(No Model.)

J. HILL.

LEVER CLUTCH.

No. 278,137. Patented May 22, 1883.

Fig. 1

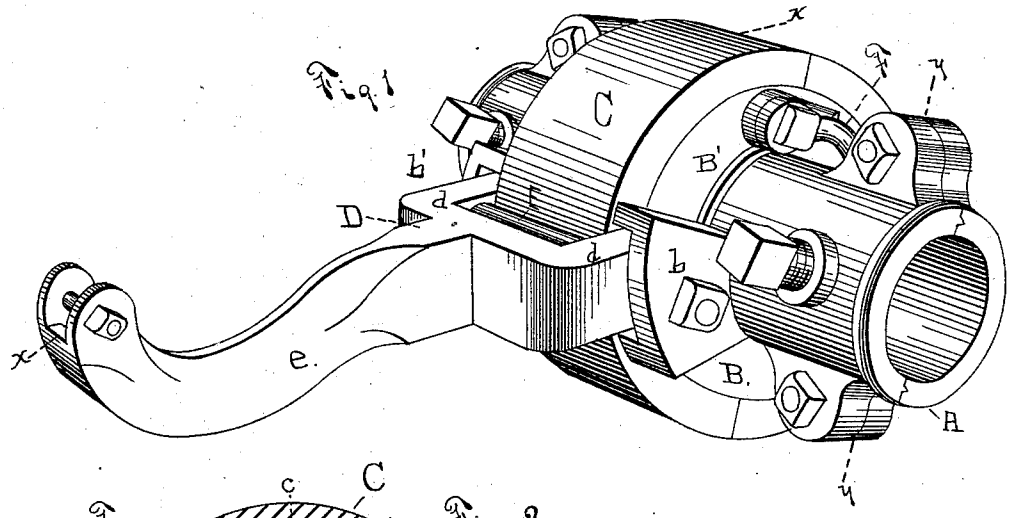


Fig. 2

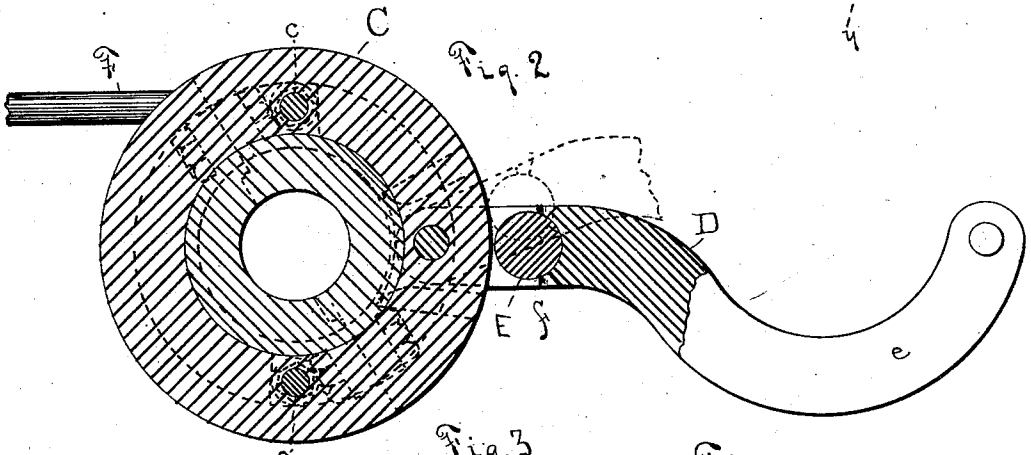


Fig. 3

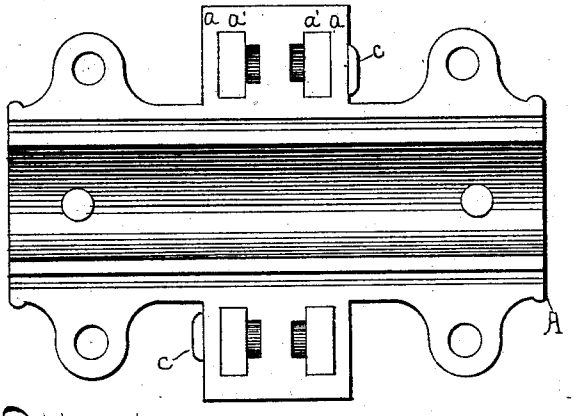
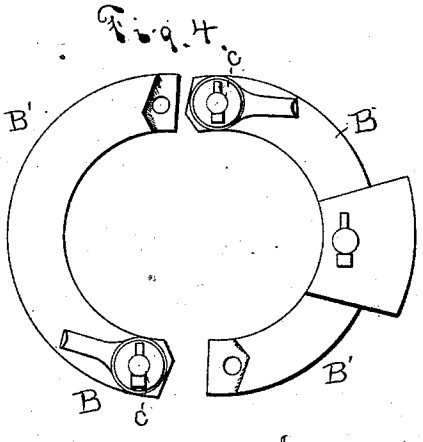


Fig. 4



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UNITED STATES PATENT OFFICE.

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LEVER-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 278,137, dated May 22, 1883.

