(No Model.) 3 Sheets—Sheet 1.

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REEL AND SUPPORT.

No. 454,615. Patented June 23, 1891.

Fig. 2.

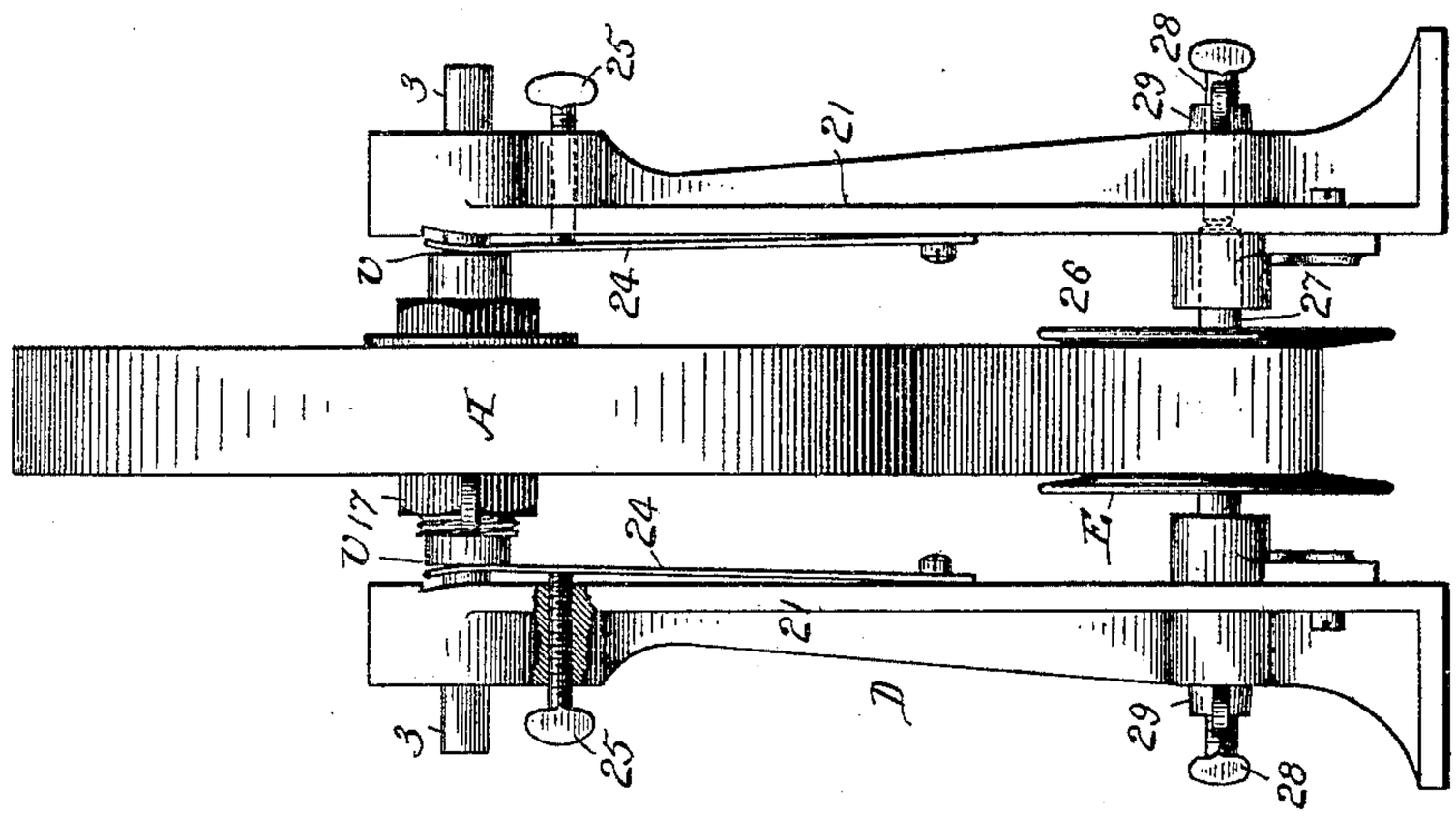

Fig. 1.

