(No Model.)

G. CROMPTON & H. WYMAN.

M. C. CROMPTON, Administratrix of G. CROMPTON, dec'd.

FRICTION CLUTCH.

No. 363,507. Patented May 24, 1887.

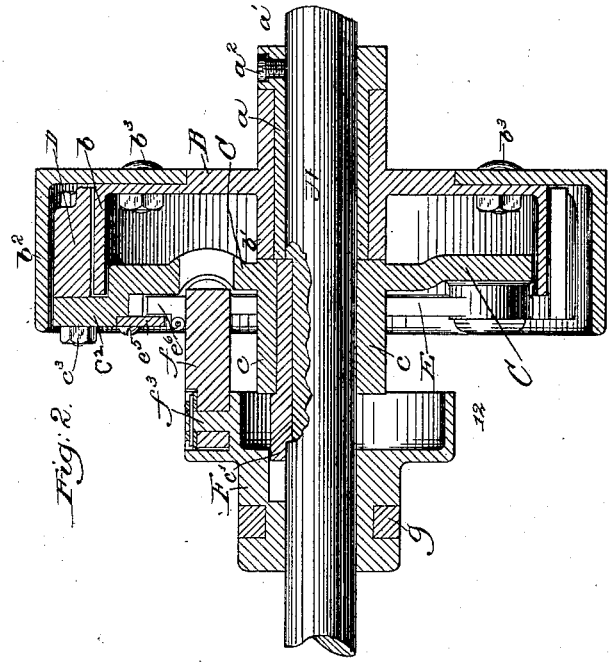

Fig. 2.

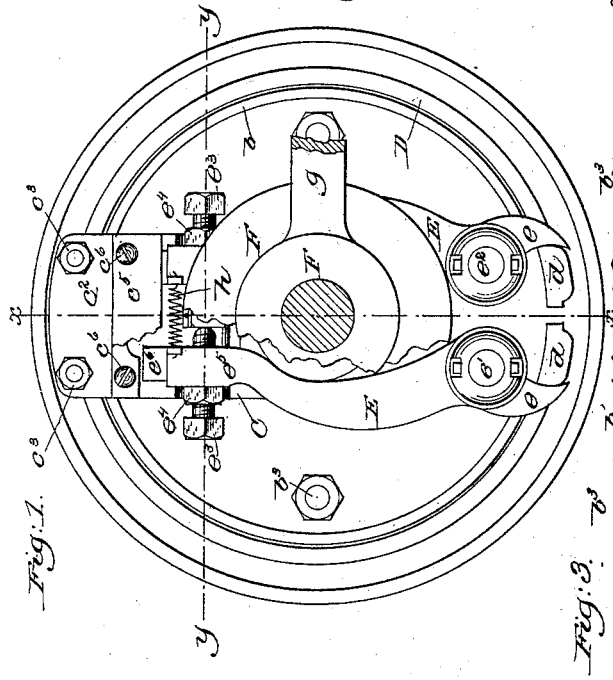

Fig. 1.

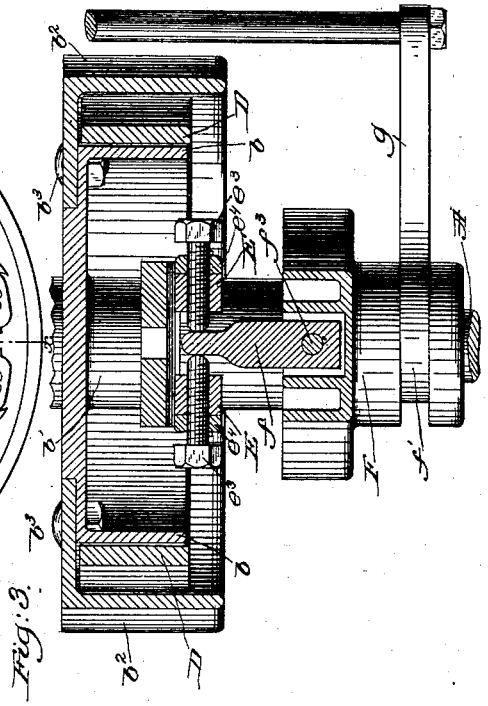

Fig. 3.

Witnesses
Fred L. Emery.
John F. C. Prinkert

Inventors.
George Crompton.
Horace Wyman.
by Crosby & Gregory Attys.

UNITED STATES PATENT OFFICE.

GEORGE CROMPTON AND HORACE WYMAN, OF WORCESTER, MASSACHUSETTS; SAID WYMAN ASSIGNOR TO SAID GEORGE CROMPTON; MARY C. CROMPTON ADMINISTRATRIX OF SAID GEORGE CROMPTON, DECEASED.

FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 363,507, dated May 24, 1887.

Application filed May 28, 1886. Serial No. 203,512 (No model.)

To all whom it may concern:

Be it known that we, GEORGE CROMPTON and HORACE WYMAN, of Worcester, county of Worcester, and State of Massachusetts, have invented an Improvement in Friction-Clutches, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention, relating to friction-clutches, consists, essentially, of a shaft provided with a loose pulley having an inner annular flange and a sleeve capable of longitudinal movement on said shaft, and provided with a pivoted wedge, combined with a strap-carrier having a strap nearly encircling said flange, and a pair of levers pivoted to the strap-carrier and having their jaws engaging the ends of the strap, whereby the wedge may be thrust between the levers to force their shanks apart and cause the strap to bind or clamp the flange of the pulley and secure rotation of the pulley with the shaft, the pivoting of the wedge enabling the pressure applied to the strap through the levers to be applied equally to both levers.

