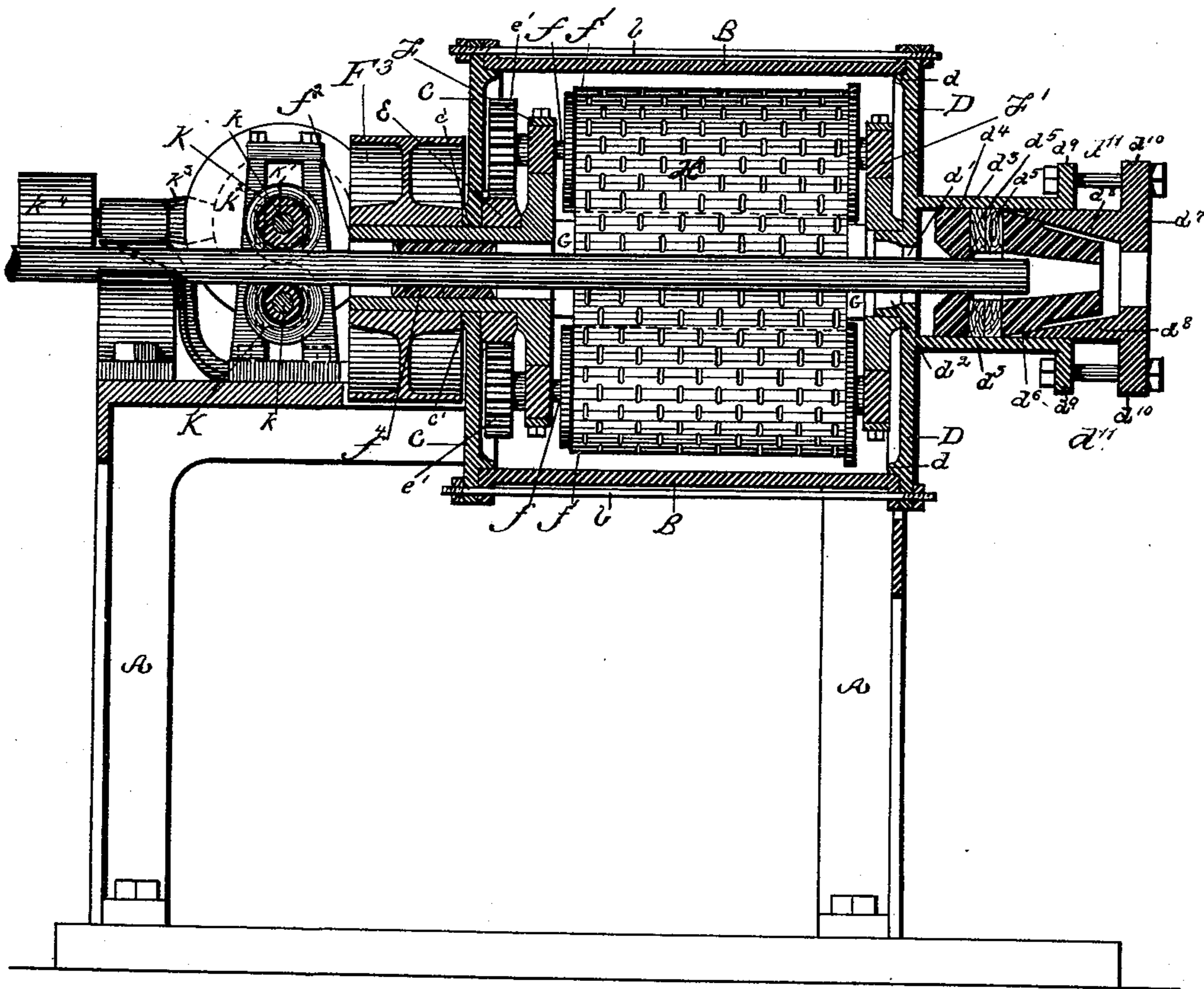
3 Sheets—Sheet 1.

L. SWITZER.

# MACHINE FOR POLISHING RODS.

No. 386,792.

Patented July 24, 1888.



**WITNESSES:**

C. Raymond Weavers  
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INVENTOR,

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BY Price & Stewart.

ATTORNEYS .

(No Model.)

3 Sheets—Sheet 2.

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FIG. 2.

