

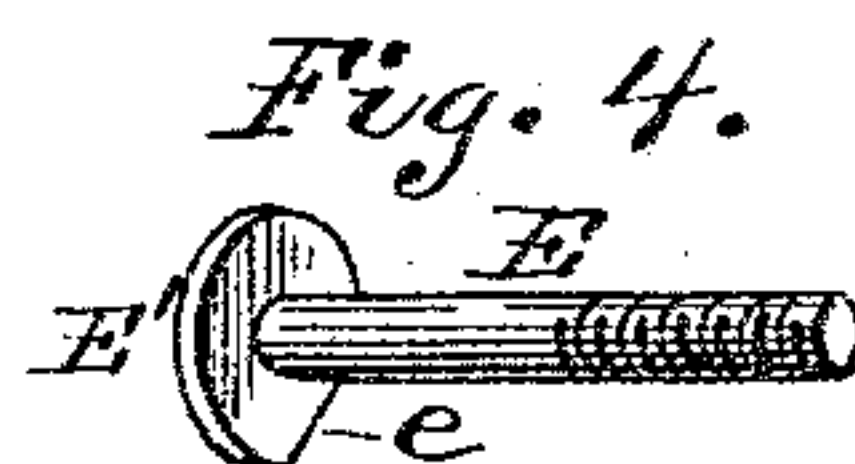
