(No Model.)

W. P. HALE.

CLUTCH.

No. 259,852. Patented June 20, 1882.

Fig. 1.

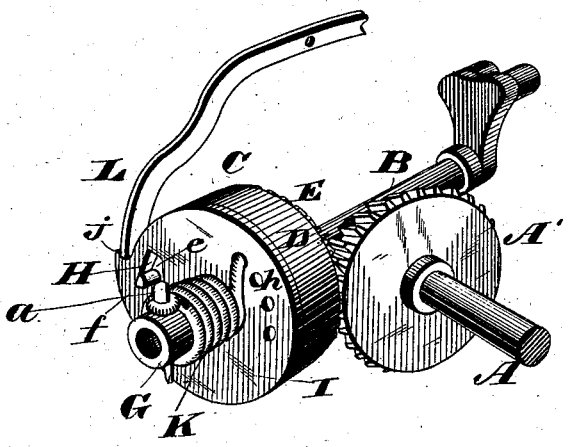


Fig. 2.

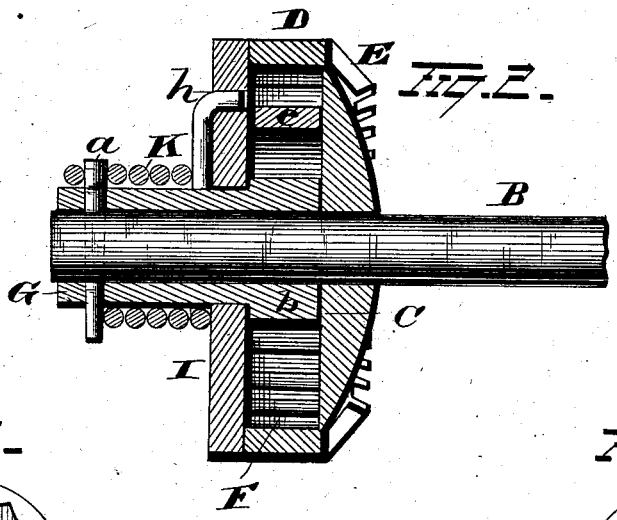


Fig. 3.

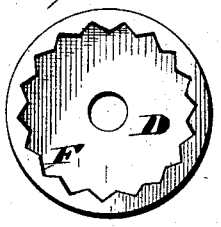


Fig. 4.

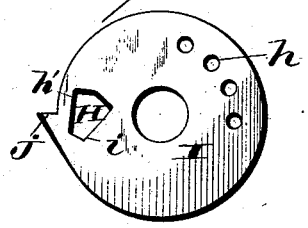
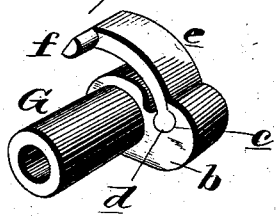


Fig. 5.



WITNESSES.

E. C. Nottingham,

George Cook

INVENTOR

W. P. Hale,

By H. A. Seymour.

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM P. HALE, OF BROCKPORT, NEW YORK.

CLUTCH.

SPECIFICATION forming part of Letters Patent No. 259,852, dated June 20, 1882.

Application filed May 2, 1882. (No model.)

To all whom it may concern:

Be it known that I, WM. P. HALE, of Brockport, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Clutches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to an improvement in clutches, the object being to provide a clutch which shall be simple and durable in its construction, and which may be instantly thrown in and out of gear by a very slight expenditure of power.

With these ends in view my invention consists in a clutch comprising certain features of construction and combinations of parts, as will hereinafter be described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of my improved clutch. Fig. 2 is a vertical section. Figs. 3, 4, and 5 are detached views of the different parts of the clutch.

A represents a driving-shaft, having the bevel-gear A′ rigidly secured thereto, and B represents the driven shaft, to which the clutch C is applied. Clutch C is constructed as follows:

D is the clutch barrel or cylinder, loosely mounted on the shaft B, and provided with the bevel-gear E, with which meshes the bevel-gear A′ for driving the same.

Instead of employing bevel-gears E and A′, they may be plain cog-wheels, or friction-wheels, or pulleys connected by a belt.