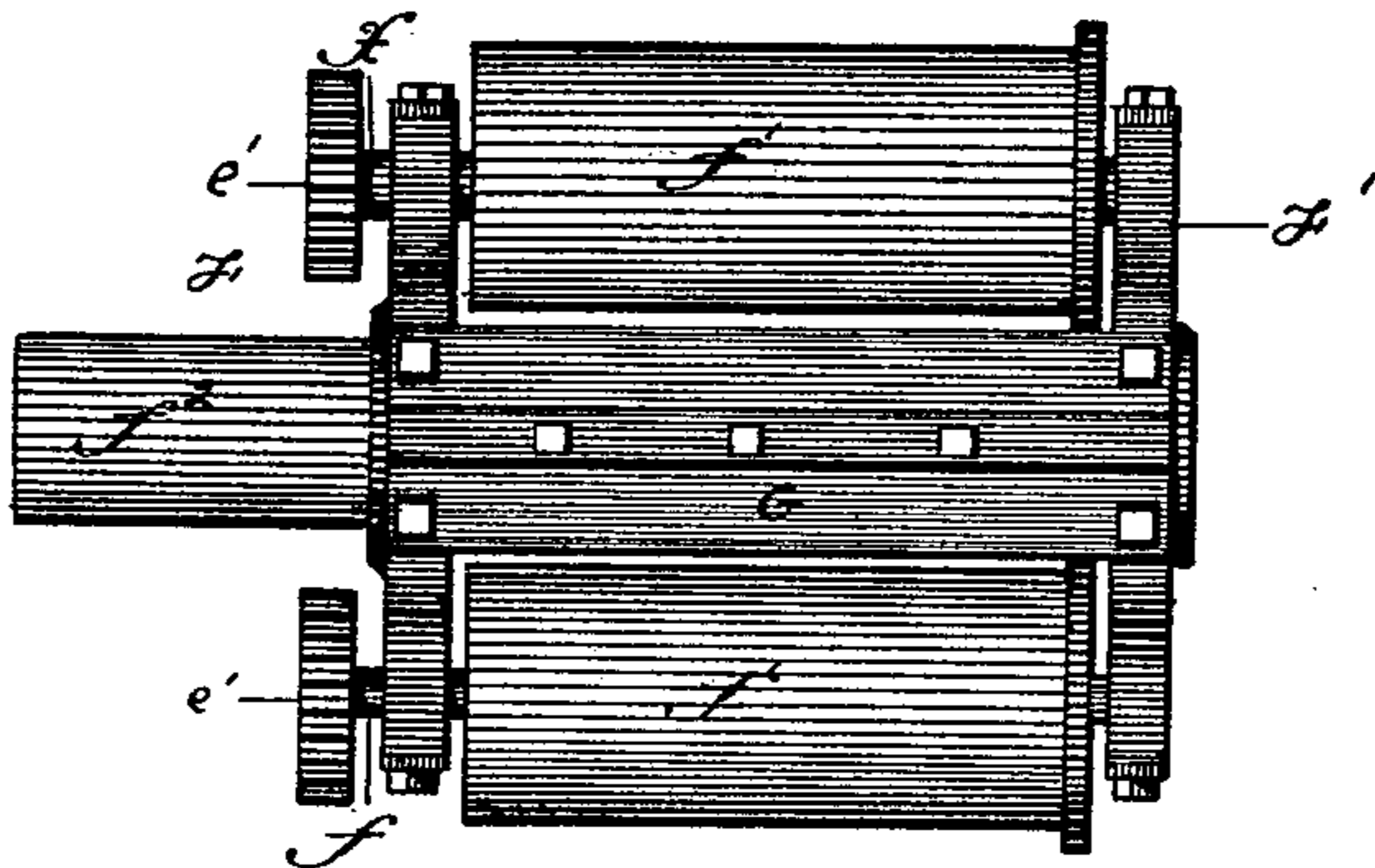


FIG. 3.

