

4 Sheets—Sheet 1.

DRIVING MECHANISM FOR COP AND BOBBIN WINDERS.

Patented Nov. 15, 1892.

FIG. 1.

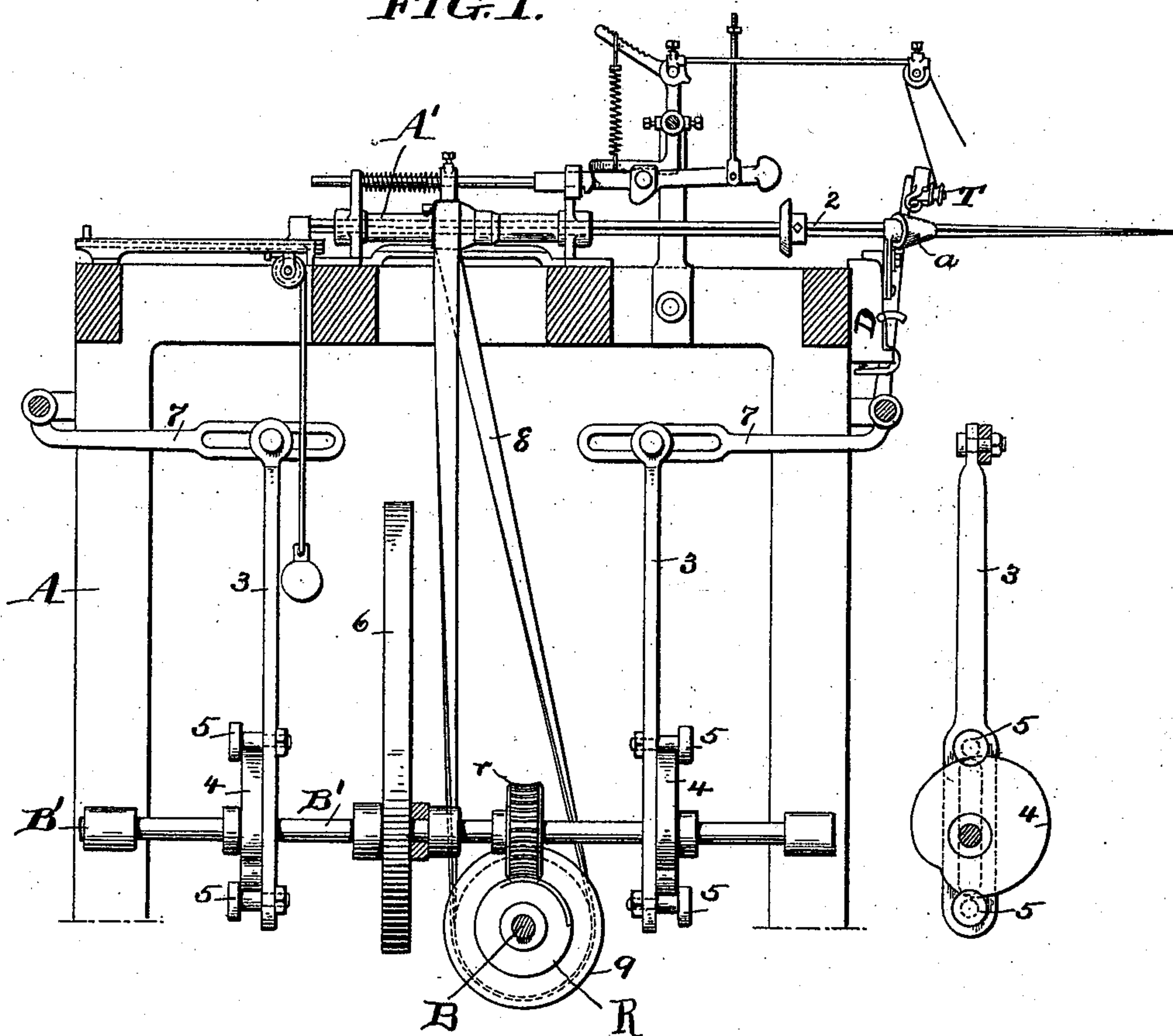
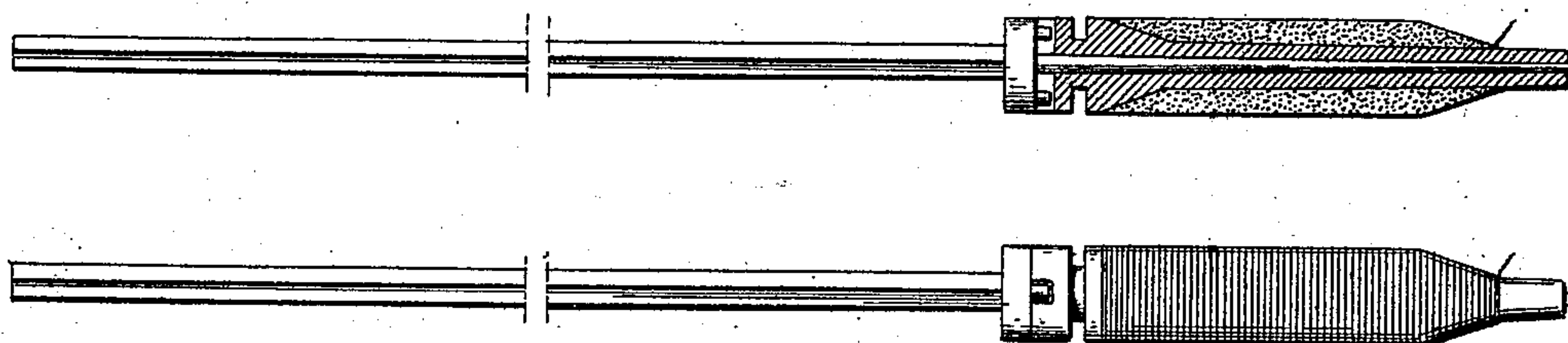