The interior portion of the barrel or cylinder D is provided with V-shaped notches F, for a purpose hereinafter described.

To the shaft B is rigidly secured the clutch-sleeve G by means of a pin, *a*, or in any other suitable manner. To one end of the sleeve is secured or rigidly formed therewith the arm *b*, which is provided with a circular recess or groove, *c*, in which fits the circular bearing *d* of the pawl *e*, the latter being provided with a stud or pin, *f*, on its outer or free end, said stud or pin projecting through the opening H in the disk I, which latter is loosely mounted on the sleeve G.

Disk I is provided with a series of holes, *h*, into any one of which is hooked one end of the spiral spring K, which encircles the sleeve, the outer end of the spring being attached to the pin *a*. The tendency of the spring is to impart a rotary motion to the disk upon its supporting-sleeve G. The opening H in the disk is formed with the two inclined sides *h i*. Disk I is provided with a stop or projection, *j*, on its periphery, with which engages the end of the clutch-lever L, which latter may be operated by a treadle, or may be tripped automatically, according to the character of the machine and purpose for which the clutch is to be used.

Having described the construction and relative arrangement of the several parts of my improved clutch, I will now briefly describe its operation.

When the driving-shaft A is rotated a continuous revolution is imparted to the cylinder or drum D of the clutch, and as the clutch-lever L engages the projection *j* on the periphery of the disk I the stud *f* on the pawl will engage with the inclined side *i* of the disk, which will operate to disengage the pawl from its V-shaped notch and allow the drum or barrel to revolve freely, while the stud or pin drops down on the inner end of the inclined side *i* of the opening in the disk. Thus the drum or barrel will rotate on the shaft, while the clutch-disk and shaft to which it is secured will remain stationary so long as the clutch-lever is in engagement with the projection *j* on the clutch-disk. Now, by disengaging the clutch-lever from the projection *j* the spiral spring K instantly imparts a slight rotary movement of the disk on its sleeve, thereby causing the inclined side *i* to force the stud and pawl outwardly and cause the latter to engage in one of the V-shaped notches in the clutch drum or barrel, and thereby lock the clutch-disk to the drum or barrel and rotate the shaft on which the clutch is mounted.

The parts of the clutch are very simple in their construction, and are so arranged that they may be operated by a very delicate adjustment of the clutch or tripping lever.

As it is evident that many slight changes in the construction and relative arrangement of the parts might be resorted to without involving a departure from the spirit of my inven-

tion, I would have it understood that I do not restrict myself to the exact construction and arrangement of parts shown and described; but,

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

1. A clutch consisting of a drum or barrel loosely mounted on the shaft, in combination with a sleeve secured to the shaft, a disk loosely mounted on said sleeve, and a pawl pivoted to an arm on the sleeve, the free end of the pawl being provided with a pin or stud that engages the inclined sides of an opening in the disk, substantially as set forth.

2. The combination, with a clutch drum or barrel loosely mounted on the shaft and provided with internal V-shaped notches, of a sleeve secured to the shaft said sleeve having an arm provided with a circular groove, a pawl constructed with a circular bearing that fits in said groove, a disk loosely mounted on the sleeve, a spring for imparting a part rotary movement to the disk, and a stud on the pawl that extends through an irregular-shaped opening in the disk, substantially as set forth.

3. The combination, with the drum or barrel, sleeve, pawl, disk, and spring, constructed and arranged substantially as described, of the projection on the disk and the clutch-lever, substantially as set forth.

4. The combination, with the sleeve, pawl, and disk, the latter provided with a series of holes, of a spiral spring encircling the sleeve, and secured at one end in one of said holes and at the other to the sleeve or pin connecting the sleeve and shaft, substantially as set forth.

5. A clutch consisting essentially of a loosely-revolving barrel or drum, a sleeve secured to the shaft, a disk loosely mounted on the sleeve, a pawl arranged to lock the sleeve to the drum, a spring for imparting a part rotary movement to the disk, and a clutch-lever for engaging the disk and arresting its movement, said parts being constructed and arranged substantially as set forth.

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

WILLIAM P. HALE.

Witnesses:
ANDREW BOYD,
ERNEST F. FELLOWS.