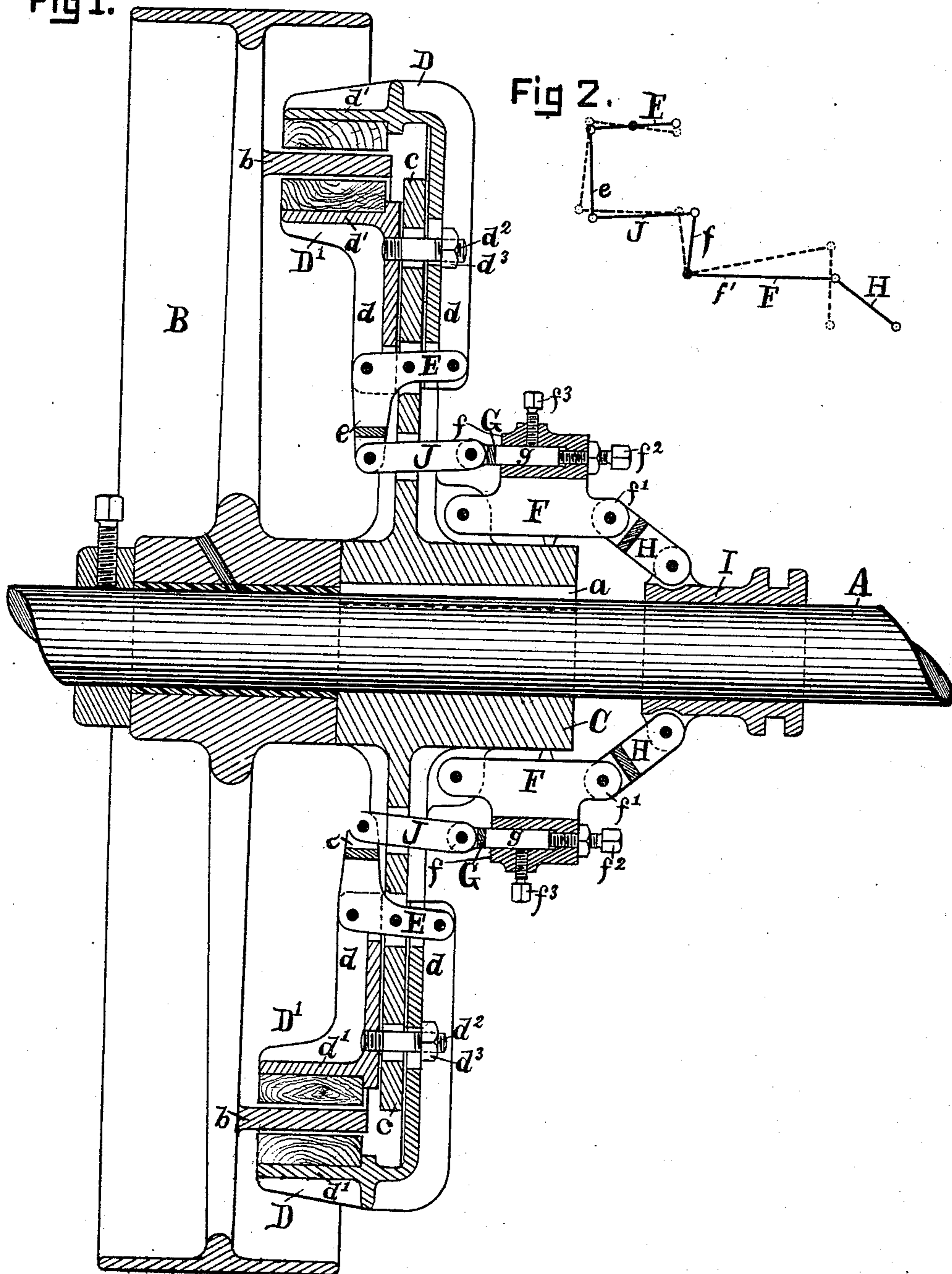


L. J. HIRT.
FRICTION CLUTCH.

Patented Aug. 19, 1890.

Fig 1.



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FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 434,445, dated August 19, 1890.

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To all whom it may concern:

Be it known that I, LOUIS J. HIRT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Friction-Clutches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a central sectional view of my improved clutch in its best form. Fig. 2 is a diagram of the geometric lines of the clutch.

My invention relates to that class of friction-clutches in which the jaws are arranged in pairs mounted on opposite sides of a radial clutch-arm, which jaws are pivotally connected on opposite sides of its pivot to a lever, which is pivoted to said clutch-arm, whereby said jaws are moved simultaneously toward or from an interposed cylindric pulley-flange for the purpose of grasping or releasing the same.

The object of my invention is to provide adjustable mechanism whereby the lever with which the jaws are connected is moved positively in both directions—that is to say, in direction which causes engagement of the jaws with the flange and in the direction which causes them to release said flange.

To this end it consists in the construction and combination of parts herein described and shown, and pointed out definitely in the claims.

I will now proceed to describe the embodiment of my invention which the drawings show.

Referring to the parts by letter, A represents a shaft, and B represents an independently-revoluble pulley mounted concentric with said shaft and provided with a concentric cylindric flange *b*.

C represents a clutch-frame rigidly secured to the shaft by a key *a* or other appropriate means. This clutch-frame is provided with as many radial arms *c* as it is desired to employ clutch systems—that is to say, pairs of jaws and their operating mechanism.