FIG. 9.



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(No Model.)

4 Sheets—Sheet 2.

O. LEVER & W. S. GRUNDY.

DRIVING MECHANISM FOR COP AND BOBBIN WINDERS.

No. 486,258.

Patented Nov. 15, 1892.

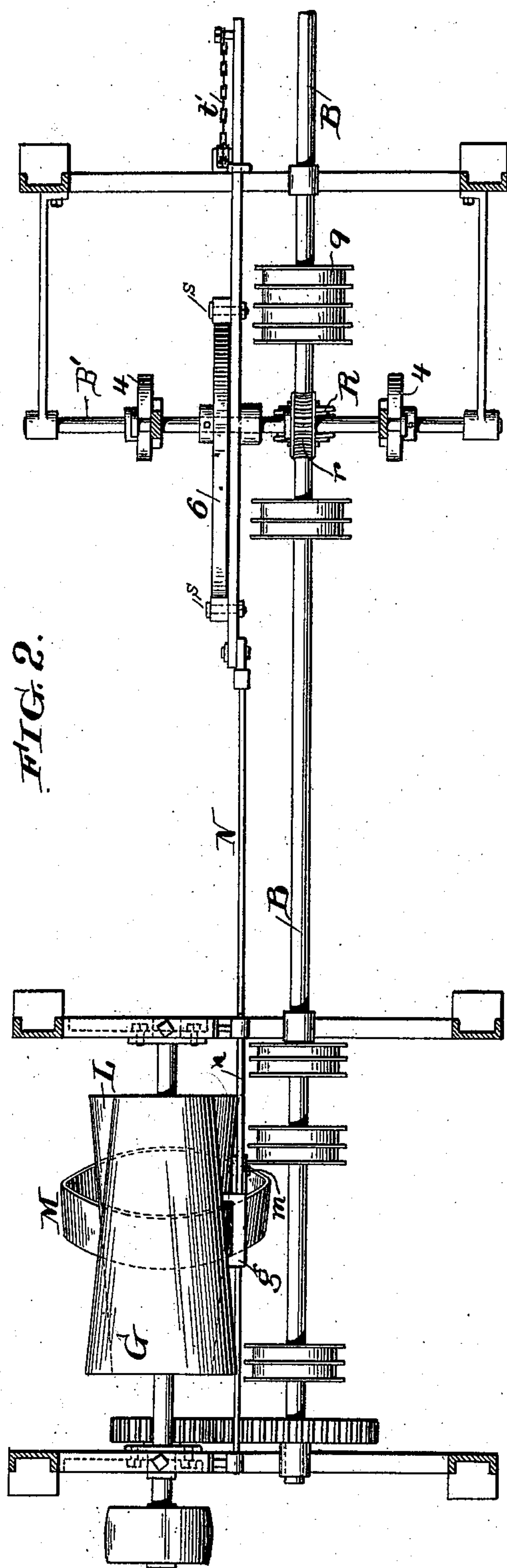


FIG. 2.

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4 Sheets—Sheet 3.

