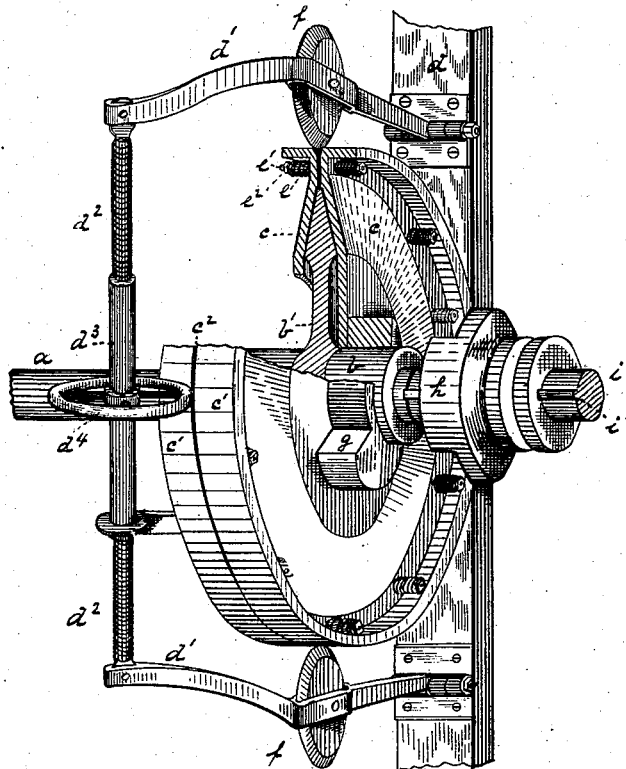


(No Model.)

J. A. HAFNER.  
FRICTION CLUTCH.

No. 260,386.

Patented July 4, 1882.



Witnesses  
*Geo. K. Smith*  
*L. C. Fidler*

Inventor  
*John A. Hafner*  
*by his attorneys*  
*Matthews & Co.*

# UNITED STATES PATENT OFFICE.

JOHN A. HAFNER, OF PITTSBURG, PENNSYLVANIA.

## FRICITION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 260,386, dated July 4, 1882.

Application filed May 26, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. HAFNER, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Friction-Clutches; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an improvement in a friction-clutch; and it consists in an adjustable device for any machinery where it is necessary or desirable to stop or start the machine without interfering with the motion of the driving-power.

I will now describe my invention, so that others skilled in the art may manufacture and use the same, reference being had to the accompanying drawing, forming a part of this specification, which is a perspective view, partly in section, of my invention.

Like letters of reference indicate like parts wherever they occur.

In the drawing, *a* represents the driving-shaft, by which power is applied. Keyed fast to the shaft *a* are the hub *b* and the disk *b'*, which necessarily revolve with the shaft. Fitting around but not attached to the hub *b* on each side of the disk *b'* is a disk, *c*, the inside surfaces of which, or a portion thereof, are fitted to clamp against the surface, or a portion thereof, of the disk *b'*, and are held firmly against the disk *b'* by the pressure of a number of spiral springs, *e*, which fit on bolts *e'*, which bolts pass through the outer part of the disks *c*, which project beyond the circumference of the disk *b'*, the springs being held on the bolts by bearing against the sides of the disks *c c* and the nuts or heads *e''*. The pressure of these springs *e* produces a severe friction between the disks *b'* and *c c*.

At the circumference of the disks *c c* are flanges *c'*, extending outwardly, so as to act as a protection from injury by the springs and bolts; but these flanges may be dispensed with, if desired. The edges of the disks *c c* are slightly beveled, so as to form a groove, *c''*, along the circumference of the disks.

Above and below the disks *c c*, hinged to a suitable standard, *d*, are arms *d'*, at the outer end of which are hinged right and left handed screws, *d''*, which are connected by a

tube, *d'''*, the interior of which is provided with a screw-thread.

On the tube *d'''* is a hand-wheel, *d''*, by turning which the arms *d d'* are drawn toward or separated from each other. Pivoted to the arms *d d'* are two V-shaped colter-wheels, *f f*, the edges of which enter the groove *c''* between the disks *c c* when the arms *d d'* are drawn together by the hand-wheel *d''*, and, being wedge-shaped, overcome the pressure of the springs *e*, cause the disks *c c* to separate from each other and cease to press against the disk *b'*, thereby removing from them the motive power.

Attached to the side of one of the disks *c*, or forming part thereof, is a half-coupling, *g*, so formed as to engage with the half-coupling *h*, which is placed on the shaft *i*, situated at the end of the shaft *a*, having a feather, *i'*, so that the half-coupling may be moved along the shaft *i* in order to couple or uncouple with the half-coupling *g*. By means of the shaft *i* power is communicated to the machinery. The shaft *a* being in motion, the disk *b'* revolves, carrying with it the disks *c c* and the half-coupling *g*.

In order to impart motion to the shaft *i*, the hand-wheel *d''* is turned so as to cause the wedge-shaped colter-wheels *f f* to enter the groove *c''* and thereby separate the disks *c c*, overcoming the pressure of the springs *e*, so that the disks no longer bear against the disk *b'*, and the motive power being removed, they cease to revolve. The half-coupling *h* is then moved along the shaft *i* by a lever or otherwise until it engages with the half-coupling *g* on the disks *c c*. The colter-wheels *f f* are then removed from the groove *c''* by turning the hand-wheel *d''* in the opposite direction, the disks *c c* again clasp the disk *b*, and are caused to revolve thereby with the shaft *a*, the half-couplings *g* and *h* imparting motion to the shaft *i*. The half-coupling *h* and shaft *i* may be released at any time in a like manner.

Although I have described the springs *e* as being spiral springs, other forms of elastic or spring pressure may be applied to the disks *c c*; nor do I wish to confine myself to the particular device of the hand-wheel *d''*, screw *d'''*, and colter-wheels *f f*, as other means—such as knife-wedges attached to a lever, &c.—may be applied to accomplish the same purpose.

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

1. The combination of a rotating wheel or disk having a friction surface or surfaces on its sides, friction disks or plates mounted loosely on the hub or shaft of the wheel or disk, and turning therewith by contact with its friction-surfaces, and devices for separating the friction-plates and permitting the wheel or disk to rotate freely between them, substantially as and for the purposes described.

2. A wheel or disk having friction-surfaces on its sides, in combination with friction disks or plates arranged on its opposite sides, which plates are free on the shaft and are elastically connected together by bolts and springs, substantially as and for the purposes described.

3. The combination of a rotating wheel or disk, friction plates or disks mounted loosely on the shaft and bearing elastically upon the opposite sides of the rotating wheel, and wedge-shaped wheels capable of being forced between

the friction-plates to open them and free the rotating wheel or disk of their clasp, substantially as and for the purposes described.

4. The combination of a rotating wheel or disk, friction plates or disks connected together and bearing on opposite sides of the rotating wheel, and a sliding clutch connected to a shaft and engaging with a clutch on one of the friction-plates, substantially as and for the purposes described.

5. The combination of the pivoted arms, carrying the wedges, screw-rods connecting their outer ends, and a screwing device for operating the rods to cause the arms to approach or recede from each other, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 24th day of May, A. D. 1882.

JOHN A. HAFNER.

Witnesses:

JAMES K. BAKEWELL,  
JAMES H. PORTE.