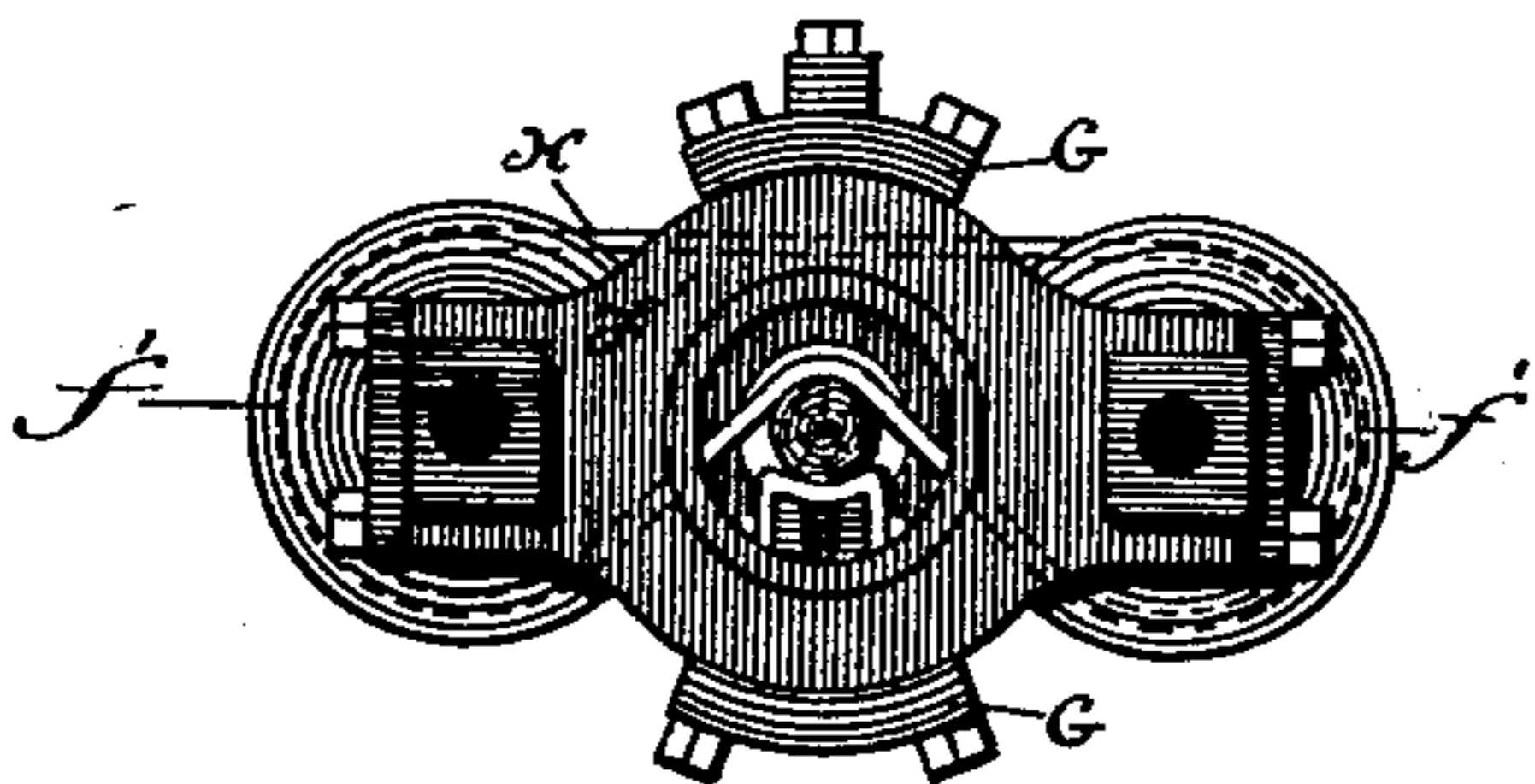


FIG. 4.

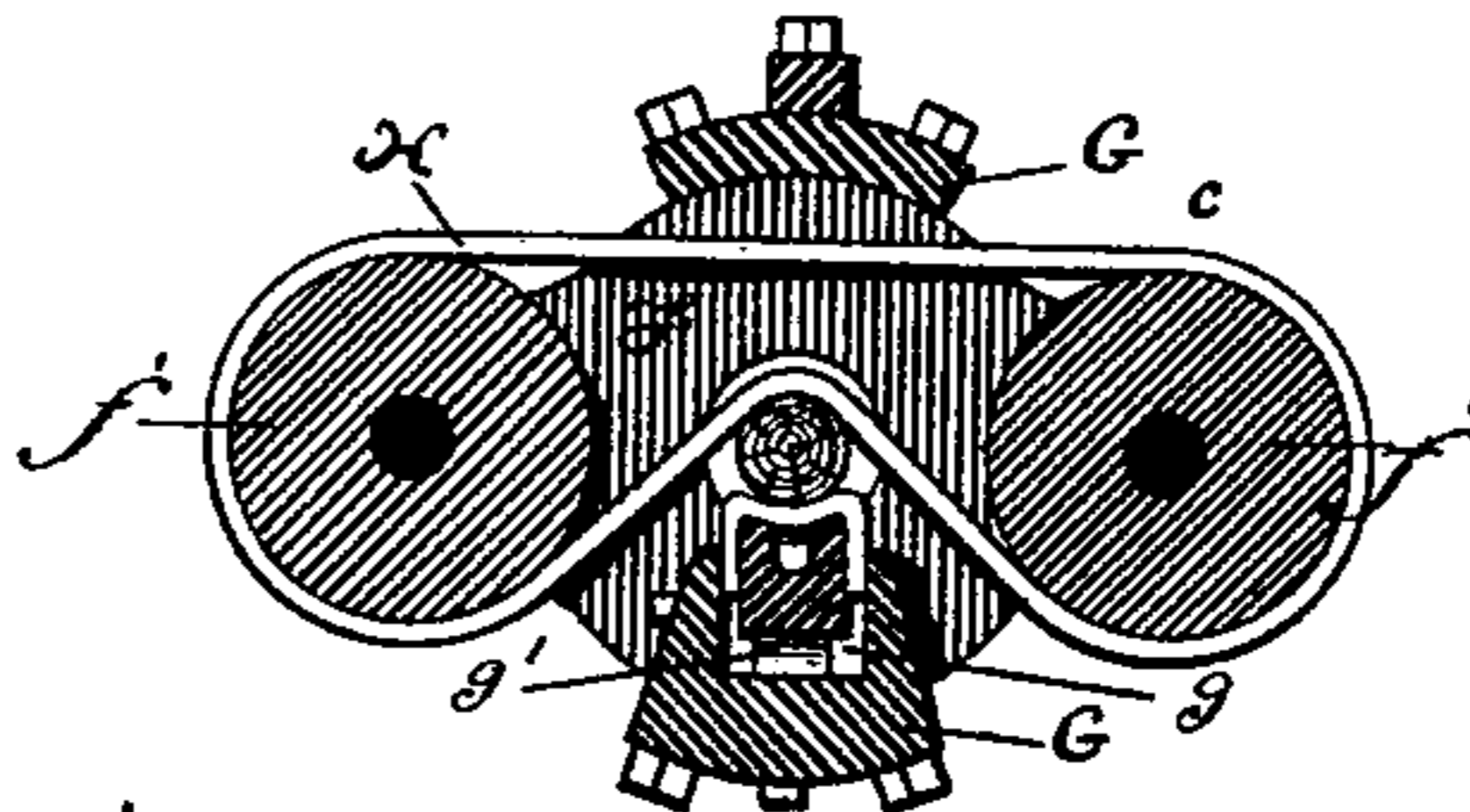


FIG. 5.