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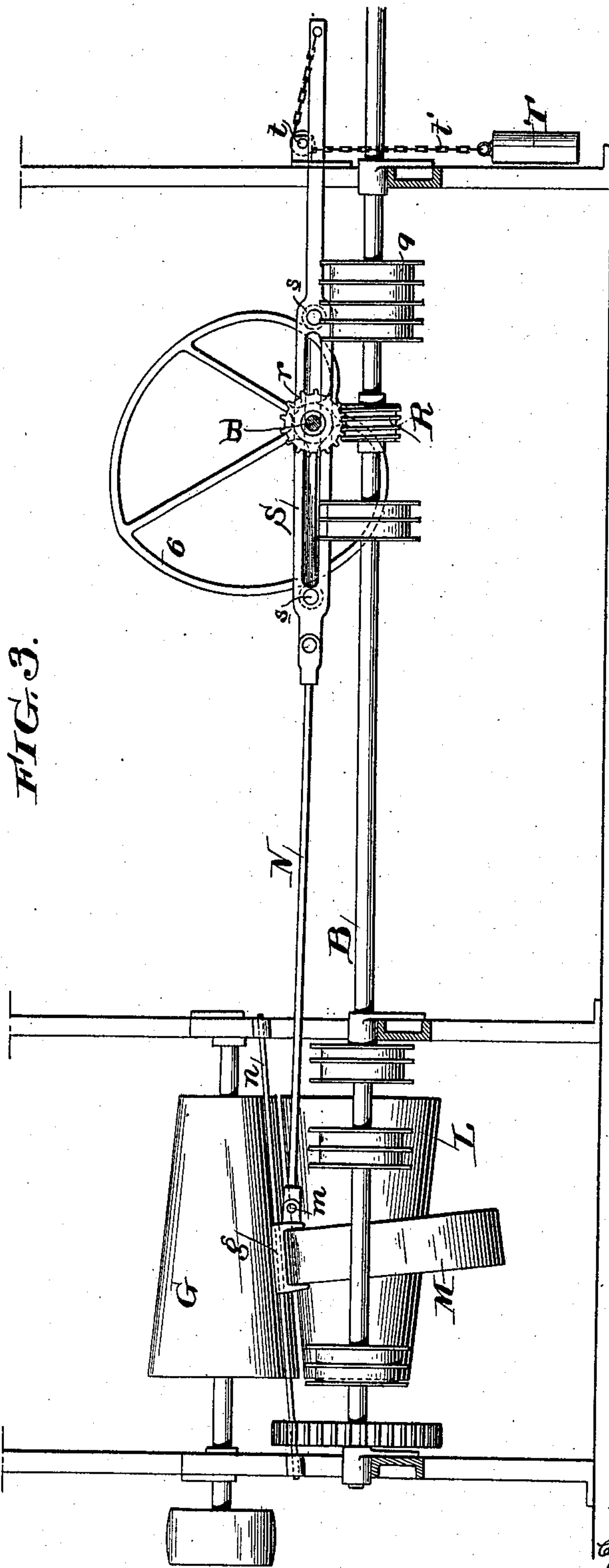


FIG. 3.

