(No Model.)

W. H. EDDY.

FRICTION CLUTCH.

No. 285,593. Patented Sept. 25, 1883.

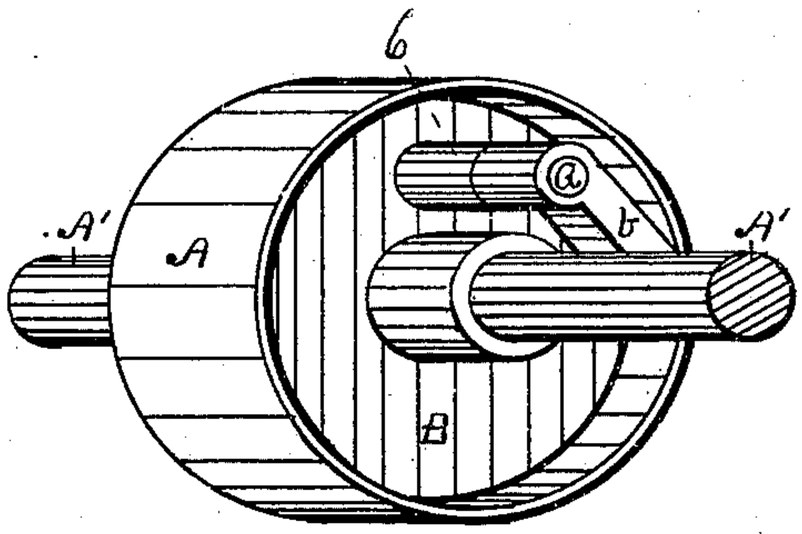

FIG. 1.

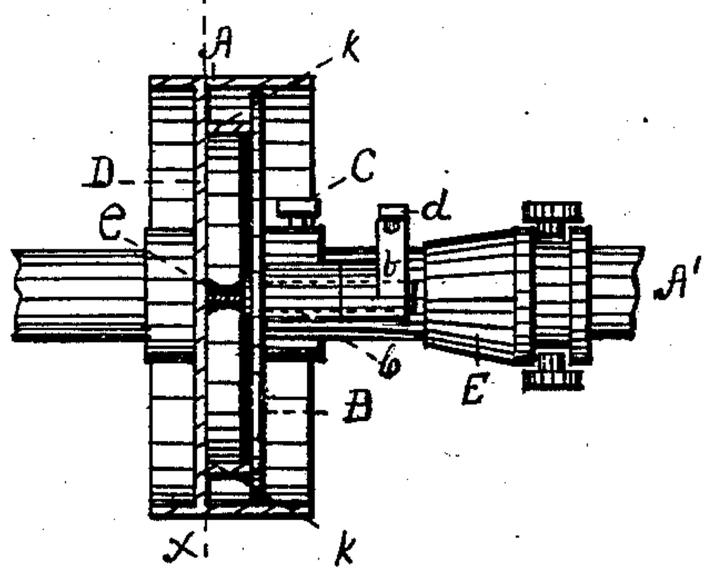

FIG. 2.

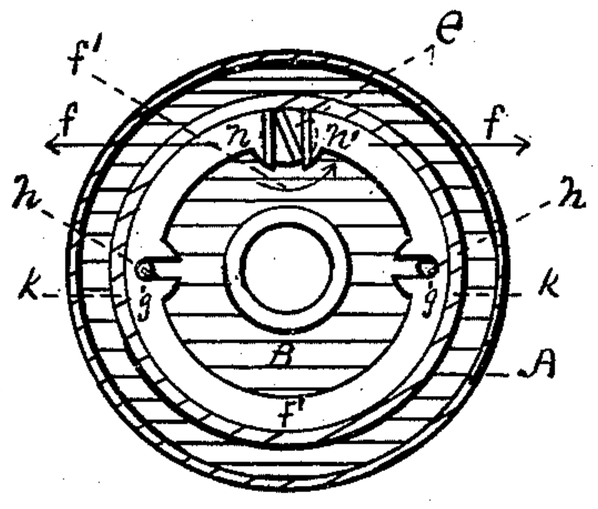

FIG. 3.