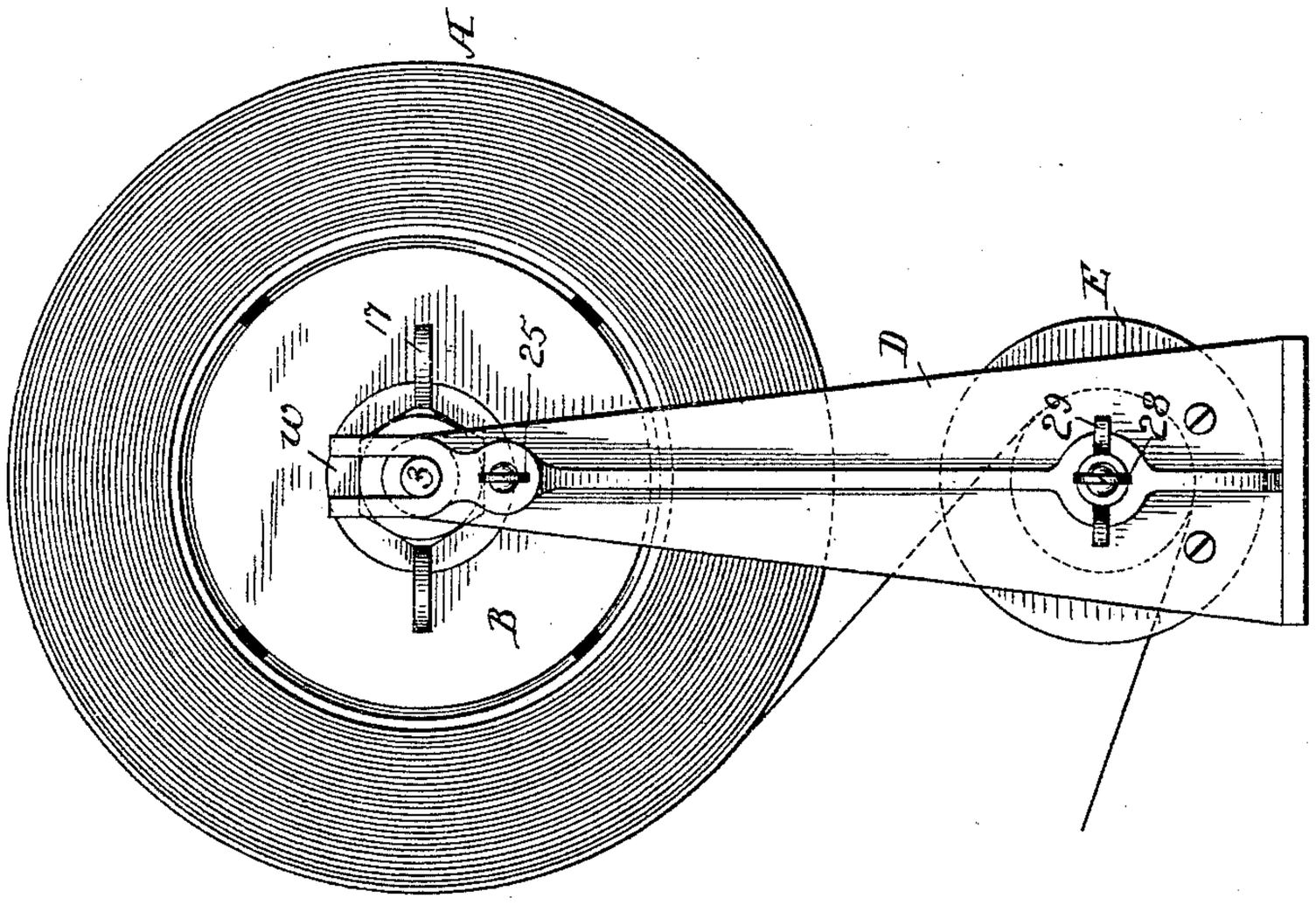

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Fig. 3.