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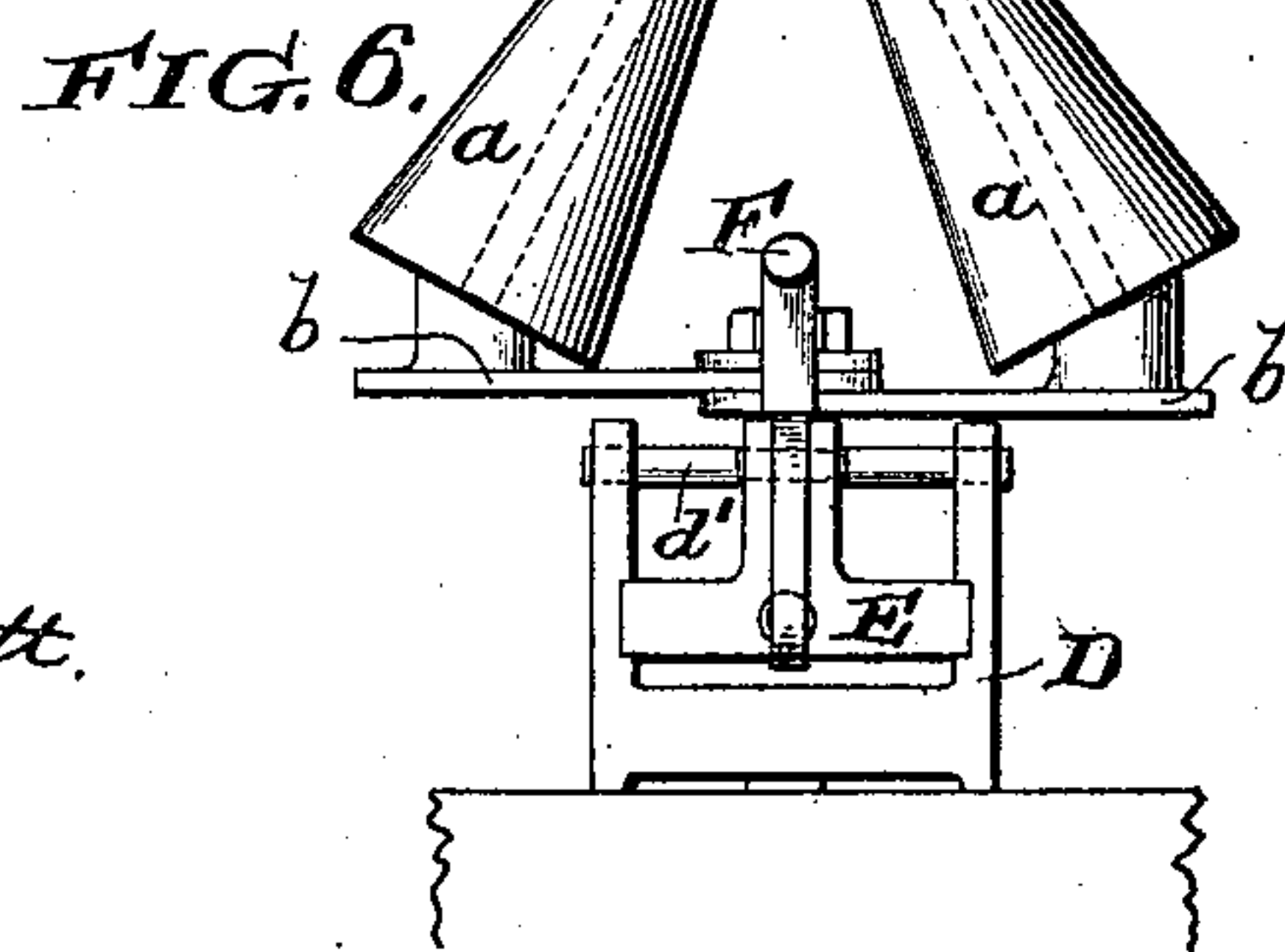
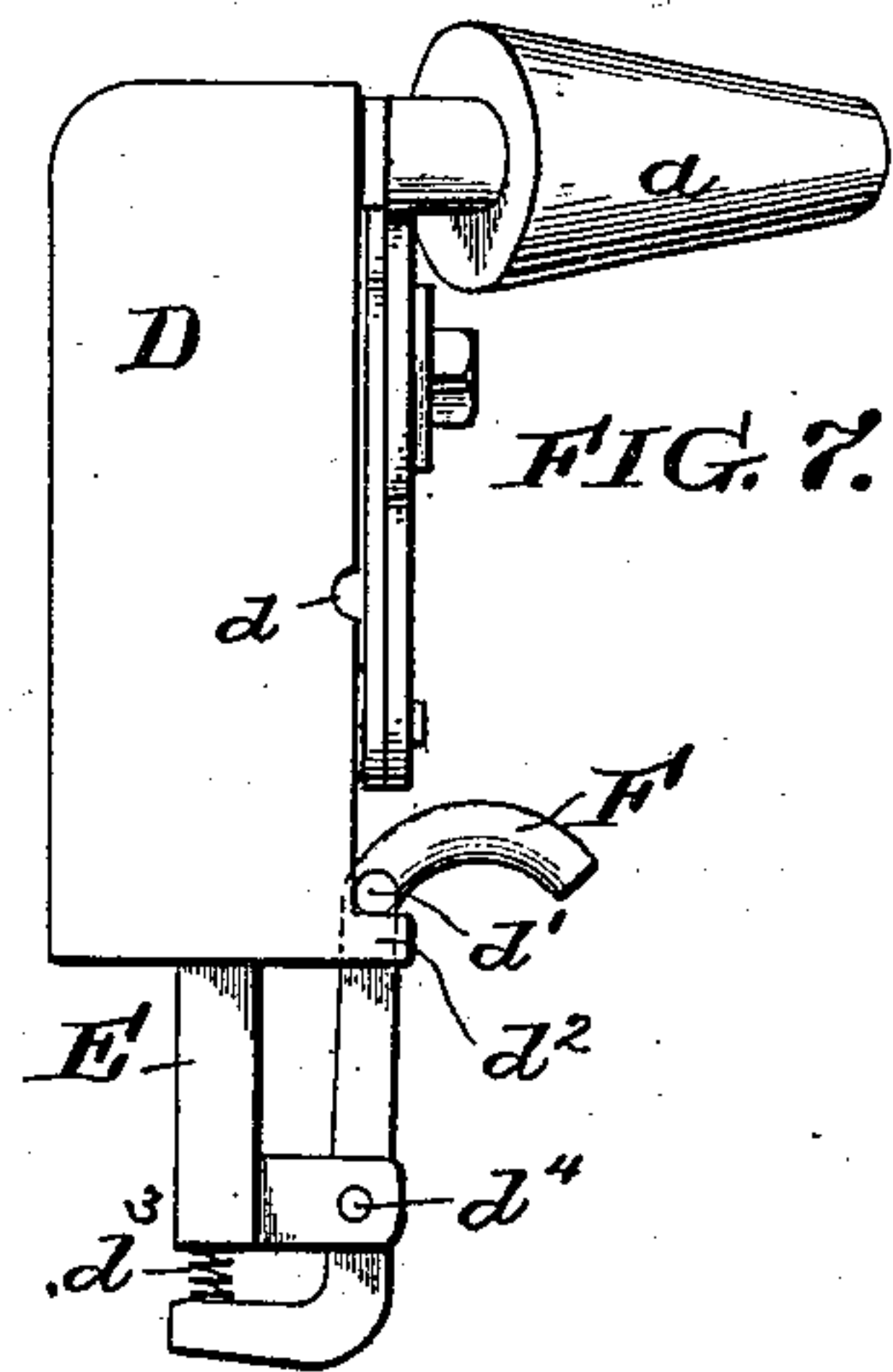