D represents the outer and D' the inner clutch members. These clutch members are of a well-known type and consist of an inwardly-directed shank *d* and an overhanging

jaw *d'*. The shanks *d d* are mounted upon opposite sides of the clutch-arm in such manner that they are adapted to slide lengthwise of said arm. The means shown in the drawings, whereby the jaw-shanks are held against the clutch-arm and this sliding movement permitted, consist of a bolt *d²*, secured to one jaw-shank and passing through a slot in the clutch-arm and through another slot in the other jaw-shank, and a nut *d³*, which screws onto the end of said bolt. Tongue-and-groove connections between the jaw-shanks and the clutch-arm, or any other equivalent connections, may be employed instead of that above described to hold the jaw-shanks against the clutch-arm and permit them to move lengthwise thereof.

E represents a lever pivoted near its center to the clutch-arm and pivotally connected on opposite sides of its central pivot with the two jaw-shanks *d*. This lever E is provided with an angle-arm *e* extending inward toward the shaft.

F represents an angle-lever pivoted to the clutch-frame; and one arm *f'* of this lever is connected by means of a link H with a sliding sleeve I, whereby said lever F is rocked in both directions by the movement of said sleeve. The other arm *f* of said lever is connected by a freely-swinging link J with the angle-arm *e* of the lever E.

The operation of the device thus described is as follows: When the sleeve I is moved toward the clutch-frame, the lever F is rocked, and this movement is transmitted through the link J to the lever E, by the rocking of which the jaws of the clutch members are moved simultaneously toward each other and the interposed cylindric flange *b*. When the sliding sleeve is moved in a contrary direction, a reverse movement of all the parts ensues and the jaws are positively drawn apart. In order that the clutch may be practical, some means for adjusting the throw of the jaws must be provided, so that the clutch may continue to be operative as the jaw-faces or the flange *b* wear away. This adjustment may consist in mechanism whereby the length of the angle-arm *e*, or of the angle-arm *f*, or of the link J, (represented in the diagram of Fig. 2 by similar letters,) may be varied, or

in mechanism whereby the inclination of either of the arms e or f with the other arm of the angle-lever of which it is a part may be varied. The adjustment is secured in the clutch shown in the drawings by means which substantially change the inclination of the angle-arm f to the arm f' . The particular mechanism for securing this effect, which the drawings show, is as follows: A movable piece G , to which one end of the link is pivoted, is adjustably connected with the angle-arm f of the lever F . This piece G is provided with a square shank g , which fits into a socket in the arm f and substantially parallel to the arm f' . A set-screw f^2 screws into the opposite end of the arm f' at a point where its end will abut against the end of the shank g , whereby the piece G may be crowded forward as the screw is screwed in. The set-screw f^3 prevents the shank g from being drawn out of its socket when the clutch-jaws are being opened. This means of securing the adjustment is of advantage, because the greatest strain upon said shank g comes when the clutch-jaws are being closed, and this strain is in the nature of an end-thrust directly against the end of the set-screw f^2 . In opening the clutch there is very little strain upon the shank, and the set-screw f^3 is sufficient to hold it in place.

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

1. In a friction-clutch, in combination, a cylindric flange, a clutch-arm, a pair of clutch members mounted thereon, an angle-lever centrally pivoted to said arm and pivotally connected on opposite sides of its central pivot to the clutch members, respectively, an angle-lever pivotally connected with the clutch-frame, a freely-swinging link connected with one arm of the last-named lever and with the angle-arm of the other lever, a sliding sleeve, and a link, substantially as and for the purpose specified.

2. In a friction-clutch, in combination, a cylindric pulley-flange, a clutch-arm, a pair of clutch members mounted thereon, a lever

pivoted centrally to the clutch-arm and on opposite sides of said central pivot with the clutch members, respectively, an inwardly-directed angle-arm to said lever, an angle-lever pivoted to the clutch-frame, a freely-swinging link connecting one arm of the last-named lever with the angle-arm above named, a sliding sleeve, a link, and mechanism adapted either to vary the length of the first-named link or the length or the inclination of either of the two angle-arms with which said link is connected, substantially as and for the purpose specified.

3. In a friction-clutch, in combination, a cylindric pulley-flange, a clutch-arm, a pair of clutch members mounted thereon, a lever centrally pivoted to the clutch-arm and on opposite sides of said central pivot with the clutch members, respectively, an inwardly-directed arm secured to said lever, an angle-lever pivoted to the clutch-frame, a piece adjustably secured to one arm of said angle-lever, a freely-swinging link connected with said piece and the inwardly-directed arm above named, a sliding sleeve, and a link, substantially as and for the purpose specified.

4. In a friction-clutch, in combination, a cylindric flange, a clutch-arm, a pair of clutch members mounted thereon, a lever centrally pivoted to said arm and on opposite sides of the central pivot to the clutch members, respectively, an inwardly-directed angle-arm secured to said lever, a lever pivotally connected to the clutch-frame having an angle-arm extending from its upper side, a socket in said arm, a piece having a shank fitted to said socket, a set-screw adapted to thrust endwise against said shank, a second set-screw for preventing the withdrawal of said shank, a freely-swinging link connecting said piece and the inwardly-directed angle-arm first named, a sliding sleeve, and link, substantially as and for the purpose specified.

LOUIS J. HIRT.

Witnesses:

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