Application filed April 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH HILL, of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Improvement in Lever-Clutches; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to a lever-clutch used in connection with a cylinder and adapted to have two functions—viz., when the free end of the lever is raised out of a normal position it is capable of giving a rotary forward movement to the cylinder, and when the lever is restored to a normal position it offers no impediment to a rotation of the cylinder in either direction; thus when the free end of the lever is held in the raised position it prevents the cylinder from a backward rotary movement; and the novelty therein consists in the construction and arrangement of the lever and of the cylinder, and in the various operative combinations of the several parts.

For the better comprehension of my invention, reference should be made to the accompanying drawings, in which Figure 1 is a perspective of my device; Fig. 2, a vertical section of the same on the line *x x* of Fig. 1. Fig. 3 is a horizontal section on line *y y* of Fig. 1. Fig. 4 are separate views of one of the collars.

Similar letters denote corresponding parts in all the figures.

In the drawings, A represents any suitable sleeve, made, for convenience, in two parts, adapted to be secured together, and the sleeve itself adapted to be secured to a shaft. Upon this sleeve are placed two collars, B B′, made conveniently in two parts, with the ends halved to lap by and fit to each other, adapted to be secured together, which collars have freedom of rotation (more or less limited) about the sleeve A, and within or against the cylinder presently to be described. These collars, upon their outer surfaces, are preferably in the same plane as the outside of said cylinder; but the collars have flanges *a*, which fit into corresponding grooves, *a′*, in the interior of said cylinder. Upon the outer side of each collar are ears *b b′*, within which or to which are pivoted the inner ends of the lever presently to be described, and also bosses *c*, which are adapted to receive screw-bolts, which pass through the halved ends of the collars and secure them together, and also may serve to pivot the trip hereinafter described, suitable provision being made to lock or pin such screw-bolts, so that they may not work loose in use.

The cylinder proper, C, is preferably in two parts, and may be cast with the separate parts of the sleeve A, or, if not so cast, should be rigidly secured to said sleeve. This cylinder has a smooth face, and may be made of any ordinary metal, preferably of cast metal.

The lever D has jaws *d*, each of which is pivoted to or within the ears *b b′* on the two collars B B′, and have a little freedom of movement within the ears *b b′*, which for that purpose have their sides diverging a little outwardly. Outside of the jaws the lever has a suitable arm, *e*, adapted to be connected with any proper contrivance for raising it, or with any ordinary handle. Within the jaws *d* of the lever is a recess, *f*, in which a small loose cylinder, E, is retained in position at a suitable distance from the face of the cylinder C.

A trip-rod, F, or similar device, preferably forked, is pivoted to the collars B B′ very conveniently by the screw-bolts which secure the two parts of the collars together. If now the free end of the lever be raised, the cylinder E takes or binds against the face of the cylinder C, as shown in dotted lines in Fig. 2, and causes it to rotate as long as the lever is moved in that direction. When the free end of the lever is held in that position the small cylinder E still maintains its pressure against the face of the cylinder C and prevents its backward rotation. When the lever returns to its normal position, as in full lines in Fig. 2, then the cylinder C has freedom of rotation in either direction. When by means of the trip-rod F the collars B B′ are rotated, and in turn raise the pivoted ends of the lever, and the small cylinder E is moved out of contact with the face of the cylinder C, then this cylinder has freedom of rotation in either direction. This result is accomplished by the axial relations of the cylinders C and E. When the lever D is in a normal position the centers of the axle of the cylinder E and the pivoting-bolt to the lever is in the same line, and this line is the shortest line from the center of the axle to the center of the

recess *f* for the cylinder E, and this line is of such length that when the cylinder E is close to its recess there is a space between the cylinders C and E, and the cylinder C may have freedom of rotation in either direction. When the lever D is raised by its free end or lowered by its free end out of the normal position, then the line from the center of the pivot of the lever D to the center of the cylinder E is tangential to the line from the center of the axle to the center of the lever-pivot, and consequently the cylinder E is brought more nearly to and in actual contact with the face of the cylinder C. The same result follows when the inner end of the lever is moved by the trip. When all the centers named are in line there is no contact of the cylinders. When such centers are out of line there is such contact.

It is manifest that the collars described by me may be made to turn wholly upon the outside of the cylinders, and that for some purposes both the collars and cylinder may each be made in one piece, and that the part E need not be a cylinder, but may be one or more balls and that other changes may be made in the construction and arrangement of the operative parts without departing from the spirit of my invention.

It is manifest, also, that this clutch is capable of use for a large number of purposes, and it is my intention to prepare applications for Letters Patent for such clutch in connection with other mechanism, and for a variety of such purposes, intending in this application to confine myself only to the invention herein described.

The advantages which I assert for my device are simplicity and durability of its several parts, and great effectiveness in operation.

Having thus described my device, what I claim as new therein is—

1. A lever-clutch pivoted to a rotating collar, substantially as described.

2. In combination with a pivoted lever-clutch, a rotating collar having rotation about a fixed cylinder, substantially as described.

3. In combination with a pivoted lever-clutch, a small cylinder, or its equivalent, supported within said clutch, and between it and a cylinder capable of rotation, substantially as described.

4. In combination with a lever-clutch and a rotating collar, a trip adapted to rotate such collar, substantially as described.

5. In combination, the lever-clutch, the small cylinder E, the collars, the cylinder C, and the trip, substantially as described.

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

JOSEPH HILL.

Witnesses:
F. O. McCLEARY,
GEO. H. COOPER, Jr.