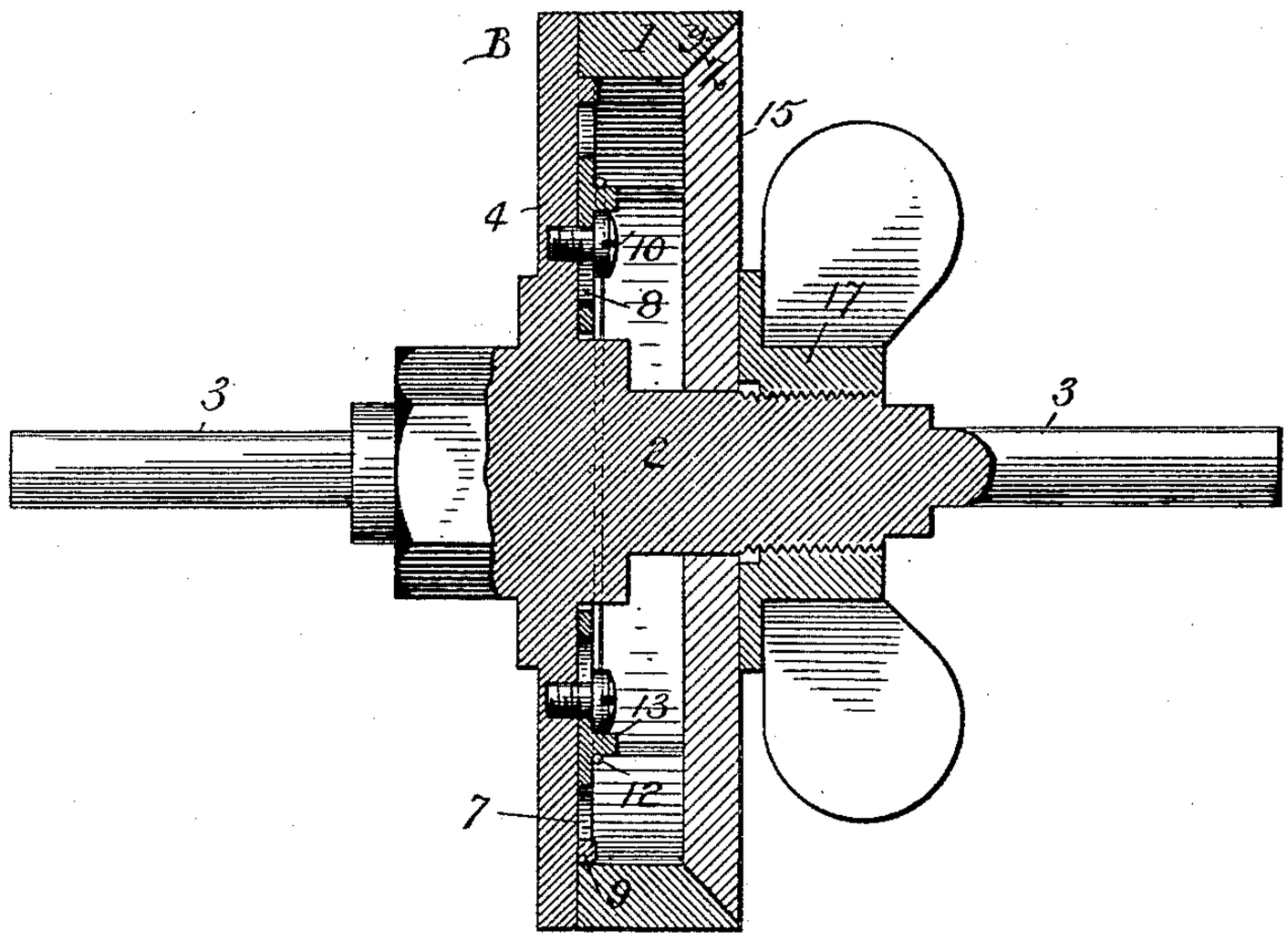

Fig. 4.

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Fig. 5.