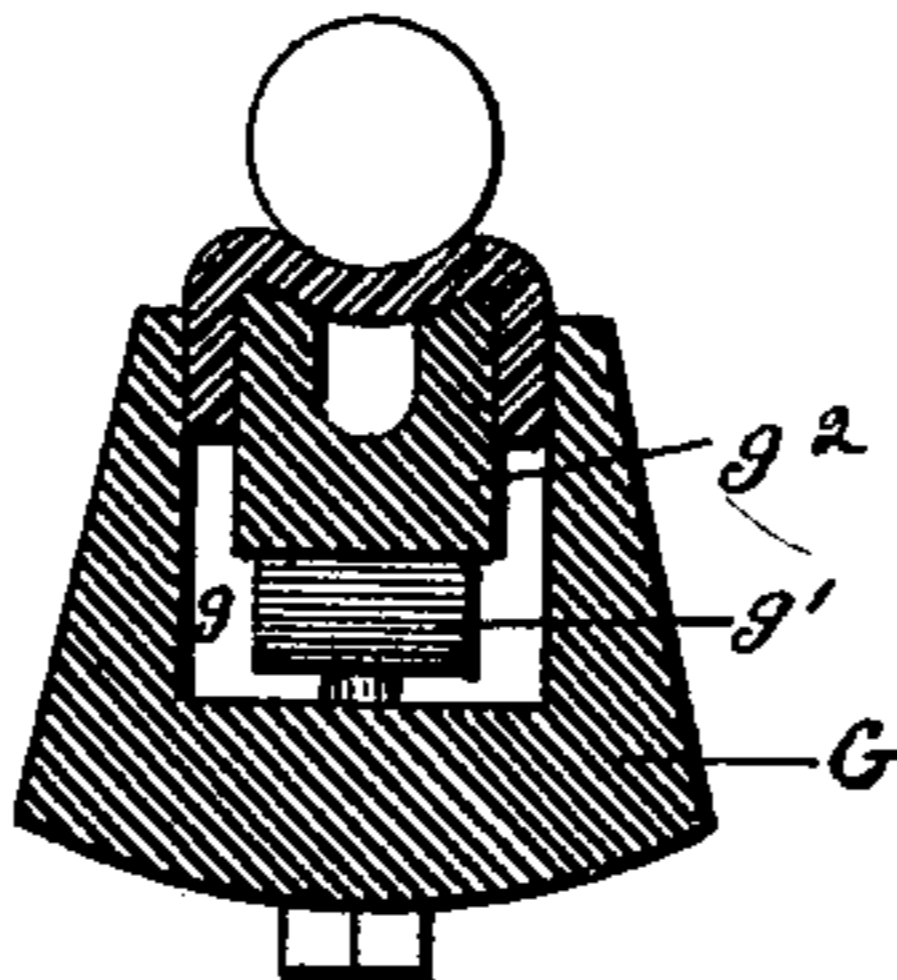
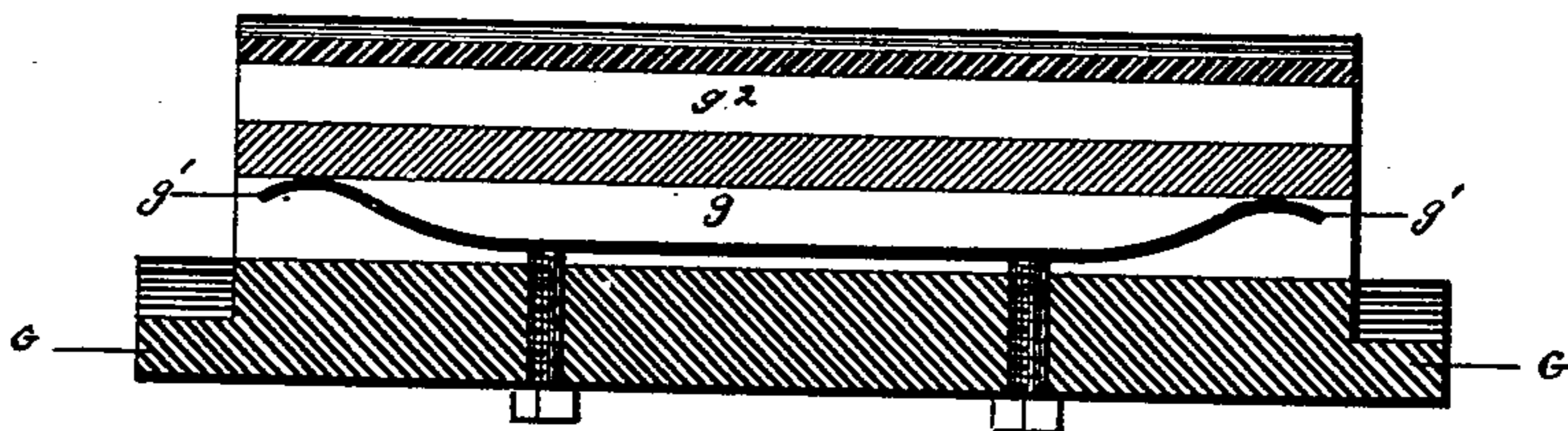


FIG. 6.