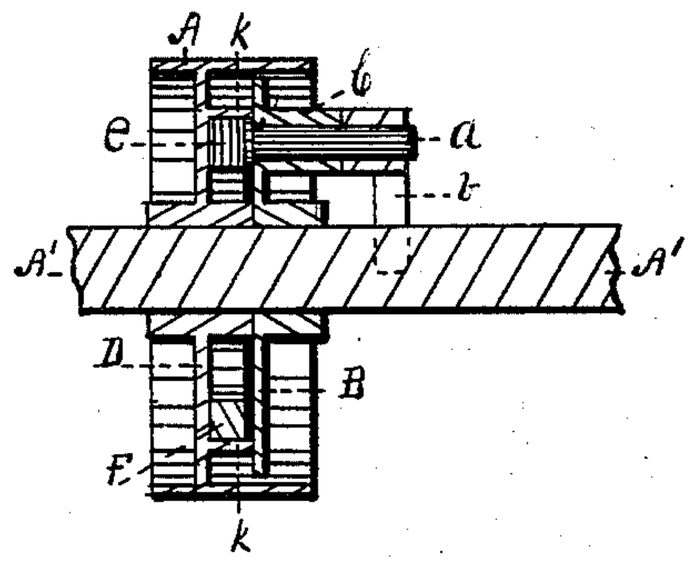

FIG. 4.

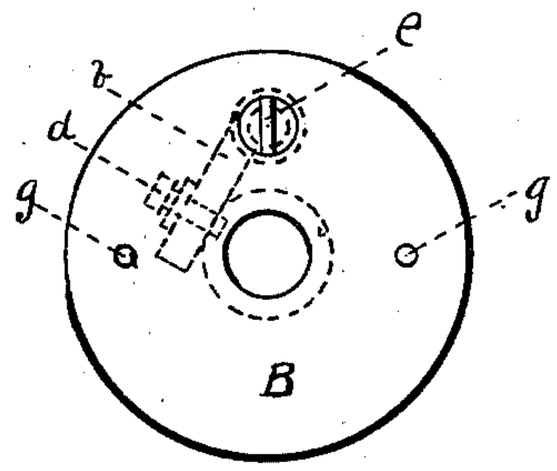

FIG. 5.

Witnesses.

H. M. Fowler

B. M. McCrohan

Inventor.

William H. Eddy,

By His Atty.

Rufus Bennett Fowler.

UNITED STATES PATENT OFFICE.

WILLIAM H. EDDY, OF WORCESTER, MASSACHUSETTS.

FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 285,593, dated September 25, 1883.

Application filed May 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. EDDY, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Friction-Clutches, of which the following is a specification, in which the nature and objects of my invention are fully set forth, and illustrated in the accompanying drawings, in which—

Figure 1 shows a perspective view of a belt-pulley containing my improved clutch. Fig. 2 represents a top view of the same, with the rim or "face" partially removed, showing the expanding friction-ring and the manner of operating it. Fig. 3 is a sectional view on line *x x*, Fig. 2. Fig. 4 a sectional view on a line dividing the shaft, and Fig. 5 shows the disk B.

Similar letters refer to similar parts in the several views.

A is a belt-pulley running loose on the shaft A′ A′. B is a disk attached to the shaft A′ by the set-screw *c*, Fig. 2. Upon the side of the disk B is an elastic metallic ring, F, cut apart at *n n′* and having on opposite sides the slots *k k*, through which the pins *g g* in the disk B, Fig. 5, pass loosely, thereby causing the ring F and disk B to rotate together. Attached to the disk B, and placed opposite the opening *n n′* in the ring F, is a hub, C, which carries the rotating spindle *a*. The inner end of the spindle terminates in a flat blade, *e*, extending between the ends *n n′* of the ring F, and the outer end has an arm or "dog," *b*, attached to the spindle *a* by a pin or set-screw and extending past the shaft A′, having in its end the adjusting-screw *d*. (Best shown by the broken lines in Fig. 5.) To the web D of the pulley A, I attach the circular flange or shell K, which incloses the elastic ring F, space being left between the two to allow the independent rotation of either without friction.

