

No. 681,511.

Patented Aug. 27, 1901.

L. E. ROBINSON.
REVERSIBLE CLUTCH PULLEY.

(Application filed Dec. 3, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 2.

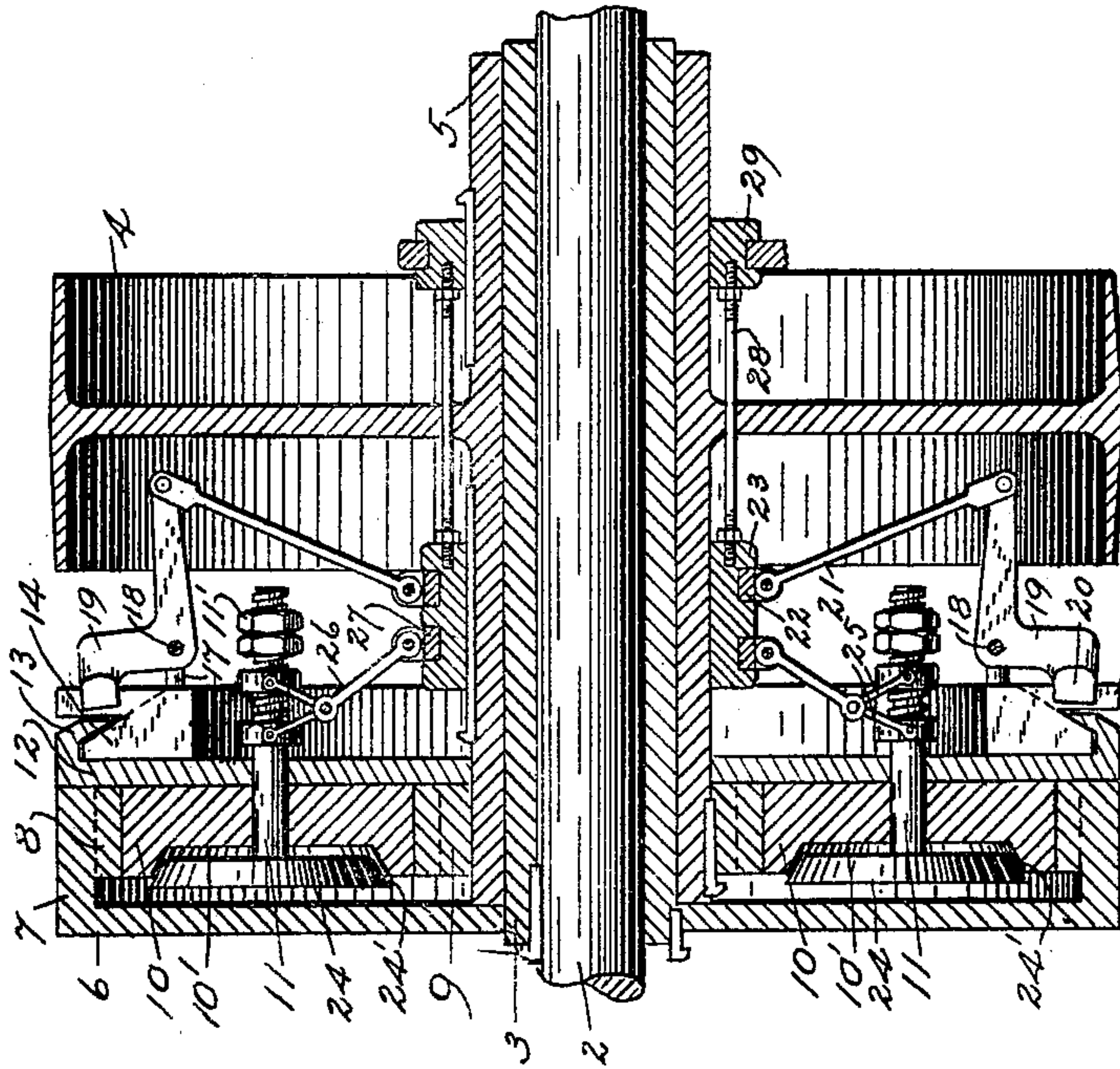
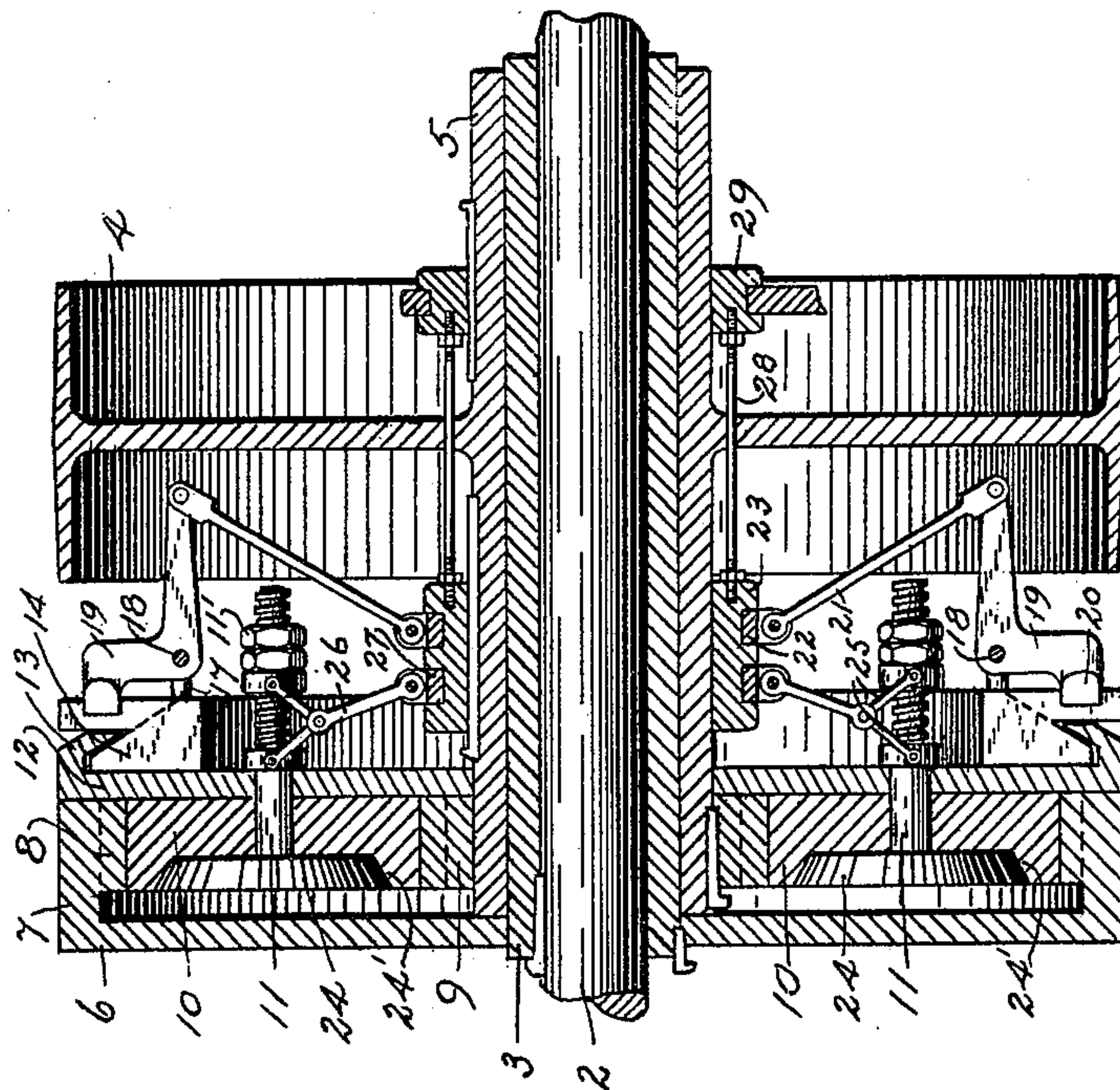