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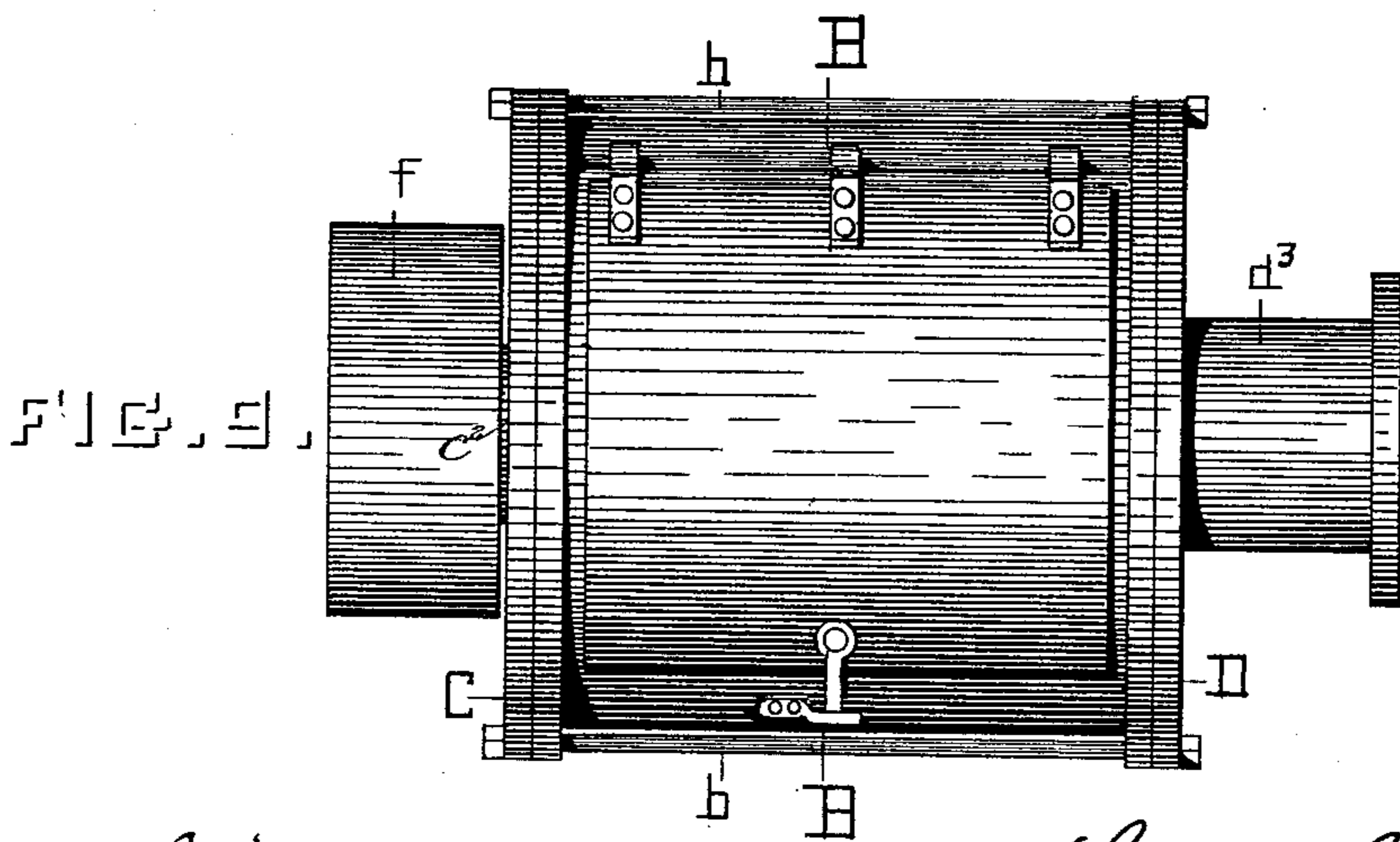
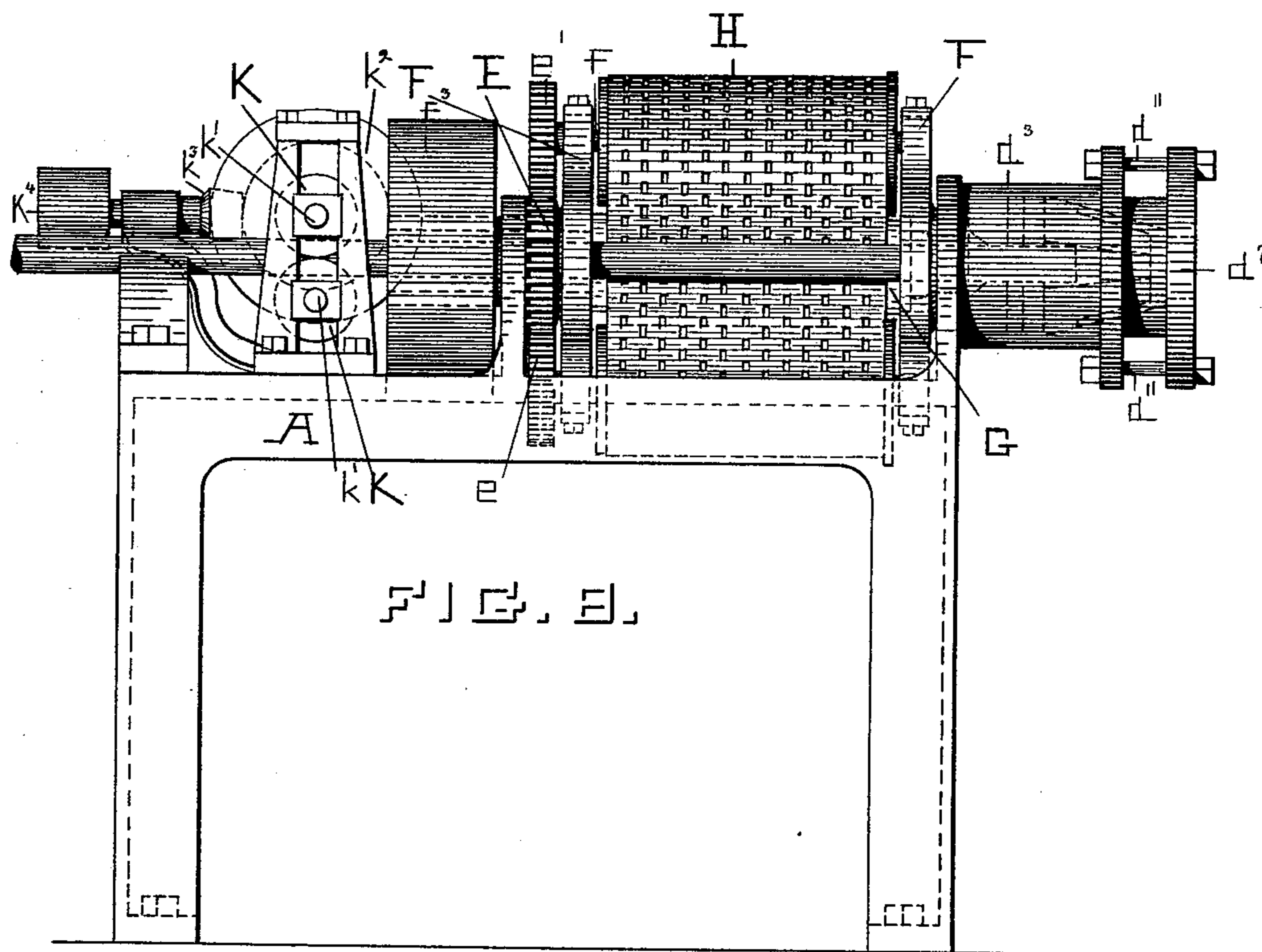
(No Model.)