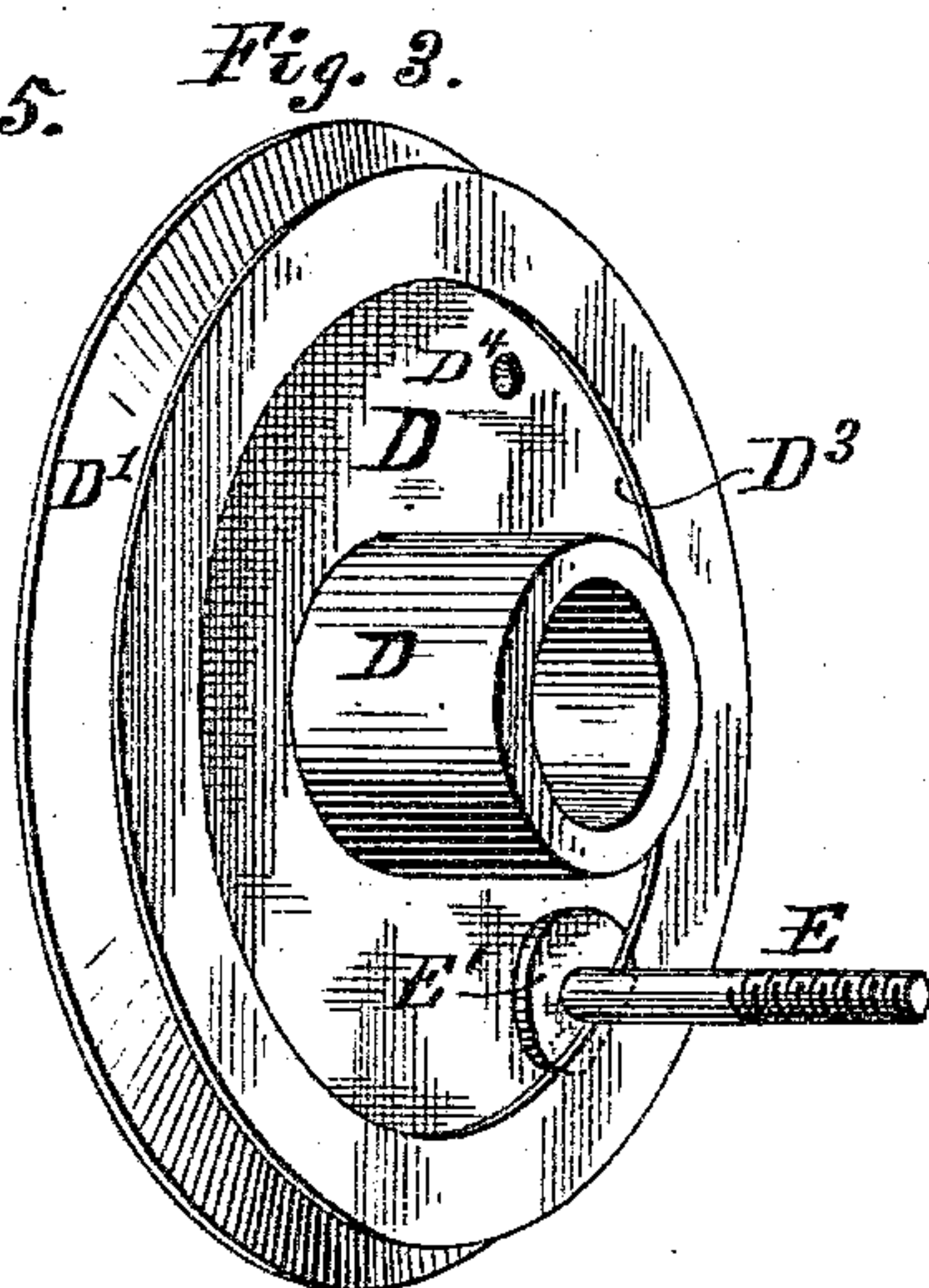
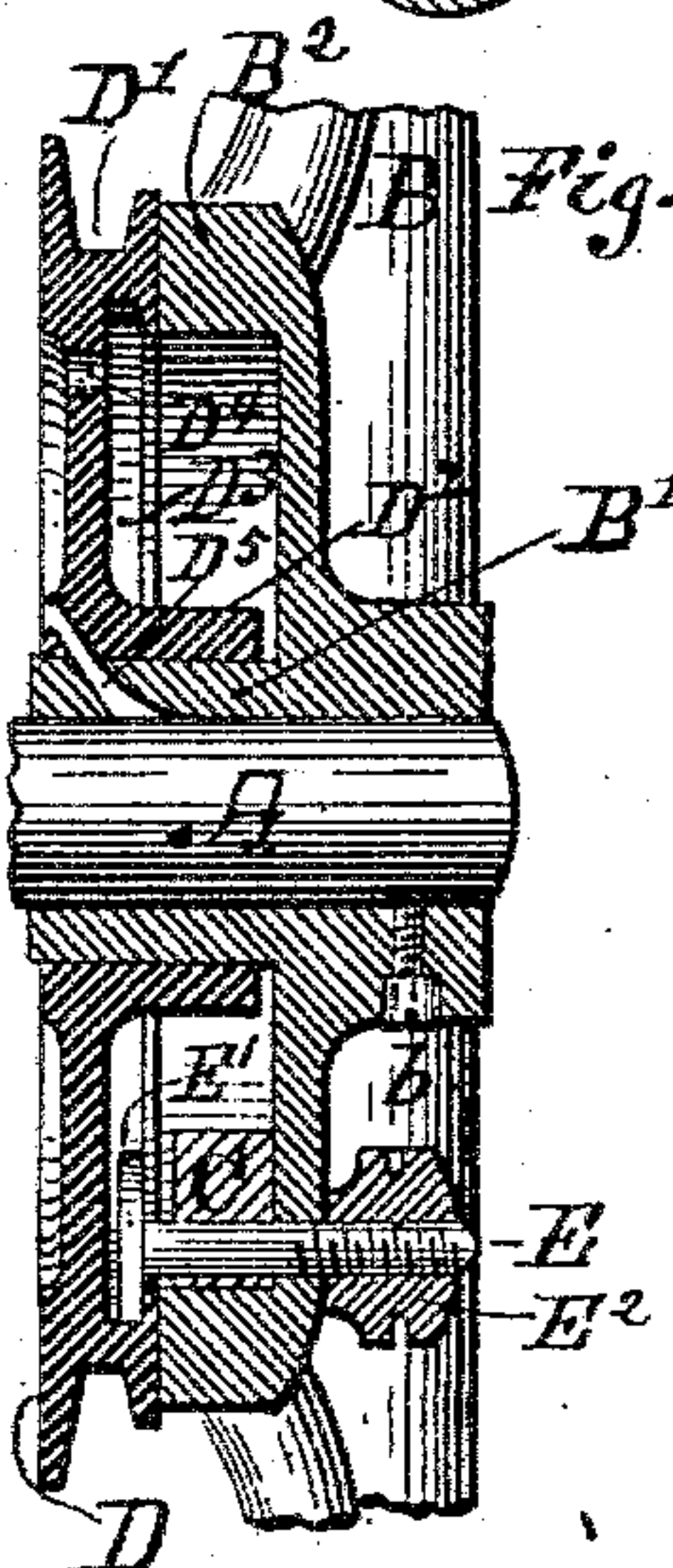