Fig. 1.



WITNESSES
M. J. Hillis
Robt. D. Hamilton.

INVENTOR
L. E. Robinson
By *J. M. Norbit*
Attorney

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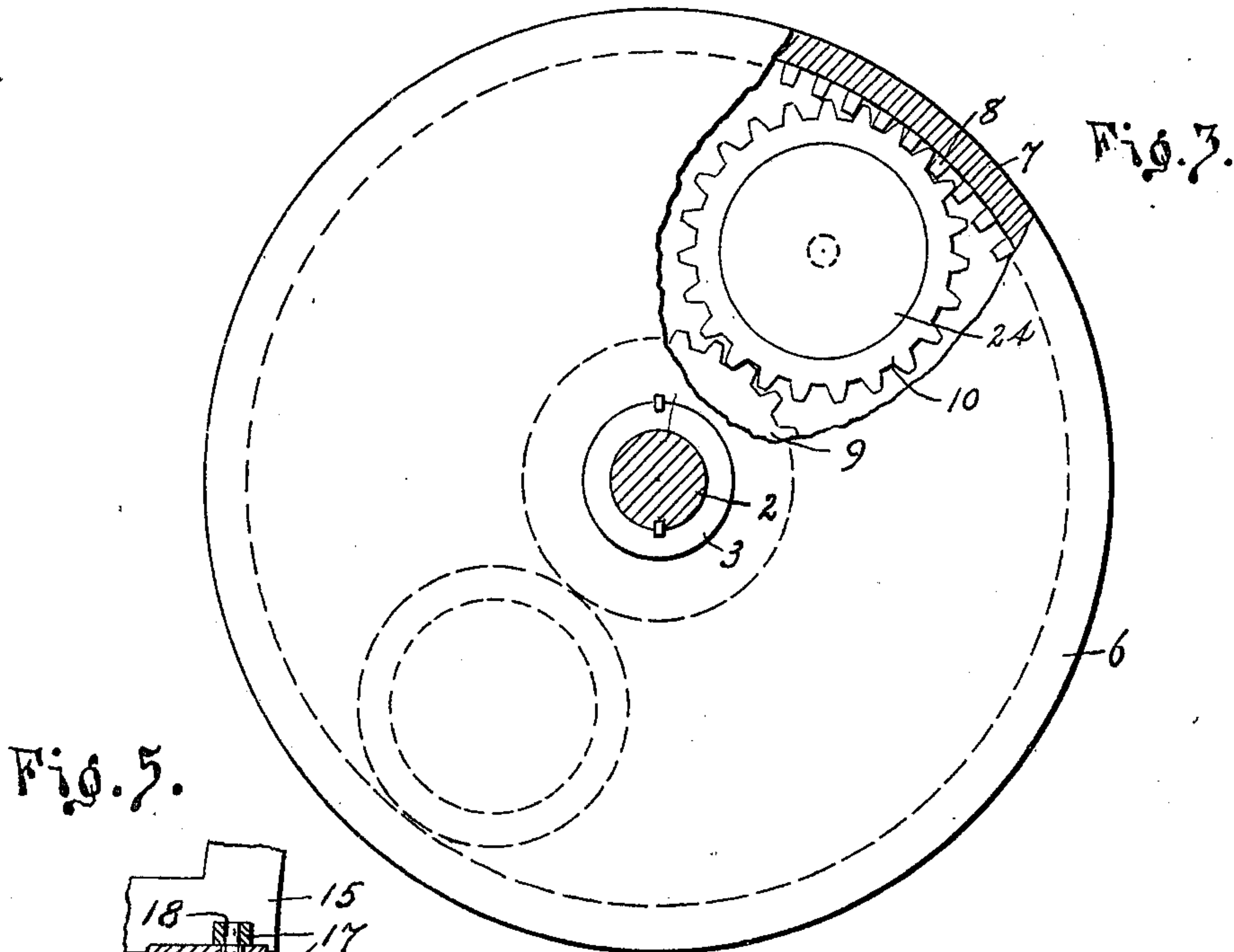
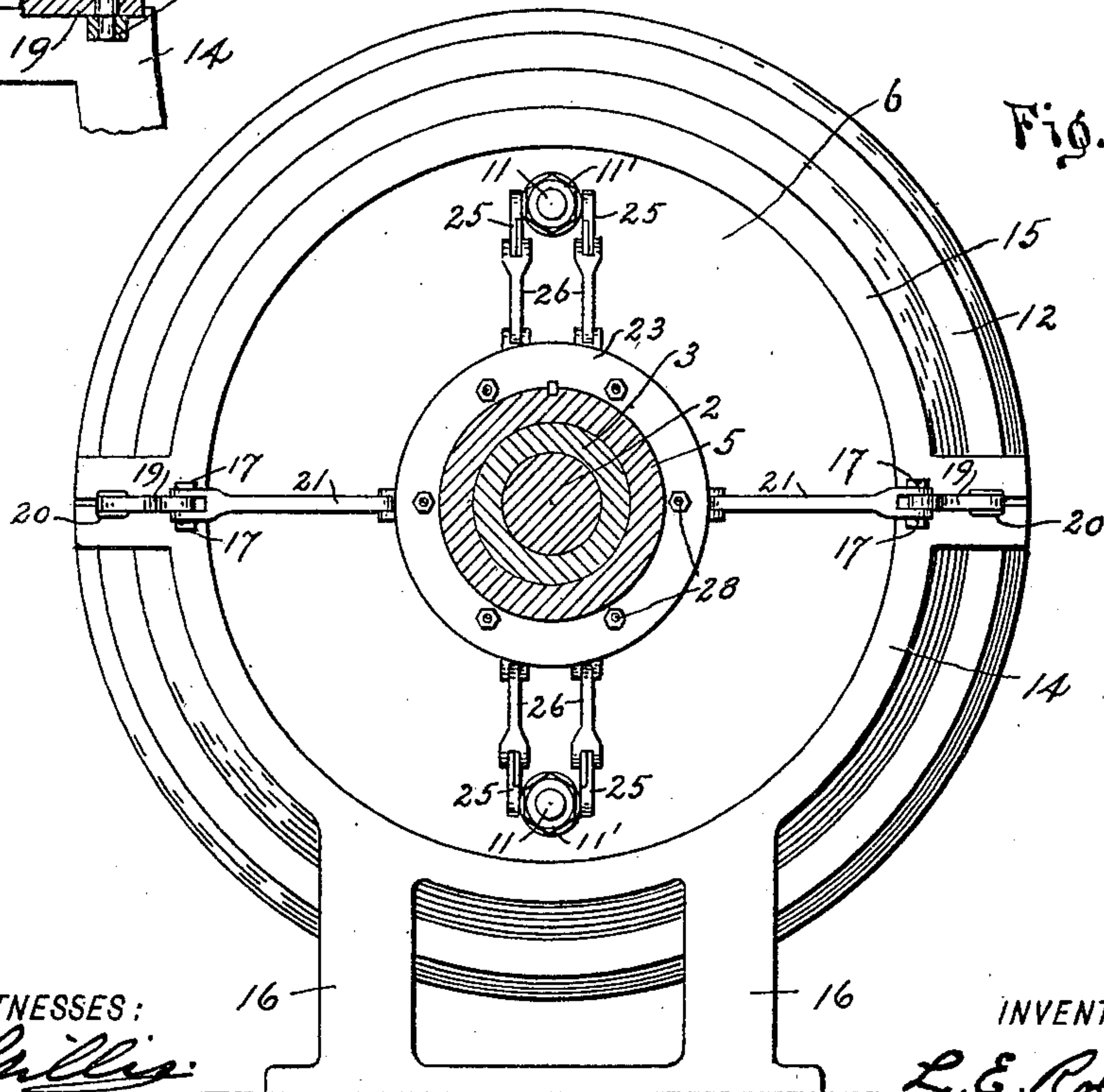
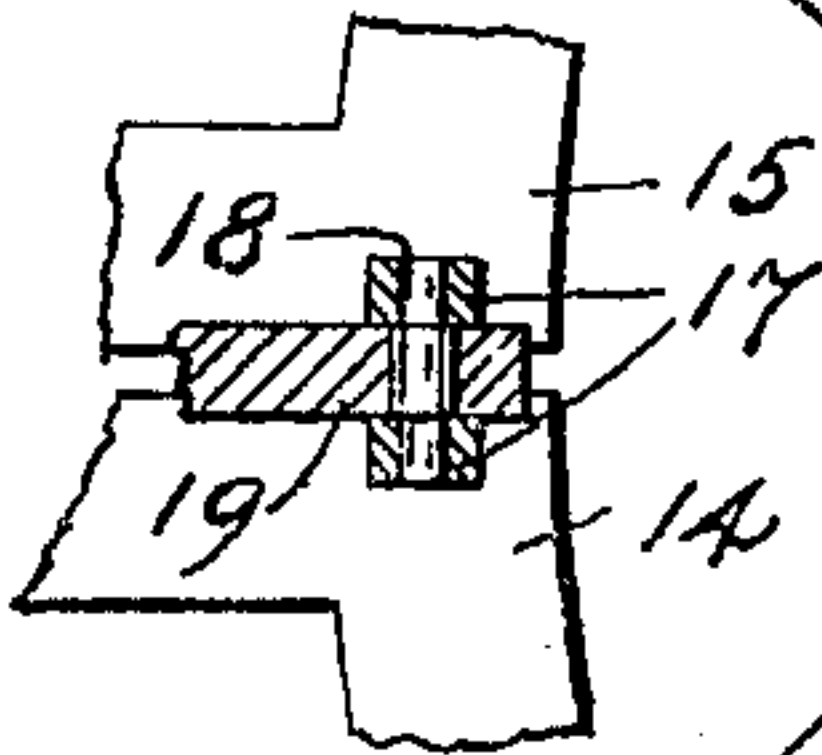