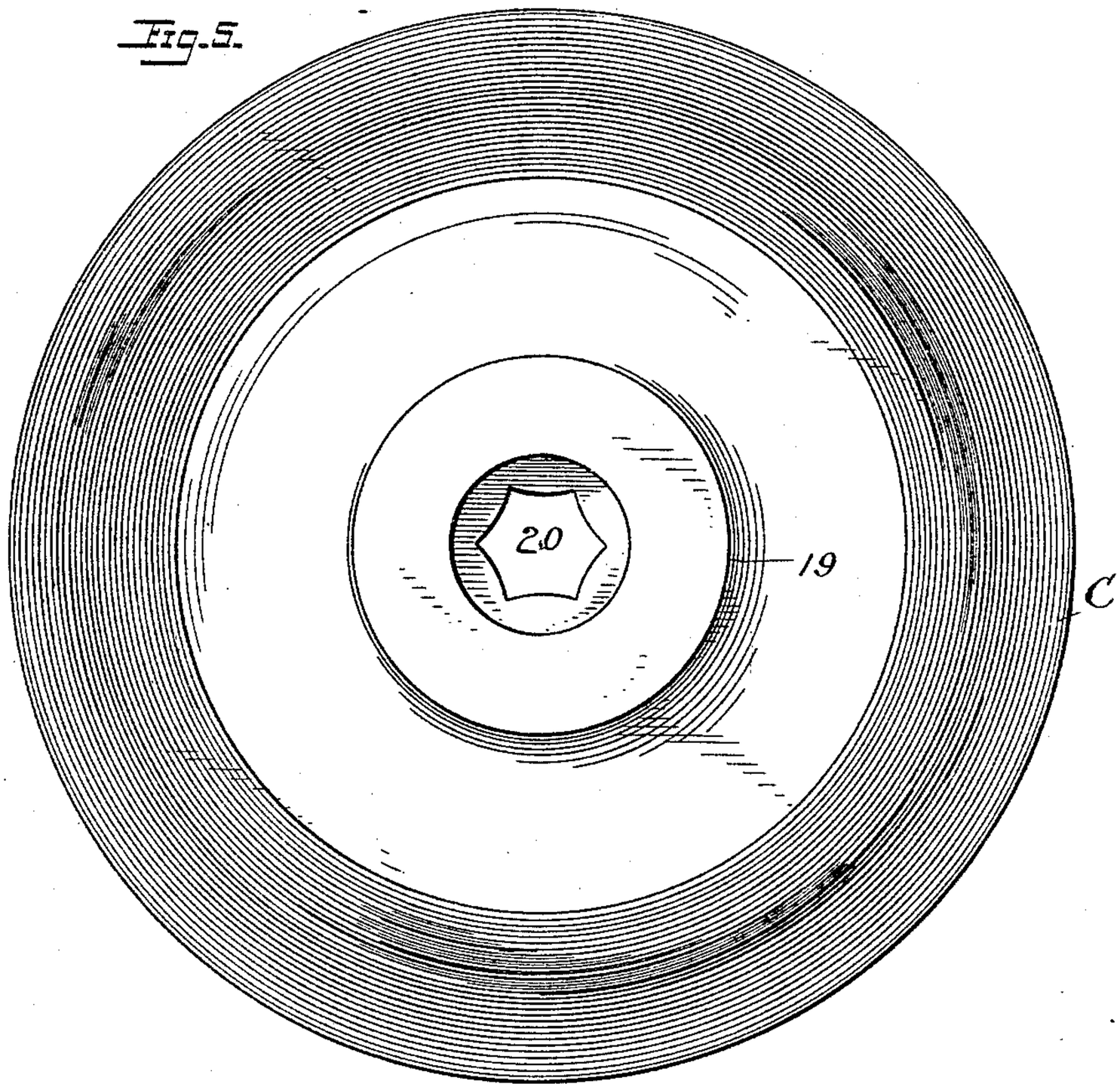
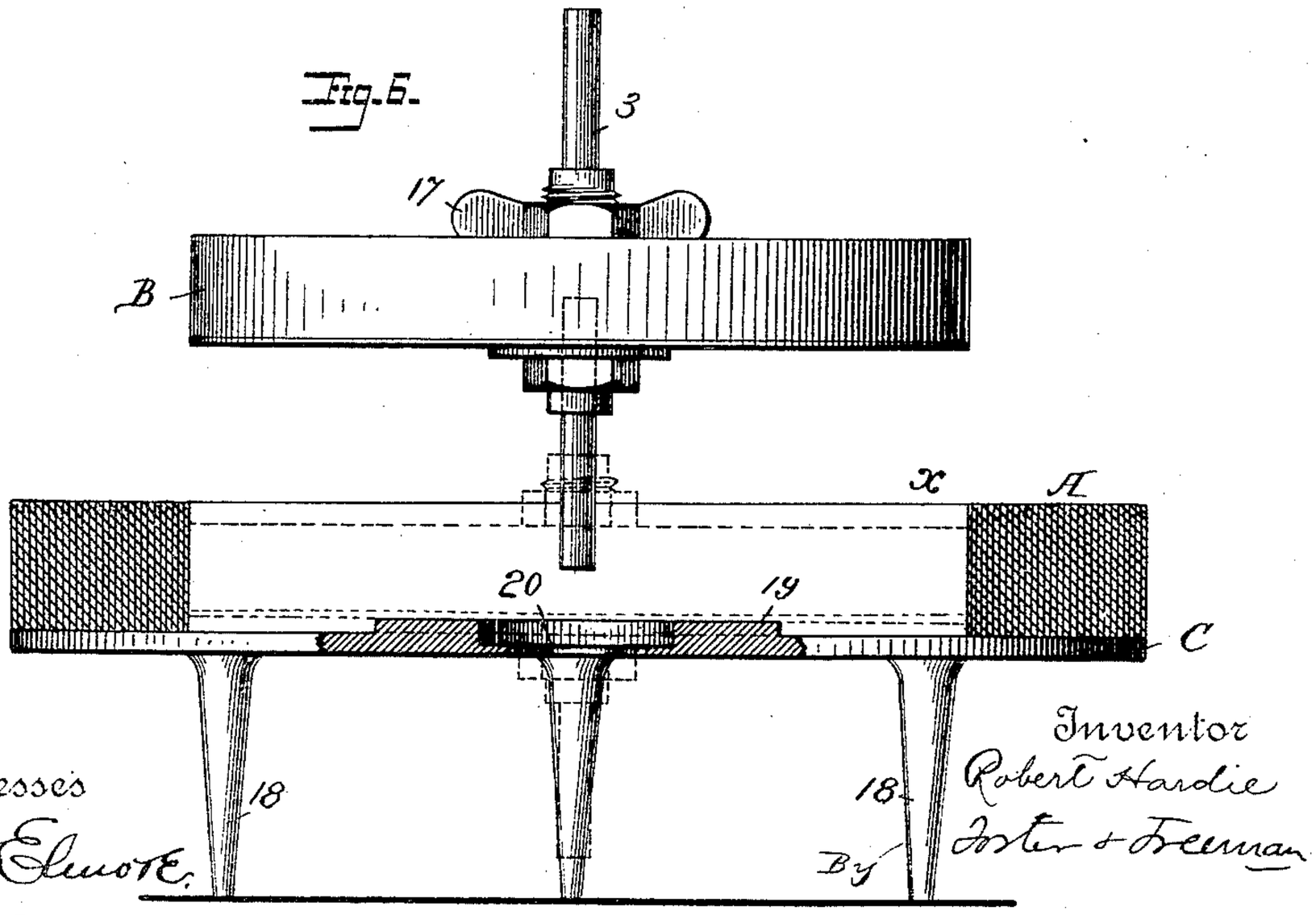