It will be readily seen that in the position of the several parts, as described, the disk B with its ring F and spindle *a* with arm *b* are attached to and will revolve with the shaft A′, while the pulley A remains at rest, or the pulley may be made to revolve and the shaft A′ remain at rest.

Sliding upon the shaft A′, and operated by any suitable shifting device, is the cone E, which may be passed beneath the arm or dog *b*, the set-screw *c* sliding upon the cone, thereby causing a partial rotation of the spindle *a* and blade *e* between the ends *n n′* of the elastic ring F, as shown in Fig. 3, in which the arrow *f′* indicates the direction of rotation, the lower edge of the blade pressing against the end *n′* and the upper edge against the end *n*, spreading them apart in the direction of the arrows *f f*, and expanding the ring F against the inner surface of the flange K on the pulley A with sufficient pressure to cause the ring and pulley to turn togther. When the cone E is removed from beneath the arm *b*, the elasticity of the ring F will bring the ends *n n′* together, disconnecting it from the flange K and reversing the motion of the spindle *a*, bringing the arm *b* in proper position to be again actuated by the cone E. In order to accomplish this, however, the blade *e* must not be turned so far as to stand at right angles to the ends *n n′*, as that would cause the elastic force of the ring to press against the edges of the blade in a line with the center of the spindle, which would obviously prevent the ends *n n′* from coming together. In order to secure the requisite expansion of the ring F with a slight rotation of the blade *e*, I increase the radial width of the ring where it is severed, so as to increase the face of the ends *n n′* and permit the use of a wider blade. In expanding the ring F the opposite edges of the blade press against the opposing faces of the ends *n n′* with opposite and equal force, producing statical or balanced pressures against the ends of the ring simultaneously, and relieving the spindle *a* from strain and wear. The expansion of the ring may be increased by means of the adjusting-screw *d*, which will allow any wear between the surface of the ring F and flange K to be taken up.

I am aware that elastic rings have been in use for many years in the construction of friction-clutches; also that a rotating spindle having an arm operated by a sliding cone on the shaft has long been a feature common to friction-clutches for the purpose of operating an elastic ring. I do not claim these features, broadly.

My invention embodies, beside the construction and arrangement of the operating parts of the clutch, two essential features, viz: op-

erating the elastic ring by a rotating device acting against both ends *n n'* of the elastic ring simultaneously and with balanced pressures, and also in causing the recoil of the elastic ring to reverse the motion of the spindle and set the arm in proper position to be actuated by the cone.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a friction-clutch, with a flange or rim, K, and an expansible elastic ring, F, inclosed therein, of a rotating blade with its axis of rotation between the opposite edges, and placed between the ends of the divided elastic ring so its edges will press against and slide upon the opposing ends of the ring, as described, and for the purpose set forth.

2. The combination, in a friction-clutch, with a flange or rim K, of an expansible elastic ring, F, with its ends *n n'* enlarged, so as to increase the radial length of the opposing faces, and a rotating-blade, *e*, placed between the ends *n n'*, and having its axis of rotation between its opposite edges, as and for the purposes set forth.

3. The combination, in a friction-clutch, of the flange or rim K, expansible elastic ring F, with slots *k k*, disk B, attached to the shaft, and having driving-pins *g g*, and the rotating blade *e*, as and for the purpose set forth.

4. The combination, in a friction-clutch, of the cut elastic ring F with ends *n n'*, rotating blade *e* on the spindle *a*, disk B, attached to the shaft and having the driving-pins *g g* entering the slots *k k* in the ring F, and hub C, carrying the spindle *a*, all arranged and operating as described, and for the purpose set forth.

5. The combination of the elastic ring F, with ends *n n'*, rotating spindle *a*, with blade *e*, extending between the ends *n n'*, and having an arm carrying an adjusting-screw, *d*, and cone E, sliding on the shaft A', as and for the purpose set forth.

WILLIAM H. EDDY.

Witnesses:
R. B. FOWLER,
GEO. E. SMITH.