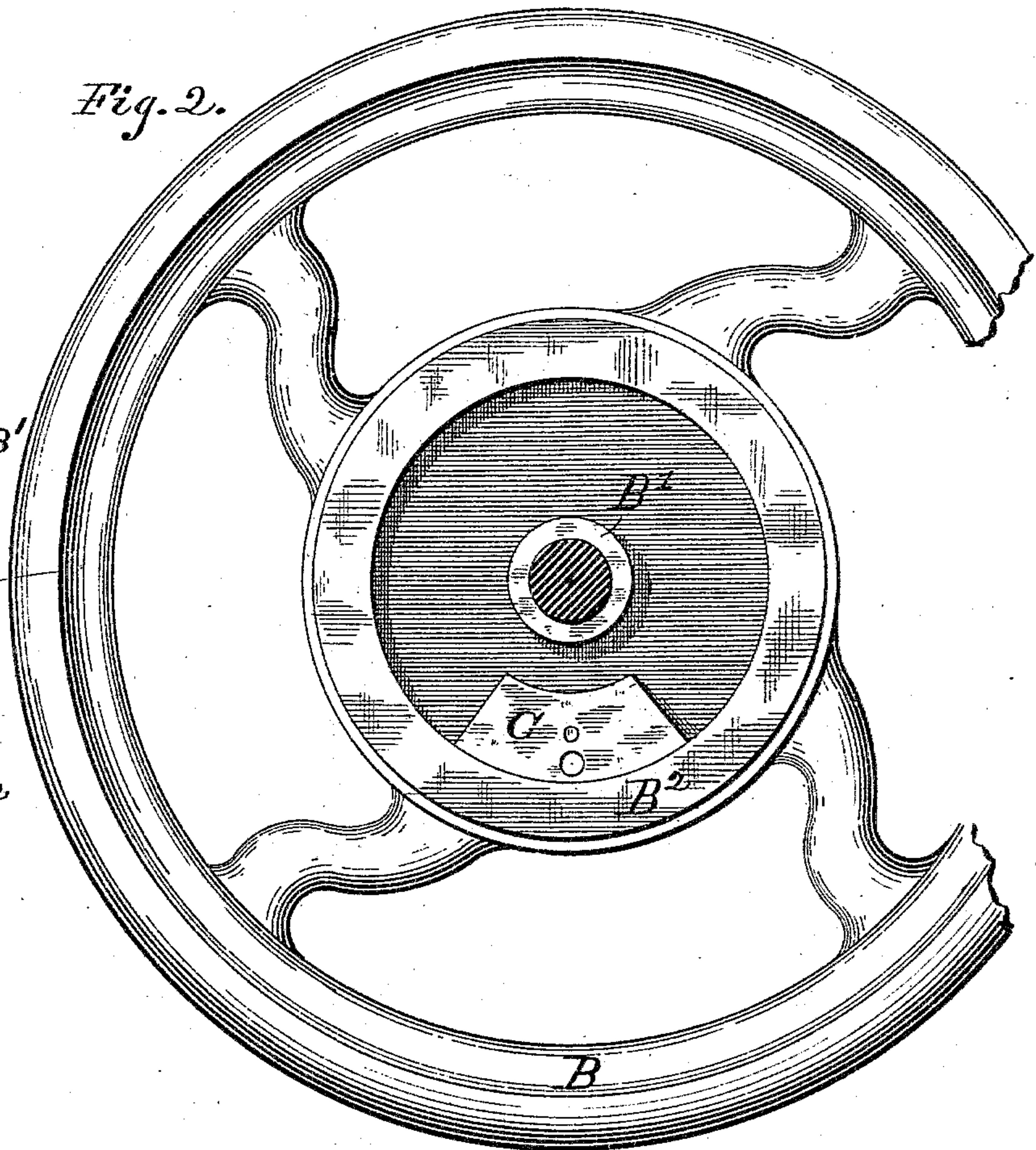
(No Model.)