Fig. 6.



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UNITED STATES PATENT OFFICE.

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REEL AND SUPPORT.

SPECIFICATION forming part of Letters Patent No. 454,615, dated June 23, 1891.

Application filed June 25, 1890. Serial No. 356,657. (No model.)

To all whom it may concern:

Be it known that I, ROBERT HARDIE, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Reels and Supports, of which the following is a specification.

In that class of cigarette-making machines in which the wrapper in the form of a continuous strip of paper is applied to a continuous filler it is of the utmost importance that the strip shall be fed with a practically uniform tension, that it shall be conducted evenly to the folding devices whereby it is turned into a U-shaped form—that is, that the position of the strip shall not be shifted to one side or the other—and that when a roll of the paper is exhausted no time shall be lost in supplying its place, and that when a new roll is placed in position it shall not be necessary to alter the adjustment of the supporting and conducting devices. One cause of irregularity in feeding the paper and of irregular tension and strains and of delays in applying new rolls from time to time has been the imperfect devices heretofore used for supporting the rolls of paper, the reels or supports in some cases being too tight for the rolls to which they are applied, and in other cases being so loose that the roll, instead of being circular, droops at one side and is elliptical in shape. To obviate these objections and otherwise improve the support for the paper roll, I make use of an improved reel and adjuncts hereinafter set forth, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved reel and support; Fig. 2, an edge elevation. Fig. 3 is a transverse sectional view of the reel; Fig. 4, a face view of the reel, the expansion-plate removed; Fig. 5, a face view of the face of the centering-plate and paper roll; Fig. 6, a part sectional view showing the reel and method and means of securing it centrally within the roll of paper.

The strip of paper as usually prepared is formed into an annular roll A, with a circular opening *x* to receive the hub of the reel, which is inserted in said recess and then transferred to some suitable support upon the machine.

In place of the reel usually employed I make use of an expanding reel B, the peripheral portion 1 of which is suitably supported upon a central hub 2, which may be extended to form the spindle or journals 3, adapted to bearings of the machine, and I so construct the peripheral portion 1 and other parts of the reel that said portion may be expanded so that the reel may be contracted in diameter, inserted in the opening *x* of the roll, and then expanded uniformly until it fits tightly in said opening in any roll of any size, so as to maintain the central shape of the roll, prevent it from sagging at any point, and hold it firmly in position.

