(No Model.)

E. L. BABCOCK & E. D. SCHMITT.

FRICTION CLUTCH.

No. 465,106. Patented Dec. 15, 1891.

Fig. 2

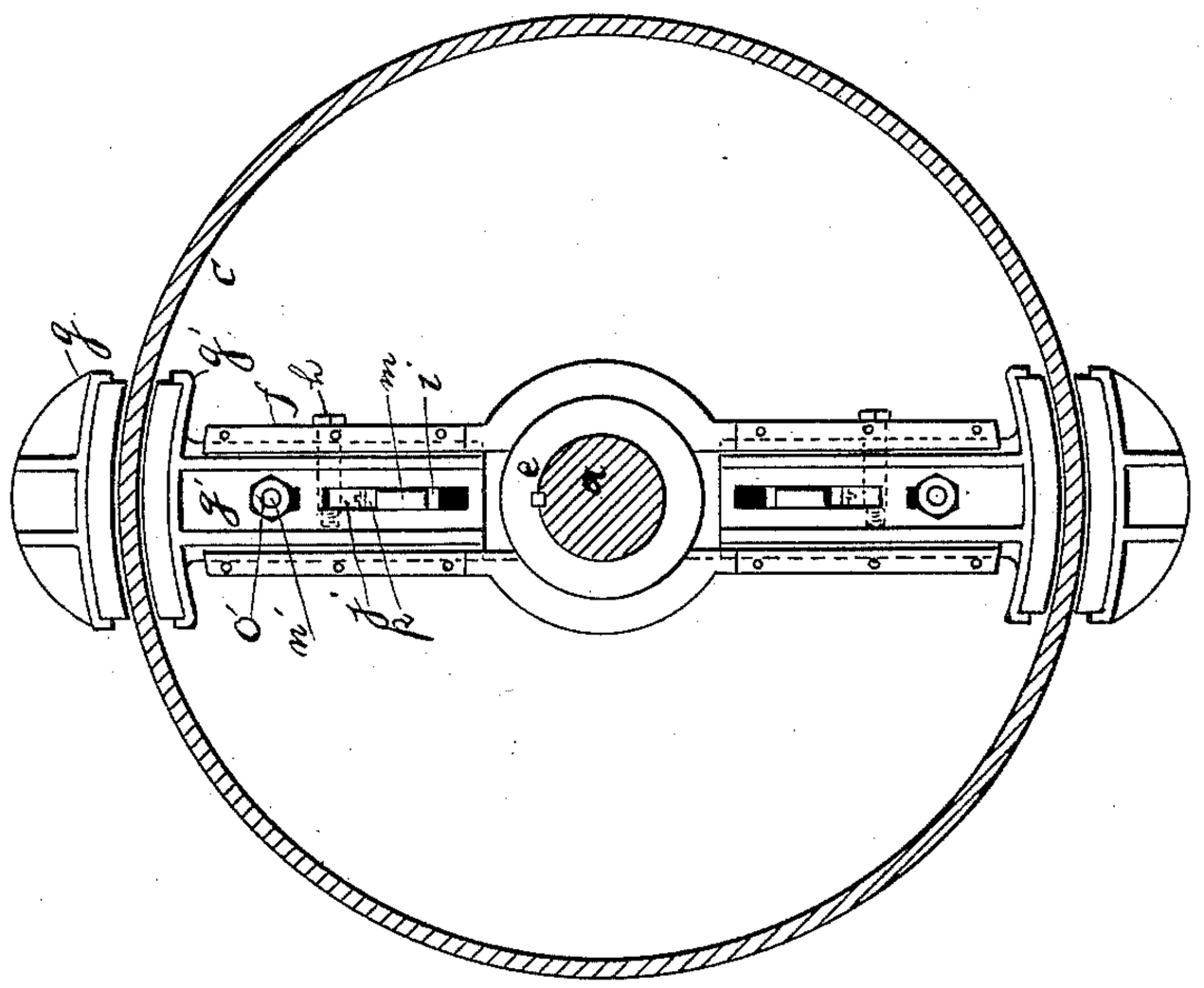
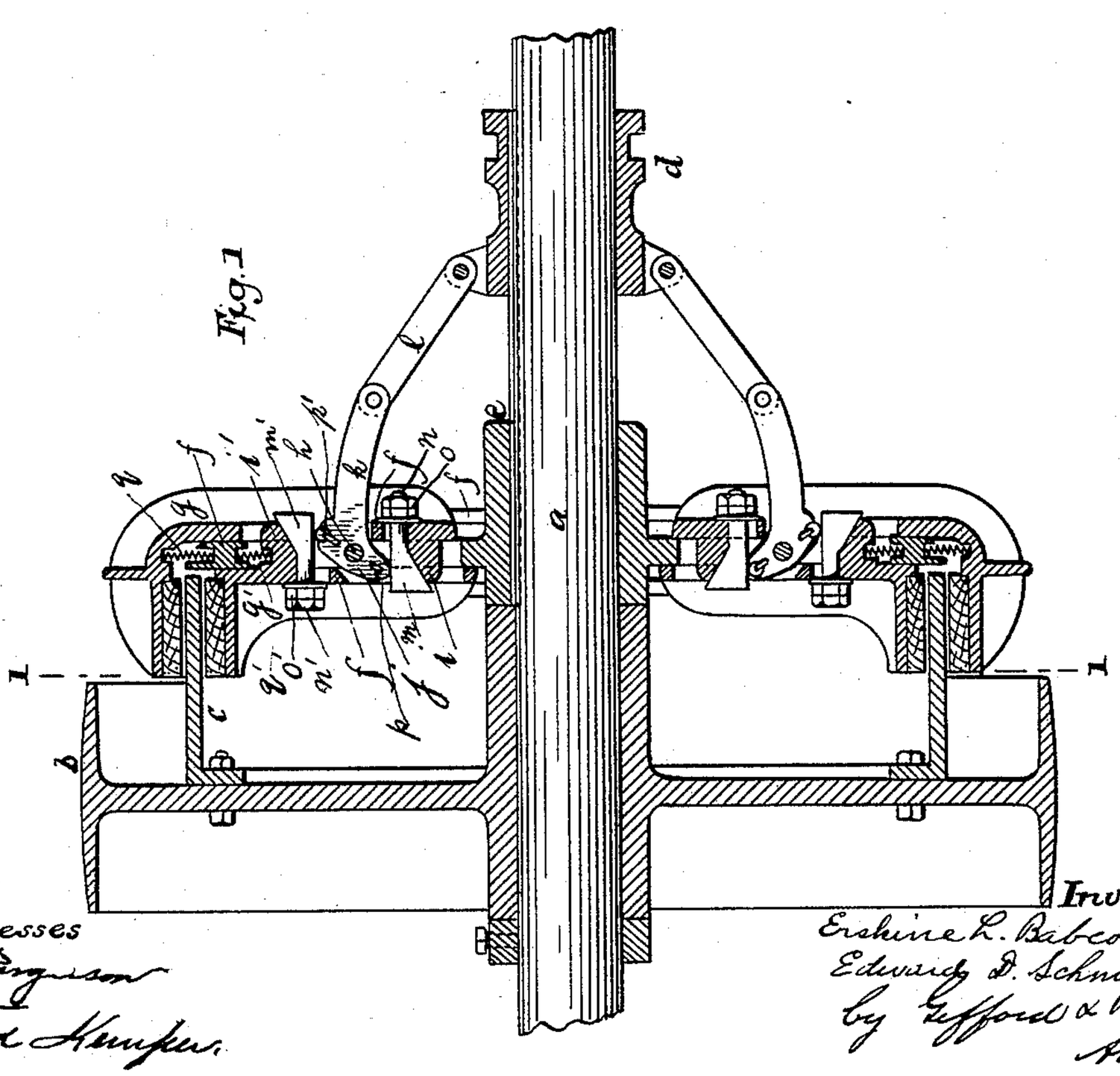