Fig. 5.



WITNESSES:

J. M. Willis
Robt. D. Hamilton

INVENTOR

L. E. Robinson
BY *J. M. Nesbit*
ATTORNEY

UNITED STATES PATENT OFFICE.

LAWRENCE E. ROBINSON, OF BUTLER, PENNSYLVANIA.

REVERSIBLE CLUTCH-PULLEY.

SPECIFICATION forming part of Letters Patent No. 681,511, dated August 27, 1901.

Application filed December 3, 1900. Serial No. 38,394. (No model.)

To all whom it may concern:

Be it known that I, LAWRENCE E. ROBINSON, a citizen of the United States, residing at Butler, in the county of Butler and State of Pennsylvania, have invented new and useful Improvements in Reversible Clutch-Pulleys, of which the following is a specification.

The object of this invention is to provide efficient reversing mechanism of simple and improved construction whereby a clutch-pulley may be caused to rotate with its shaft or reversely thereto, or it may be released therefrom and run idle.

The invention consists in the novel features of construction and in the combination and arrangement of parts hereinafter fully described and claimed, and illustrated by the accompanying drawings, wherein—

Figure 1 is a sectional plan view of gearing embodying my invention, the mechanism being adjusted to cause the pulley to rotate with the shaft. Fig. 2 is a similar view showing the reverse adjustment or with the pulley rotating oppositely to the shaft. Fig. 3 is an end elevation, partly in section. Fig. 4 is a cross-sectional view. Fig. 5 is a detail view of the split-ring lever-fulcrum.

Referring to the drawings, 2 is the drive-shaft, and 3 an elongated sleeve or bushing keyed thereto. Loosely mounted on this bushing is pulley 4, having elongated hub 5. Keyed to one extremity of bush or sleeve 3 is disk 6, formed with a peripheral flange or rim 7, which is cogged internally at 8. Pulley-hub 5 terminates at the inner side of disk 6, and secured on the extremity of said hub is gear-wheel 9, which meshes with the oppositely-positioned gears 10, the latter in turn meshing with cogged rim 7 of disk 6. Gears 9 and 10 are preferably of corresponding diameter, so that the pulley will rotate at the same speed as the shaft in the different adjustments. Gears 10 are loosely journaled on bolts 11, projecting through disk 12, the latter being loosely mounted on pulley-hub 5. On the inner face of disk 12 is the peripheral rim or flange 13, which is disposed obliquely to the plane of the disk, and projecting beneath this rim or flange is the two-part clutch-ring, consisting of the lower section 14 and the upper section 15. Section 14 is held fixed by posts or supports 16, project-

ing from the base-block or hanger of the gearing. Projecting laterally from the ring-section extremities are arms 17, which are loosely connected by hinge-pins 18, upon which levers 19 are mounted. These levers have opposite position and are each of angular form, one extremity forming shoe or wedge 20, while the other elongated extremity is connected by link 21 to strap 22 on shifting collar 23, the latter being loose on pulley-hub 5 and movable longitudinally thereon. Bolts 11 have slight longitudinal play through disk 12 and carry at their inner extremities the friction-disks 24, having beveled peripheries 24', while the faces of gear-wheels 10 are formed with countersunk and peripherally-beveled depressions 10' to receive disks 24. The outer ends of bolts 11 project laterally within the non-rotatable sectional ring and are provided on their extremities with adjusting-nuts 11'. Links 25 have their outer extremities slidable on bolts 11 between nuts 11' and disk 12, while the inner ends of said links are pivoted together and to the outer ends of links 26, the inner extremities of said links being pivoted to strap 27 of shifting collar 23. Collar 23 may be connected by bolts 28 to collar 29 on the opposite side of the pulley-web, to which a shifting lever may be connected in any suitable manner.

In operation when the pulley is to rotate in the same direction as the shaft the adjustment is as seen in Fig. 1, wherein collar 23 has been so moved as to expand links 25, thus moving bolts 11 longitudinally, with disks 24 frictionally engaging gears 10 at depressions 10', thus locking said gears against rotation on their individual axes. Disks 6 and 12 are thus rigidly united or locked together by the interposed gears, and as disk 12 is rigid on the shaft and gear 9 rigid on the pulley-hub the pulley is caused to rotate in the same direction as the shaft. For the reverse adjustment links 25 are relaxed, as in Fig. 2, when gears 10 are free to rotate individually, while the same movement of adjusting-collar 23 actuates levers 19 in such manner as to move their wedge extremities 20 between the extremities of ring-sections 14 and 15, thus expanding said ring-sections and causing them to tightly clutch disk 12 and its flange 13. Thus said disk and gears 10 are held against

rotation axially of the shaft, and with gear 9 rotating with the pulley and gears 10 freely rotating on their own axes and actuated by disk 6, rigid with the shaft, the pulley is caused to rotate oppositely to the latter, as will be understood. With collar 23 shifted to position midway its extreme adjustments the clutch mechanism is inactive, and the pulley will simply run idle.