3 Sheets—Sheet 3.

L. SWITZER.  
MACHINE FOR POLISHING RODS.

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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR POLISHING RODS.

SPECIFICATION forming part of Letters Patent No. 386,792, dated July 24, 1888.

Application filed December 10, 1887. Serial No. 257,499. (No model.)

*To all whom it may concern:*

Be it known that I, LEROY SWITZER, a citizen of the United States, and a resident of the city of Chicago, in the State of Illinois, have  
5 invented certain new and useful Improvements in Machines for Polishing Rods, of which the following is a specification.

My invention relates principally to the polishing of wooden rods such as are used for  
10 curtain-cornices or for other similar purposes, and which are, as a general thing, made of wood and polished with shellac; and it consists of the construction of a machine by means of which the polishing heretofore done by  
15 hand, and known as "hand-polish," can be produced by a machine with great rapidity and economy.

In the drawings, which illustrate my invention, similar letters of reference indicate similar parts.

Figure 1 is a vertical longitudinal section of the machine. Fig. 2 is a full top view of the rubber. Fig. 3 is a full end view of rubber. Fig. 4 is a vertical transverse section of rubber. Fig. 5 is a vertical longitudinal section of the presser-pad. Fig. 6 is a transverse section of presser-pad. Fig. 7 is a vertical longitudinal section of a modified form of my machine. Fig. 8 is a side elevation of my machine, showing its form when used with a dry  
30 powder as polishing material, the drum having been removed. Fig. 9 is an elevation of the drum provided with a large door on one side for the purpose of easy access to the interior.