Fig. 1



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UNITED STATES PATENT OFFICE.

ERSKINE L. BABCOCK AND EDWARD D. SCHMITT, OF CUYAHOGA FALLS, OHIO.

FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 465,106, dated December 15, 1891.

Application filed April 11, 1889. Serial No. 306,836. (No model.)

To all whom it may concern:

Be it known that we, ERSKINE L. BABCOCK and EDWARD D. SCHMITT, both of Cuyahoga Falls, Ohio, have invented a new and useful Improvement in Friction-Clutches, of which the following is a specification.

Our invention relates to that class of friction-clutches in which a friction-flange is grasped by a pair of jaws which move inversely and radially upon a clutch-arm. Examples of this class are shown in Letters Patent of the United States No. 383,104, dated May 22, 1888; No. 367,856, dated August 9, 1887, and No. 308,872, dated December 9, 1884.

It will be noticed that in the patents above referred to the two jaws were connected together by a rocker, and that the bearing-point of each jaw upon the rocker was upon the same side of the pivot or center of motion of the rocker as the jaw itself. Consequently, when the end of the rocker nearest the shifting-lever was moved up the jaws were opened and when it moved down the jaws were closed. Thus, to the end that the movement of the sleeve toward the clutch should close the jaws it was necessary that the mechanism communicating motion from the sleeve to the rocker should be carried through the clutch-arm, so as to deliver motion in an upward direction upon the arm of the rocker opposite to the sleeve.