Different expansion devices may be employed for uniformly expanding the peripheral portion 1, but I prefer to make use of those which I will now describe. As shown, the peripheral portion 1 is formed in four sections, each capable of radial adjustment upon a disk 4, secured to the hub 2. For instance, each section 5 has a flange 6, in which are radial slots 7 8, each slot 7 receiving a lug 9, projecting from the face of the disk 4, and a screw 10, passing through each slot 8 and serving with the lug 9 to guide the section radially, and further serving to hold the section in contact with the disk 4 without interfering with its radial movement.

Suitable means is employed for carrying the sections 5 automatically inward toward the hub. For instance, a spring-rod 12 bears upon pins 13, projecting from the sections, and tends to contract and draw said sections toward the hub, and suitable means is also employed for forcing the sections simultaneously and uniformly outward to expand the diameter of the reel.

The preferred expansion means consists in beveling one edge of the annular flange portion 1 upon each section, so as to form practically an annular beveled face *y*, which bears upon the correspondingly-beveled face *z* at the periphery of a disk 15. By forcing the disk 15 inward toward the disk 4 the action of the beveled faces *y z* forces out the sections 5 and expands the periphery of the reel, and by drawing out the disk 15 the outward pressure upon the sections is removed, permitting the spring 12 to draw inward the sections.

Different appliances obvious to skilled mechanics may be employed for moving the disk 15. For instance, a thumb-nut 17, turning upon a threaded extension of the hub 2 and bearing upon the disk 15, serves as a ready means for moving the latter in a manner which will be obvious on inspecting Fig. 3.

In order to center the reel in the recess *x* of the roll A and so adjust it therein that the side faces of the reel shall be equally distant from the corresponding faces of the roll, the reel being narrower than the paper roll, I make use of a centering-plate C, supported upon suitable standards 18 or otherwise, which plate is preferably of a diameter equal to that of a fresh paper roll, as shown in Fig. 6. This plate C has a central elevation 19 of such a height that when the reel is placed thereon within the recess in the paper roll it will occupy the desired position midway between the opposite faces of the roll, as shown in dotted lines in said Fig. 6, a recess 20 in the center of the plate C permitting the passage of the hub and spindle of the reel. The reel is then expanded by turning the thumb-nut 17, as heretofore explained, a recess 20 in the center of the plate C permitting the passage of the hub and spindle of the reel. After the roll has been centered it is placed upon its bearings in the machine, and to secure the proper positioning of each reel and roll without the necessity of constant adjustments I provide a support D, having standards 21 21, each with an open socket *w* at the upper end to receive one of the journals 3 of the reel, and holding the latter in the proper position vertically.

To secure the proper lateral position of the reel, I provide the journals with shoulders or bearings *v v*, and I provide the support with adjustable bearings, preferably in the form of spring blades or plates 24, each of which may be forced inward by a set-screw 25, so as to bear upon one of the shoulders V, and by setting in one of the bearings 24 and moving out the opposite bearing the reel and its roll may be set to any desired position laterally without interfering with the ready removal of the reel when the paper is exhausted and insuring the replacing of the reel in its proper position exactly as occupied before.

In order that the strip of paper may be properly guided from the reel, I make use of a guide-roll E, having side flanges 26 with inner tapering faces, the journals 27 of the guide-roller turning in sockets in the frame, and into each socket extends an adjusting-screw 28, the two screws being turned to set the roll 26 in any desired position laterally in respect to the roll and being then secured by jam-nuts 29. Inasmuch as the inner faces of the flanges 26 are tapering, a strip of paper will be truly centered even if, as is sometimes the case, it should be irregular in width.

It will be evident that the improved reel above described may be used for supporting rolls of paper in other apparatus than cigarette-machines and for application to hollow cylinders that have to be truly centered in various kinds of apparatus.

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

1. The combination, with the hub, of radially-adjustable sections having beveled annular flanges at their outer edges, a disk having a correspondingly-beveled edge, and means for adjusting the disk upon the hub, substantially as described.

2. The combination, with the hub having the disk 4, of radially-adjustable sections arranged to slide upon said disk and having beveled annular flanges at their outer edges, a disk 15, having a correspondingly-beveled edge, and a thumb-nut upon the hub for adjusting the latter disk, substantially as described.

3. In combination with the reel and its hub, the circular plate C for supporting a paper roll, said plate being centrally perforated to receive the reel-hub and having the projection 19 to support the body of the reel, substantially as described.

4. The support D, provided with open sockets for the reception of the reel-spindle having shoulders *v* and provided with adjustable bearings 24, substantially as set forth.

5. The combination, with the support D, of spring-blade bearings 24 and adjusting-screws 25, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT HARDIE.

Witnesses:
J. F. HARRIGAN,
ALBERT G. LUM.