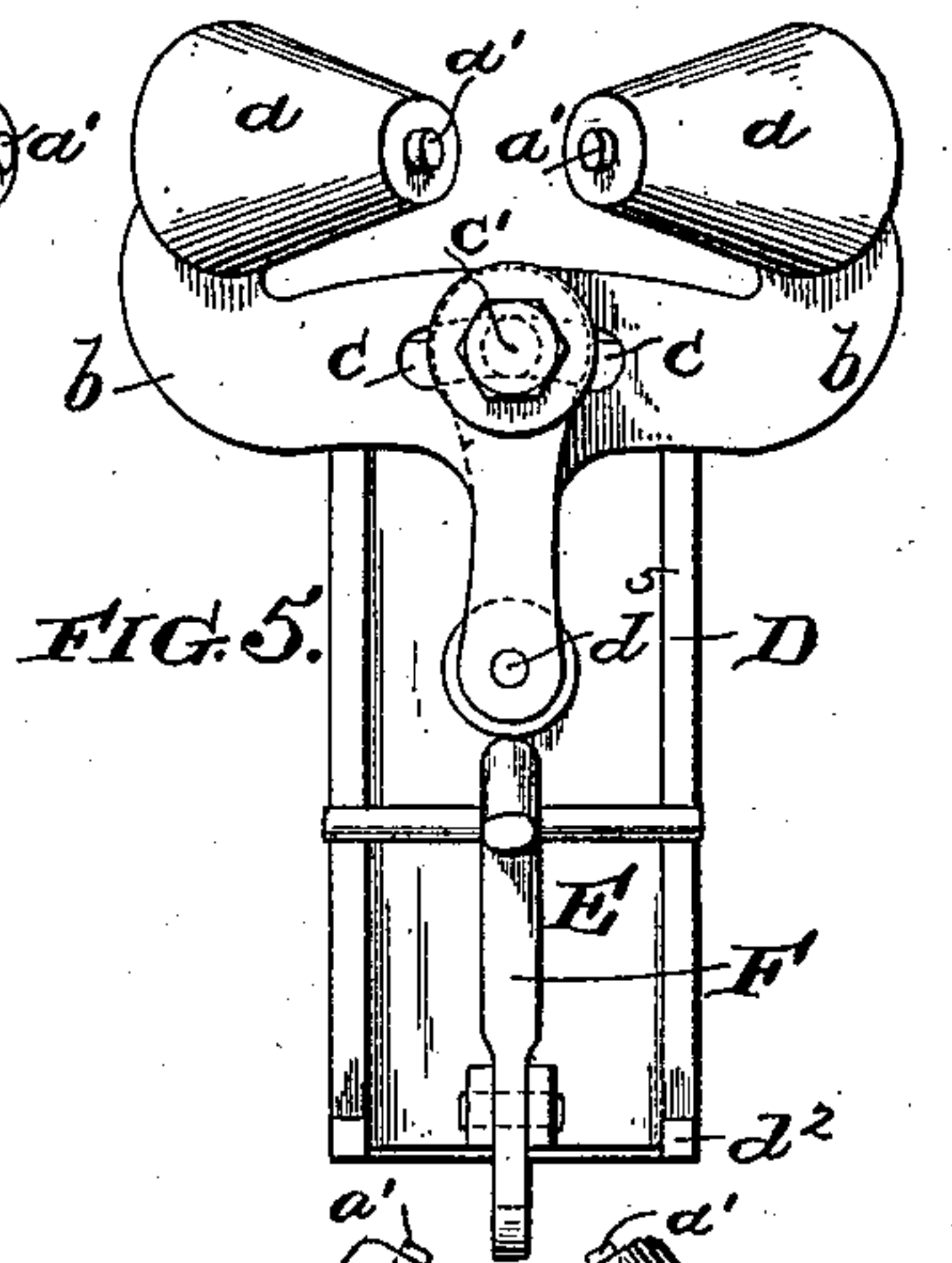
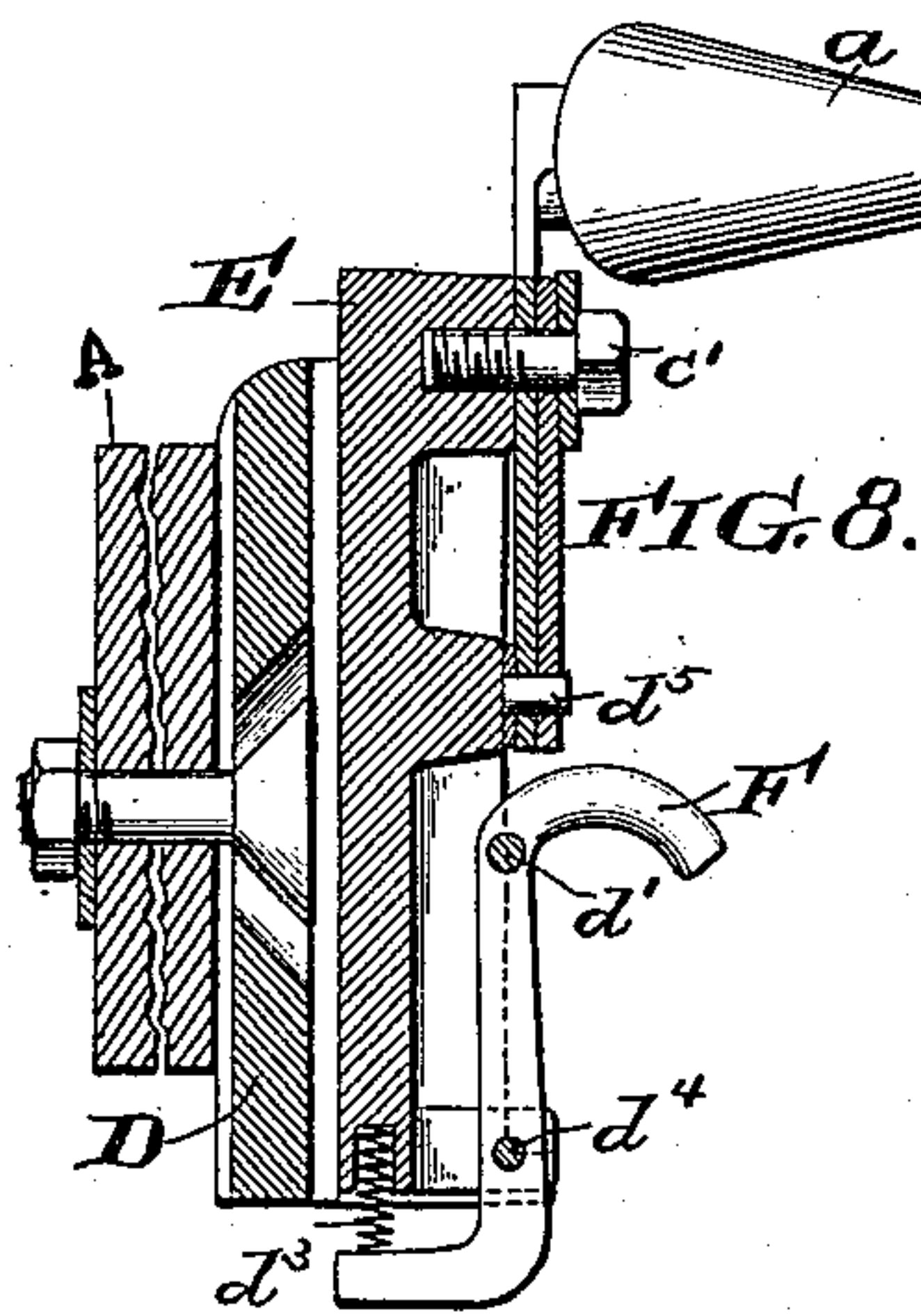
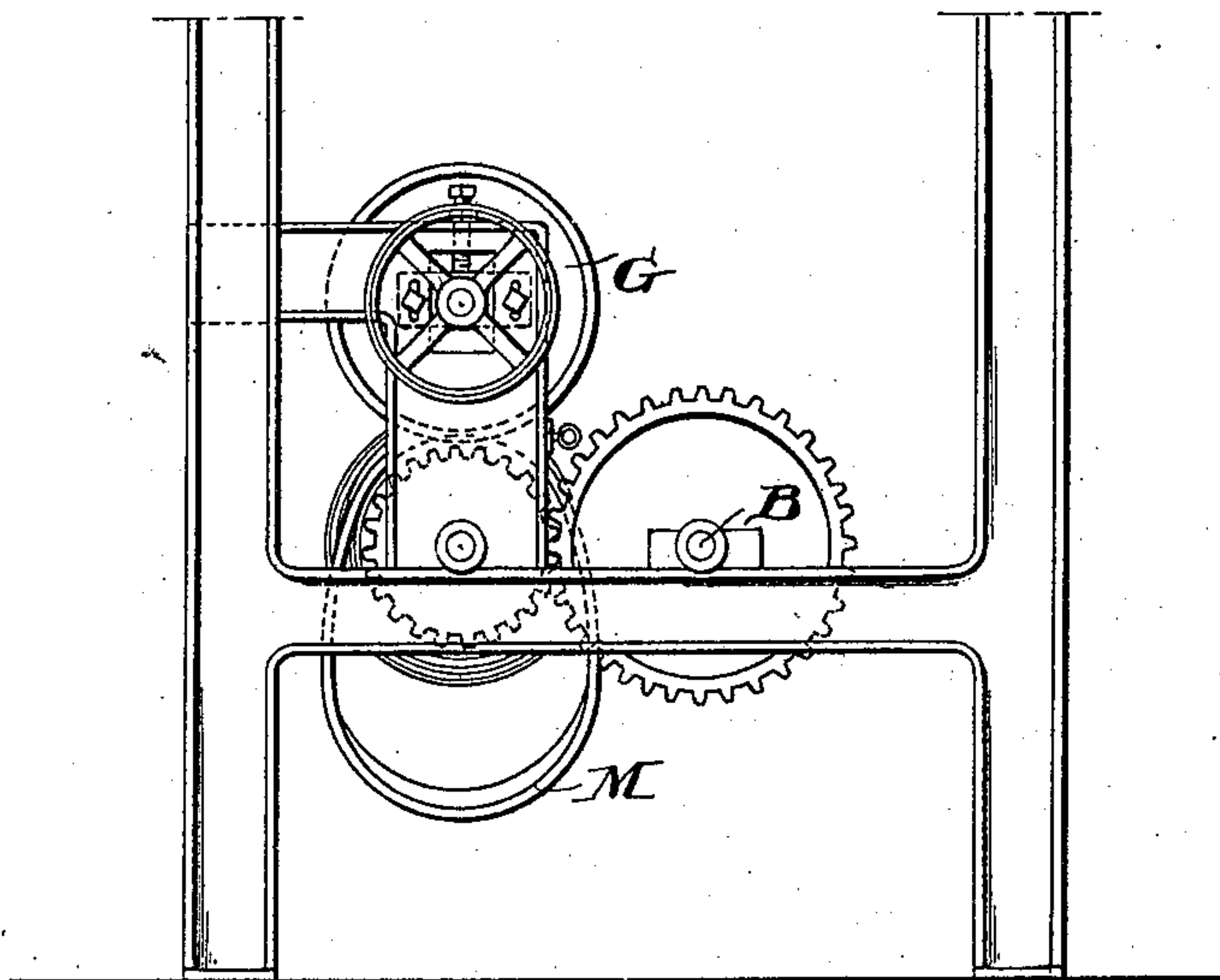
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DRIVING MECHANISM FOR COP AND BOBBIN WINDERS.