R. W. WHITNEY.

FLY WHEEL.

No. 295,215.

Patented Mar. 18, 1884.



Witnesses:  
L. C. Hills  
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*Atty.*



# UNITED STATES PATENT OFFICE.

RUEL W. WHITNEY, OF CLEVELAND, OHIO, ASSIGNOR TO THE LEADER SEWING MACHINE COMPANY, OF SAME PLACE.

## FLY-WHEEL.

SPECIFICATION forming part of Letters Patent No. 295,215, dated March 18, 1884.

Application filed January 4, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, RUEL W. WHITNEY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Fly-Wheels, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a vertical section of a fly-wheel embodying my invention. Fig. 2 is a side elevation with the disk removed. Fig. 3 is a perspective of the disk and the binding-bolt. Fig. 4 is a perspective of the binding-bolt, and Fig. 5 is a modification.

Like letters refer to like parts in all the figures.

My invention relates to that class of fly-wheels which, or the adjuncts of which, are adapted to divert the power applied from the main machine, with which the fly-wheel is connected, to independent mechanism, whereby the latter may be operated while the former is at rest, and although primarily and principally set forth herein as for use upon sewing-machines, my said invention is also fully and readily applicable to any mechanism which comprises independently-operative parts, which it is desirable at will to use separately, and I therefore do not limit myself to an application of my said invention to sewing-machines, but reserve my right to adapt the same for use upon any machine which permits of its use, or which, by the exercise of ordinary mechanical skill, can be made to permit its use.

Taking a sewing-machine provided with a bobbin-winding mechanism as an example of a machine which is adapted to receive and make use of my invention, it is well known that said bobbin-winding mechanism is constructed to be thrown in contact with the belt which serves to convey motion from the treadle or crank shaft to the main shaft of the machine, and to be operated. In such cases it is apparent that the machine is also operated during the operation of the bobbin-winding mechanism, and it is the object of the class of fly-wheels to which my invention relates to obviate the necessity of the simultaneous operation of both mechanisms at such times.

Other objects and advantages of my invention will appear in the following description of its construction and operation, and the novel features of the same will be specifically set forth in the claims.

A represents the main shaft of a machine, and B a fly-wheel mounted thereon and secured rigidly thereto—in this instance by a set-screw, *b*, but any other well-known devices may be used instead of said set-screw for the firm connection of the fly-wheel with the shaft. The hub of the fly-wheel is cut out to form a sleeve, *B'*, and a rim or shoulder, *B<sup>2</sup>*, and although shown as interiorly and continuously fitting the shaft, the sleeve may not be so constructed, if desired. Any usual balance-weight, *C*, may be secured to the wheel within the hub and between the sleeve and rim, but in this instance it performs an additional function, hereinafter described.

D represents a disk having a peripheral belt-groove, *D'*, and is adapted to rotate upon the sleeve *B'* of the hub. In this instance the disk is provided with a sleeve, *D<sup>2</sup>*, fitted to the sleeve *B'* and extending within the hub. The distance to which it shall extend is not essential, as all that is desirable is that the disk be mounted, directly or indirectly, upon the shaft A, and be capable of longitudinal movement upon the sleeve *B'*, so that when held snugly against the rim or shoulder *B<sup>2</sup>* of said disk the wheel and the shaft shall revolve as one piece. The means or binding device employed in this instance for drawing and holding the disk in firm contact with the rim or shoulder *B<sup>2</sup>* comprises a headed bolt, *E*, and an interior circumferential groove, *D<sup>3</sup>*, formed in the disk D, into which groove the head *E'* of the bolt projects, while its body passes through the hub of the wheel and is provided with a suitable nut, *E<sup>2</sup>*.