In the drawings, A represents the stand of the machine; B, a drum mounted thereon. I prefer to construct this drum with independent heads C and D, each of which is provided  
40 with an interior offsetting flange,  $d$ , fitted to the interior of the cylinder and held together by the bolts  $b$   $b$  on the exterior of the cylinder passing through the projecting edges of the heads. The front head, C, of the drum B  
45 is perforated with a hole,  $c'$ , some five or six inches in diameter, and provided with an offsetting flange,  $c^2$ , around the hole on the exterior of the plate, so as to give considerable bearing-surface for a shaft which passes  
50 through it. On the interior side of this head, and rigidly secured to it or cast upon it, is a

gear-wheel or circular rack, E, having an aperture in its center of the same size as that in the head, which, being coincident with that in the head, serves the same purpose. The other  
55 head, D, is provided with a smaller aperture,  $d'$ , and also with a circular interior offsetting flange,  $d^2$ , which is arranged concentrically with the aperture  $c$  in head C.

On the exterior of head D is cast a cylinder,  $d^3$ , into which a form of stuffing-box is fitted, which will be hereinafter described.

The rubbing device is mounted and revolved on the interior of the cylinder B. The rubber is constructed of two yokes or cross-heads, F  
65 F', united to one another by the side braces, G G, which are bolted to said yokes at either end. Journaled in either end of the yokes are the shafts  $f$   $f$ , upon which are mounted  
70 rollers  $f'$   $f'$ .

The rollers  $f'$   $f'$  are constructed a little fuller at one end than at the other, and are provided at the smaller end with a projecting flange to retain the belt in place. This arrangement secures the uniform position of the  
75 belt and prevents its running off either end of the rolls. The ends of the shafts  $f$   $f$  nearest the front of the machine project through the yoke F, and are provided with pinions  $e'$   $e'$ , which, meshing with the gear wheel or rack  
80 E, are revolved by contact with it. Secured upon the exterior face of the yoke F is a cylinder or hollow sleeve,  $f^2$ , which is turned so as to fit snugly into the aperture  $c$  in the head C and gear E, which form a bearing for it.  
85 The interior of this sleeve is fitted with another cylinder of rubber or wood,  $f^4$ , having a hole in it of the size of the rod to be polished, thus preventing the escape of the polishing-fluid. The sleeve projects beyond the head  
90 C, and has a driving-pulley,  $F^3$ , keyed to it. To this pulley power is applied to revolve the rubber. The yoke F' is provided with a circular offset on the rear side, and is perforated as above stated. Into this hole in the yoke  
95 the circular flange  $d^2$ , above described, which is on the inside of the rear head, fits and forms the rear bearing for the rubber.

Over the rollers  $f'$   $f'$  is laced a belt, H, which is perforated with small holes through-  
100 out its length. The belt is made slack and of such a length that the bar to be polished when

inserted through the machine may rest upon the outside of it and assume the position shown in Fig. 3, in which both parts of the belt pass below or above, as the case may be, of the center of the machine. Fig. 4, which is a vertical transverse section of the machine, illustrates the form of a device for counteracting the pressure of the belt upon the rod. One of the braces G which unite the yokes is constructed in the shape of a truncated triangular pyramid. A slot,  $g$ , is sunk into this pyramid from the apex toward the base, so that when the brace is bolted to the yoke with the base outside the slot will be open toward the center of the rubber. Into this slot is placed a flat steel spring,  $g'$ , or any other kind that will serve the purpose may be used. Upon the spring is placed a slotted bar,  $g^2$ , the flat side of the bar resting upon the spring and the slot opening on the side next to the center of the rubber. This slotted bar is covered with leather or other suitable material. The leather covering of this bar rests against the rod to counteract the pressure of the belt, and its tension is regulated by set screws on the outside of the brace, which bear upon the spring  $g'$ , so that if the pressure of the belt is greater or less upon the rod it can be exactly counterbalanced by the pressure of the spring  $g'$ . This leather pad, as it is revolved around the rod, acts as a rubber and assists the operation of polishing.

The device just described increases the weight of the brace G, so that it is necessary for the successful operation of the machine that the brace on the other side should be equally weighted.

The stuffing-box heretofore mentioned, which is at the rear of the cylinder, serves the purpose not only of retaining the fluid polishing material in the cylinder, but also of wiping off all the surplus polishing-fluid from the rod and of drying it. Into the cylinder  $d^3$ , I place a rubber disk,  $d^4$ , with a hole in the center of the size of the rod being polished. After this I place several disks,  $d^5$   $d^5$ , either wood or rubber, and follow them with a cone of rubber,  $d^6$ , which is provided with a conical hole through its center, the large end of both cone and hole toward the machine and the small end to the rear. The rubber cone is followed by a cylinder of iron,  $d^7$ , in which there is a conical socket,  $d^8$ , which fits the rubber cone at the large end, but is larger than the cone at the small end. The cone is made of such a size that when placed into the socket its large end will protrude and its small end not reach the bottom of the socket. The exterior of cylinder  $d^3$  is provided with two lugs,  $d^9$   $d^9$ , and on the end of cylinder  $d^7$  are lugs  $d^{10}$   $d^{10}$ . Through these lugs pass bolts  $d^{11}$ . It will be observed that by tightening up these bolts the cylinder  $d^7$  can be forced into  $d^3$  and upon the cone  $d^6$ , thereby compressing it and making the hole through it smaller. Thus any amount of pressure can be exerted upon the rod. On the standard of the machine and in front of

the drum is a pair of grooved feed-rolls, K K, mounted upon counter-shafts  $k$ , which are provided with a feather, so as to give them revolution. Upon the end of the upper shaft is mounted a beveled gear,  $k^2$ , which meshes with a beveled pinion,  $k^3$ , run by a small pulley,  $k^4$ . The lower roller shaft is run from the upper one by a gear mounted upon each and meshing with one another.