The sleeve carrying the wedge is provided with a flange having a recess to receive the pivoted end of the wedge, the flange preventing the catching of the clothing of the operator when attending a machine—as, for instance, a loom provided with a clutch such as herein described.

The loose pulley is made in two parts, to thereby enable the flange or part which is embraced by the strap to be turned at little cost.

Figure 1 shows in elevation, partly broken away, a clutch embodying our invention; Fig. 2, a central vertical section thereof on line $x\,x$, Fig. 1; and Fig. 3, a longitudinal section on line $y\,y$ of Fig. 1.

The shaft A has a sleeve, a, provided with a collar, a', which is secured to the said shaft by a set-screw, a^2, the sleeve affording a bearing for the loose pulley B, while the collar a' prevents longitudinal play of the pulley on said sleeve in one direction. The pulley has an annular flange, b, located between its hub b' and band-rim b^2, the said hub b' preferably and in the present instance being shown as cast with the pulley proper, while the band-rim b^2 encircles it, so as to leave an annular space between the same, the band-rim being attached to the vertical wall or portion of said pulley at one side thereof by the bolts b^3, as clearly shown in Fig. 2.

A strap-carrier, C, has a hub, c, which encircles and is positively secured by the key c' to the shaft A next that end of the hub b' of the pulley opposite to that contiguous to the collar a', to prevent longitudinal play of said pulley on the sleeve a, and at the same time cause said strap-carrier C to rotate with the shaft A.

The strap-carrier C is arranged, preferably, within the pulley B, between its flange b and the shaft A, and is provided at one end with an arm or extension, c^2, secured by a bolt or bolts, c^3, to a friction-strap, D, which nearly encircles the flange b, and is provided at its nearly meeting ends with studs or lateral projections d. (See Fig. 1.) These studs or projections d are engaged by the jaws e of two clamping-levers, E, pivoted, as at e' e^2, independently of each other to the strap-carrier C at or near the end opposite to that having the arm or extension c^2, the longer arms or shanks of said levers being each preferably provided with an adjusting-screw, e^3, and holding-nut e^4.

As clearly indicated in Fig. 1, the screws e^3 pass through the shanks of the levers, so that the rounded inner ends, e^5, of said screws are located adjacent to and opposite each other, to admit a wedge, f, to be projected between and to strike said ends to force them apart, and thereby move the levers E on their pivots. When the levers are thus actuated, the jaws e move toward each other, and in turn press or force the studs d on the ends of the friction-strap D in the same direction, whereupon the said strap will be caused to bind or clamp the annular flange b of the pulley B, and thus put the said pulley in clutch with the carrier, to rotate in unison with the shaft. The wedge is pivoted by the pin f^3 to the shifting sleeve F, loose on the shaft A, the said sleeve having an annular groove, f', to receive one end of the shifter g, in usual manner.

The screw e^3 in the shanks of the levers E

may be adjusted therein to compensate for wear, and then be held or retained in adjusted position by the nuts e^4.

We have shown a coiled spring, h, attached to the shanks of the levers E, to draw said shanks toward each other and facilitate the slackening of the strap D on the flange b when the wedge is sufficiently withdrawn from between the adjusting-screws e^3 to permit such slackening of parts.

The levers E are each provided with an offset or shoulder, e^6, at the ends nearest the adjusting-screws e^3, which offset projects into the space behind the depending plate c^5, secured by screws c^6 to the extension c^2, the purpose of such construction being to prevent lateral play of the levers, because of the thrust or withdrawal of the wedge with relation to said levers.

In order to insure the proper amount of friction between the strap and the flange b, and also to compensate for wear between the said parts, the screws e^3 have to be adjusted in the levers E, and to do this uniformly, so as to insure like pressure by the entire surface of the strap, would require very considerable care were the wedge rigidly fixed to the sleeve F; but to enable the pressure of the clamp to be uniform throughout, notwithstanding unequal protrusion of the screws e^3, the wedge has been pivoted.

Making the part b^2 separate from the part B enables the outer portion or periphery of the rim b to be more conveniently turned true in a lathe.

The sleeve F has a flange, 12, which forms an effectual guard to prevent anything being caught by the wedge in the rotation of the hub.

We claim—

1. A shaft provided with a loose pulley having an inner annular flange, and a sleeve capable of longitudinal movement on said shaft, and provided with a pivoted wedge, combined with a strap-carrier secured to the shaft and having a strap nearly encircling said flange, and a pair of levers pivoted to said carrier and having jaws engaging the ends of the strap, as and for the purpose set forth.

2. A shaft provided with a loose pulley having an inner annular flange, and a sleeve capable of longitudinal movement on said shaft and provided with a pivoted wedge, combined with a strap-carrier secured to the shaft and having a strap nearly encircling said flange, and a pair of levers pivoted independently of each other to the carrier, and having jaws at one end to engage the ends of the strap and oppositely-arranged adjusting-screws at the other end, as and for the purpose specified.

3. A strap-carrier having an extension at one end to permit the attachment thereto of a strap, as specified, the said extension being provided with a depending plate, e^5, combined with a pair of levers pivoted to said carrier, and each having an offset or shoulder projecting between the plate and carrier, as and for the purpose specified.

4. In a friction clutch, a shaft, the pulley B, loose thereon, provided with a flange, b, and a separate band-rim, b^2, attached thereto, as described, combined with a strap-carrier secured to the said shaft, and a strap nearly encircling the said flange b, and secured to the said strap-carrier, a pair of levers, E E, and a wedge to actuate the same, all substantially as described.

5. The strap-carrier, the levers E E, and the strap D, having a projection, d, combined with the wedge f, and the longitudinal sleeve F, having the flange 12, to operate substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEO. CROMPTON.
HORACE WYMAN.

Witnesses:
J. B. SYME,
JUSTIN A. WARE.