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FIG. 4.



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UNITED STATES PATENT OFFICE.

OSWALD LEVER AND WILLIAM S. GRUNDY, OF PHILADELPHIA, PENN-
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DRIVING MECHANISM FOR COP AND BOBBIN WINDERS.

SPECIFICATION forming part of Letters Patent No. 486,258, dated November 15, 1892.

Application filed November 27, 1891. Serial No. 413,197. (No model.)

To all whom it may concern:

Be it known that we, OSWALD LEVER and WILLIAM S. GRUNDY, citizens of the United States, residing in the city of Philadelphia, State of Pennsylvania, have jointly invented certain new and useful Improvements in Driving Mechanism for Cop and Bobbin Winders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to the driving mechanism for cop and bobbin winders; and it consists of the combination and arrangement, with conical friction driving-gearing, of mechanism, hereinafter described, whereby the length of vibration of the thread-guide over the spindle or bobbin and the rapidity of rotation of the spindle or bobbin as the yarn is being wound thereon is regulated, and in the construction of the cop and bobbin forming device and mechanism to raise and lower the same.

In the accompanying drawings, illustrating our invention, Figure 1 is a side elevation of a cop-winder with our improved driving mechanism adapted thereto. Fig. 2 is a plan view of the conical friction driving-gearing, the cam mechanism, and the shaft connected to the loose belt between the conical rollers. Fig. 3 is a side view of the mechanism shown in Fig. 2. Fig. 4 is a detached side view of the main shaft, cog-gearing, and the ends of the conical rollers with the loose belt between them. Fig. 5 is a front view, and Fig. 6 a plan view of the vertically-adjustable cop-forming device, which is operated through the connecting arms shown in Fig. 1 by the cams shown in Figs. 1, 2, and 3, mounted on the actuating-shaft. Fig. 7 is a side elevation, and Fig. 8 a vertical sectional view of the mechanism shown in Fig. 5, and Fig. 9 are views in elevation and section, respectively, of the bobbin.

Mounted on the frame A (see Fig. 1) is shown cop-winding mechanism, in which for the spindle 2 may be substituted bobbin-winders such as shown in elevation and in section in Fig. 9. This cop-winding mechanism is that for which we have filed application for Letters Patent March 2, 1891, Serial No.

383,499; but any other cop-winding mechanism having similar features may be used in connection with our invention constituting the subject-matter of this application. The driving-shaft (marked A') of the cop or bobbin winder is actuated by a driving-belt 8, passing around a pulley 9, driven through the gearing carried by the shaft B, which latter has its bearings in the frame A of the machine at the base thereof. Mounted upon this shaft B are two cams 4, which play between cam-pins 5 5 on arms 3, which latter have a slotted connection with arms 7, carrying the vibrating yarn-guide T, which, being made as usual, need not be especially described.

In Fig. 4 is shown a detached view of the cog-gearing on the actuating-shaft B, which gears with a cog-gearing on the end of the shaft which carries the driven conical friction-roller.

The connection between the driven shaft B' and the vibrating thread-guide is shown in side view in Fig. 1. In side view in Fig. 3 and in plan view in Fig. 2 is shown the shaft B, which drives the said shaft B' through the worm-gearing R r, in which figures G represents the driving conical pulley and L the driven conical friction-roller, the shafts of which are parallel with each other, they being at such distance apart that the two pulleys, each of which has its smaller end opposite the larger end of the other one, have their tapering surfaces free from contact with one another, but sufficiently close to grip between them a narrow endless belt M, arranged loosely around the driven pulley L. The details of the construction of this transmitting motion need not be more particularly herein described, as the same in its essential details will be found shown and described fully in Letters Patent to W. E. Laird, No. 299,231, dated May 27, 1884, and in patent to G. F. Evans, No. 374,296, dated December 6, 1887. It is sufficient to say here that it will be observed that the driving-pulley G will operate the driven pulley L in a reverse direction by pressure of the pulleys on the belt M between them, and that as said belt is moved toward the larger or smaller end of the driven pulley L said pulley will have its velocity increased or diminished, while the motion of