Considering the adjustments of which the mechanism is capable its construction is extremely simple and durable and the parts are not liable to disorder.

The improved gearing is capable of use wherever a reversing-pulley is required and is particularly well adapted for non-reversing gas and other motors.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In improved reversing mechanism, the combination of a shaft, a gear fixed thereon, a pulley normally loose on the shaft, a gear fixed to the pulley, gearing interposed between and connecting the said gears of the shaft and pulley, a support on which said interposed gearing is normally free to axially rotate, and means for alternately holding said support against rotation and for holding the interposed gearing against axial rotation on the support, substantially as shown and described.

2. In improved reversing mechanism, the combination of a shaft, a gear fixed thereon, a pulley having an elongated hub normally loose on the shaft, a gear fixed to the pulley-hub, a disk normally loose on the pulley-hub, gearing normally revoluble on said disk, said gearing being interposed between the gears of the shaft and pulley-hub, and means for alternately holding said disk against rotation and for holding said interposed gearing against individual rotation, substantially as shown and described.

3. In improved reversing mechanism, the combination of a shaft, a gear fixed thereon, a pulley having an elongated hub normally loose on the shaft, a gear fixed to the pulley-hub, a disk normally loose on the pulley-hub, gearing carried by and normally revoluble on the disk, said gearing being interposed between the gears of the shaft and pulley, a non-rotatable clutching device for holding said disk against rotation, and mechanism for alternately operating said clutching mechanism and for locking the said interposed gearing against individual rotation, substantially as shown and described.

4. In improved reversing mechanism, the combination of a shaft, a gear fixed thereto, a pulley having an elongated hub normally loose on the shaft, a gear fixed to the pulley-hub, a disk normally loose on the pulley-hub and formed with a peripheral flange, non-rotatable clutching mechanism adapted to engage the flange and hold the disk against ro-

tation, gearing interposed between the said gears of the shaft and pulley-hub, said interposed gearing being carried by and normally revoluble on the disk, and means operating alternately with the said clutching mechanism for holding said interposed gearing against independent rotation, substantially as shown and described.

5. In improved reversing mechanism, the combination of a shaft, a gear fixed thereon, a pulley having an elongated hub normally loose on the shaft, a gear fixed to the pulley-hub, a disk normally loose on the pulley-hub and formed with a peripheral flange disposed obliquely to the plane of the disk, a non-rotatable and expansible clutch-ring, means for expanding said ring in the space between the disk and its flange, gearing interposed between the said gears of the shaft and pulley-hub, said interposed gearing being carried by and normally revoluble on said disk, and means operating alternately with said clutching mechanism for holding said interposed gearing against independent rotation, substantially as shown and described.

6. In improved reversing mechanism, the combination of a shaft, a normally loose pulley having an elongated hub, disk 12 normally loose on the pulley-hub and formed with a peripheral flange, a sectional non-rotatable ring within said flange, levers having wedge-shaped extremities adapted to enter between the extremities of the ring-sections and expand the ring so as to clutch the disk-flange, a shifting collar operatively connected to the said levers, and gearing connecting said disk with the shaft and with the pulley, whereby when said disk is free to rotate the pulley and shaft will rotate in like direction, and when the disk is held against rotation the shaft and pulley rotate in reverse directions, substantially as shown and described.

7. In improved reversing mechanism, the combination of a shaft, a gear fixed thereon, a pulley having an elongated hub normally loose on the shaft, a gear fixed on the pulley-hub, a disk normally loose on the pulley-hub, non-rotatable clutching mechanism for holding said disk fixed, gearing normally revoluble on the disk and interposed between the gears of the shaft and pulley, means for locking said interposed gears against independent rotation, and a shifting collar operatively connected to the said gear-locking mechanism and to the said clutch mechanism, and adapted to actuate the same alternately by reverse movements, substantially as shown and described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LAWRENCE E. ROBINSON.

Witnesses:

FRANK H. MURPHY,
THOS. HAYS.