It is apparent that when the nut is turned against the hub the bolt is drawn, so as to bring the disk against the rim or shoulder, thus binding the disk and wheel together and when the nut is turned in the opposite direction the disk, by reason of the groove *D<sup>3</sup>* being completely circumferential, may be rotated independently of the wheel, so that the wheel and shaft may remain at rest.



As thus far described, it is evident that the same operation could be attained were the groove  $D^3$  made exteriorly and the bolt  $E$  relatively located; and so far as the particular location of the groove is concerned I do not limit myself.

To prevent the bolt from revolving in the groove, which would have a tendency to loosen or run off the nut, I flatten or cut away a portion of the head, so as to produce the surface  $e$ , (see Fig. 4;) but for this purpose the head may be pivoted upon the body, so as to rotate thereon, or the body may be made square in cross-section; but these modifications increase the expense of manufacture and tend to increased friction and wear of the parts, and hence I prefer the construction shown. In this instance, though not essential, I have shown the bolt passing through the weight  $C$ , and I thereby gain a longer bearing for the bolt, which is advantageous, in that it renders the connection of the parts firmer and prevents accidental bending of the bolt, whereby the head thereof would be thrown out of line with the groove  $D^3$ .

If desired, as shown in Fig. 1, the hub of the wheel may be provided with a belt-groove,  $B^3$ , in which case, in order to operate the disk independently of the wheel, the belt would be shifted from said groove into the groove  $D'$  of the disk, and this change in the position of the belt may be useful, in that it might be the means of conveying power to the bobbin-winder without shifting its position to bring it in contact with the belt, as would be the case were the belt run continuously in the groove of the disk.

Suitable oil-holes,  $D^4 D^5$ , are shown for lubricating the sleeve and disk-groove.

I deem it proper to state that I do not wish to be understood as limiting myself to the exact proportion, construction, and arrangement of the parts herein shown, but I may alter the same in any manner and to any extent within the skill of persons conversant in the construction of power-conveying mechanisms.

As before indicated, the disk may be mounted directly upon the shaft so long as it is capable of independent rotation thereon, and capable also of longitudinal movement toward and away from the hub of the wheel.

In using the terms "circumferentially grooved" relative to the disk, I mean the groove  $D^3$ , whether located interiorly or exteriorly, and in unison or in company with the belt-groove; but for finished appearance I prefer the interior location of said groove.

Having described my invention and its operation, what I claim is—

1. The combination of a fly-wheel provided with a rim or shoulder, a disk having a belt-groove, and an interior circumferential groove, with a binding device, substantially as specified.

2. The combination of a fly-wheel having a sleeve and a rim or shoulder, a disk having a belt-groove, and a sleeve adapted to rotate and to move longitudinally upon the sleeve of the wheel, with a binding device, substantially as specified.

3. The combination of a belt-disk having a circumferential groove, and a binding device projecting into said groove and through the hub of a fly-wheel, substantially as specified.

4. The disk  $D$ , having the belt-groove  $D'$ , the sleeve  $D^2$ , and the groove  $D^3$ , substantially as shown and described.

5. The combination of the disk  $D$ , having the belt-groove  $D'$  and the groove  $D^3$ , with the bolt  $E$ , having the head  $E'$  cut away, as at  $e$ , substantially as shown and described.

6. The combination of the wheel  $B$ , provided with the rim or shoulder  $B^2$  and sleeve  $B'$ , the disk  $D$ , having the groove  $D^3$ , bolt  $E$ , having the head  $E'$ , the weight  $C$ , and nut  $E^2$ , substantially as shown and described.

7. The combination of the wheel  $B$ , having the rim or shoulder  $B^2$  and sleeve  $B'$ , with the disk  $D$ , having the belt-groove  $D'$ , sleeve  $D^2$ , and groove  $D^3$ , and with the bolt  $E$ , having the head  $E'$ , weight  $C$ , and nut  $E^2$ , substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

RUEL W. WHITNEY.

Witnesses:

A. A. STEARNS,  
W. C. WILSON.