the driving-pulley G will be uniform, and that the speed of the shaft B driven by the driven pulley will be increased or diminished without stopping the motion of the machine, by means of mechanism which will slide the belt M on the periphery of the driven roller. This part of our invention consists of mechanism to accomplish this end automatically, as required in winding the yarn upon the varying thickness from end to point of the cop or bobbin. This automatic mechanism consists of a rod N, which is pivot-jointed at one end at *m* to a belt-sleeve *g*, which hangs by a recess upon a short arm *n*, mounted in the frame of the machine, and which serves as a guide-rod along which the rod N pulls the belt M backward and forward on the periphery of the driven roller L. The shaft of the driven roller communicates power, as before mentioned, to the actuating-shaft B, which is provided with a worm R, gearing into a worm-wheel *r*, mounted on shaft B', carrying the cam 6, the face of which plays between two pins *s s* at the extremities of the slot S in the rod N, whereby the latter is reciprocated. Said rod N is provided with a tension-weight, consisting of the bob T, attached by a chain *t'*, passing over the pulley *t*, fixed to the frame of the machine.

The cop-forming device is shown in side view in Fig. 1 and in detail in the four separate views constituting Figs. 5, 6, 7, and 8. It is constructed of a frame or housing D, secured to the frame of the machine, the face of which is slotted at *d* (see Fig. 7) at about half its height and is provided with a projection *d*² at its base. Within this housing or frame slides vertically a bar E, to which is pivotally hinged at *d*⁵ two arms *b b*, which are both slotted at *c c*, and through which slots passes a set-screw *c'*, which thus enables the arms *b b* to swing laterally upon the pivot *d*⁵ and adjustably brought closer together or farther apart, as may be desired, and upon these arms *b b* are spindles *a'*, extending outwardly and at an angle horizontally, upon which spindles freely rotate two conical rollers *a a*. At the lower end of the bar E is pivotally connected at *d*⁴ a finger F, the inwardly-extending base of which has between its top surface and the base of the bar E a spring *d*³, which tends to throw the finger inwardly, so that when it is raised by the hand, the lateral bar *d'* thereon will naturally drop into the recess *d* in the housing D. By means of this arrangement of mechanism the vertically-sliding bar E, carrying the cop-forming conical rollers, may be elevated by lifting the finger F, and it remains in an elevated position, owing to the lateral bar *d'* on said finger dropping into the recess *d* of the housing or frame. When it is desired to lower the cop-forming rollers, the finger F is given an outward pull, and the bar E therefore falls down until the said lateral bar *d'* strikes the projections *d*²

on the housing D, which thus limits its descent.

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

1. The combination, with the reversely-conical pulleys L and G, of the endless belt or band M, arranged loosely around the driven pulley, the belt-shifter *g*, the fixed rod *n*, upon which said belt-shifter is guided in its reciprocation, the rod N, pivoted at *m* to the same, the driven shaft B, connecting actuating-gearing between said shaft B and rod N, operating to reciprocate the said rod N slowly, the shaft B', driven thereby, and the yarn-guide and its actuating mechanism consisting of the vibrating slotted arm 7, pivoted in the frame of the machine and actuating said guide, the rod 3, the cam 4, mounted on said shaft B' and operating to reciprocate the said rod, substantially as described.

2. The combination, with the reversely-conical pulleys L and G and the endless belt or band M, arranged loosely around the driven pulley, of the belt-shifter *g*, the rod N, pivoted to the same, and mechanism to reciprocate the said rod N slowly, consisting of a counterbalancing device to move the said rod N in one direction, and cam-pins *s s* on said rod N, the slot S between the same, the cam 6, its shaft and driving-gearing, and the shaft B and worm-gearing, said parts operating to move the rod N in the opposite direction, substantially as described.

3. Bobbin-forming mechanism consisting of loosely-mounted conical rollers *a a*, bearings therefor consisting of arms *b b*, pivoted at their lower ends at *d*⁵ and provided with roller-shafts *a' a'*, set at an angle thereto, and vertically-sliding supporting-frame E, lateral slots *c c* in said arms *b b*, and a set-screw *c'*, passing through said slots into the face of the supporting-frame E, substantially as described.

4. The combination, with a fixed frame D, of a frame E, adapted to slide vertically therein, provided with a finger F, hinged to the base of said frame E at *d*⁴ and having a spring *d*³ between it and said frame, and with projecting pin *d'*, said fixed frame D being provided with a projection *d*², acting as a stop for the downward descent of the finger F, and having a recess *d*, into which the projecting pin *d'* will pass on the upward rise of the finger and acting as a locking device therefor, substantially as described.

In testimony whereof we have hereunto affixed our signatures this 17th day of October, A. D. 1891.

OSWALD LEVER.
WM. S. GRUNDY.

Witnesses:

H. T. FENTON,
ROBT. GILLESPIE.