The operation of the machine is as follows: Into the drum B is placed a gallon, say, of liquid shellac—such as is used for polishing wood—and it is plugged up air-tight, or nearly so. A rod having been previously placed in the machine, the pulley  $F^3$  is started and turned by a belt. The revolution of the pulley  $F^3$  turns the sleeve  $f^2$ , and it the rubber on the interior of the drum. The revolution of the rubber, with the pinions  $e' e'$  meshing with the rack E, causes a revolution of the rolls carrying the belt and the motion of the belt upon them. It will thus be seen that as the rod is forced through the machine it is subjected to a rubbing pressure of two kinds—the rubbing of the belt due to the revolution of the rubber and the rubbing due to the running of the belt. The latter motion has the effect of constantly renewing the supply of polishing material applied to the rod due to the passage of the belt through it, and also constantly presents a fresh surface of the belt, with which the rubbing is done. It has been found desirable to perforate the belt, so as to cause it to carry a larger quantity of polishing material, and also to cause it to hug the rollers more closely. As the rod emerges from the polishing-rubber, it passes through the rubber disks and the wiping-cone, where all the surplus fluid is removed from it and returned to the drum. I have found that any kind of belt may be used in my machine; but for rubbing wood I prefer leather.

The principle of my machine may be applied in several different ways, one of which is illustrated in Fig. 7, in which, instead of having a stationary cylinder and revolving rubber, I have the rubber mounted fixedly upon the interior of the drum, and then I revolve both drum and rubber. In this case the bearing of the drum and the rack are made stationary, and the wiper and bearing at the other end also separate from the drum and stationary. Substantially the same motions are accomplished in this device, but not so well as in the one previously described.

Another application of my invention may be made for polishing rods where a dry powder is used for polishing. In this case the drum may be dispensed with, or made so as to open and close at will.

These modifications are shown in Figs. 8 and 9 of the drawings. Fig. 8 shows the machine without a drum. In this form it may be used with a dry powder or other dry polishing material, and is particularly useful for polishing metal-covered rods. Fig. 9 shows the drum provided with a large door on one

side. This form of drum may be employed where a very dry loose powder is used, which the motion of the polisher would scatter, and it is desirable to have a large opening into the interior, in order to supply the apparatus easily with polishing material.

In the drawings I have shown the pulleys upon which the belt is placed revolved by gears mounted upon the ends of the pulley-shafts and meshing with a stationary spur-wheel; but revolving motion may be given to these pulleys by any of several means—such as a belt running in grooved pulleys mounted upon the ends of the roller-shafts and taking its motion from a stationary pulley mounted upon the standard of the machines; or the gears and racks shown may be substituted by friction-rollers.

Having thus described my invention, what I claim is—

1. In a rod-polishing machine, the combination of a revolving frame-work, a pair of belt-pulleys mounted in said frame-work, a slack belt running upon said pulleys, means for giving revolution to said frame-work, and means for revolving the pulleys, with a pressure-pad secured to said frame and revolving with it and suitably located to press the rod against the belt, substantially as described.

2. In a rod-polishing machine, a revolving frame-work carrying a pair of belt-pulleys whose shafts are journaled in the frame-work and provided with pinions, as *e' e'*, on the ends of said shafts, in combination with a stationary spur-wheel, as *E*, meshing with the pinions on the ends of the shafts, and means attached to the frame-work for holding the rod against the belt, substantially as described.

3. In a rod-polishing machine, a revolving polisher consisting of a frame suitably mounted and provided with a pair of rollers or pulleys upon which is secured a polishing-belt, with means of giving revolution to the polisher and traveling motion to the belt.

4. In a rod-polishing machine, the combination of a closed drum holding the polishing material with a revolving polisher which is provided with a traveling belt, and means for giving revolution to the polisher and traveling motion to said belt, substantially as described.

5. In a rod-polishing machine, the combination of a cylinder holding the polishing material with a revolving polisher constructed of a frame-work in which are mounted two rollers and upon them a belt, with means for revolving the polisher and of giving running motion to the belt, substantially as described.

6. In a rod-polishing machine, the combination of a cylinder holding the polishing material with a revolving polisher constructed of a frame-work in which are mounted two rollers upon which is laced a slack belt, said polisher being also provided with a pressure pad, substantially as described, to counterbalance the pressure of the belt, and a rod-wiper located outside of the drum and beyond it, substantially as described.

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Attest:

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