The object of our present invention is to so arrange the parts that the mechanism communicating the motions of the sleeve to the jaws may be located principally on the side of the clutch-arm next the shifting-sleeve.

Our invention consists in making a projection upon each jaw extending toward the other jaw sufficiently beyond the pivot of the rocker, so that the rocker may act upon each projection on the opposite side of its pivot or center of motion from the jaw to which the projection belongs and thus produce the same motion of the jaws as heretofore by a reverse movement of the rocker.

Having arranged for the relative operation of the jaws and rocker in this manner, mechanism is of course employed for connecting the sleeve with the rocker; but, although we have illustrated a mechanism which will answer for this purpose, we do not wish to be understood as limiting ourselves to this form, since other forms are well known in the art by which such connection might be accomplished.

In the drawings, Figure 1 is a longitudinal section through the axis of the pulley and clutch. Fig. 2 is a transverse section through the line 1 1 of Fig. 1.

a is the shaft; *b*, the pulley.

c is the friction-flange.

d is the shifting-sleeve.

e is a hub keyed to the shaft.

f is the clutch-arm.

g is the outer jaw, and *g'* the inner jaw.

h is the pivot or center of motion of the rocker.

i is a piece projecting from the outer jaw-shank *g* below the rocker toward the pulley. The clutch-arm and the jaw *g'* are cut away sufficiently to give this projecting piece free radial movement to the extent required by the jaw.

i' is a piece projecting above the rocker from the inner jaw-shank *g'* toward the shifting-lever. The clutch-arm and the opposite jaw are cut away sufficiently to give this projecting piece the radial motion required by its jaw.

j is the rocker, preferably in the inclined position shown, bearing through friction-rollers at one extremity against the projection *i'* of the jaw *g'* and at the other extremity against the projection *i* of the jaw *g*.

The projections *i* and *i'* overlap and extend beyond the center of motion of the rocker, so that the direction of the force exerted upon the projection *i'* passes on the opposite side of the center of motion from the jaw *g'*, and the direction of the force operating upon the projection *i* passes on the opposite side of the center of motion from the jaw *g*, thus causing the motion of the rocker, Fig. 1, to the right to permit the jaws to open and motion to the left to cause the jaws to close.

An arm *k* is provided on the rocker extending on the side toward the shifting-lever and its extremity may be connected with the shifting-sleeve by means of the link *l*.

Now it will be observed in the operation of this clutch that when the shifting-sleeve is moved toward the clutch the jaws will be closed,

and that, if the parts are arranged as shown, when the shifting-sleeve is brought up into contact with the hub *e* it will bring the lower extremity of the lever *l* slightly beyond the vertical line from the center of the shaft to the upper extremity, thus locking the clutch in a closed position. Likewise each extremity of the rocker may be brought slightly beyond the vertical line from the center of the shaft through its center of motion, so as to cause a further locking of the parts in a closed position. Means for adjustment may be provided, such as the pieces *m* and *m'*, which are each formed, on the side opposite that on which the rocker *j* bears, with an inclined surface in contact with a correspondingly-inclined surface upon the projection *i* or *i'*, as the case may be, so that by moving these inclined surfaces upon each other the position of the bearing-surface may be adjusted radially. The pieces *m* and *m'* are mounted in slots in the projections *i* and *i'*, respectively, and provided with the projecting screws *n n'* and the jam-nuts *o* and *o'*, whereby the pieces *m* and *m'* may be adjusted back or forth to vary the distance of the bearing-surface of one jaw-shank upon rocker from that of the other. The rocker may be provided at its bearing-surfaces with friction-rollers *p* and *p'*, if desired. Springs *q* and *q'* may be provided between each jaw and a shoulder on the clutch-arm for causing them to release the flange.

We claim—

1. In a clutch, in combination, a friction-flange cylindrical to the shaft, inversely-moving members provided with jaws adapted to grasp the flange inside and outside, a clutch-arm upon which said members move, a piece projecting from each of said members toward the other beyond the radial line through the center of motion of the rocker, a rocker interposed between said projecting pieces and having bearings thereon beyond said radial line, a shifting-sleeve, and mechanism whereby motion may be communicated from the shifting-sleeve to the rocker, substantially as described.

2. In a clutch, in combination, a friction-flange cylindrical to the shaft, inversely-moving members provided with jaws adapted to grasp the flange inside and outside, a clutch-arm upon which said members move, a piece projecting from each of said members toward the other, and a rocker interposed between said members and adapted to rotate from a position inclined to its bearing-surfaces on said projecting pieces to a position at right angles thereto, whereby said rocker operates to lock the jaws closed, and mechanism whereby said rocker may be rotated, substantially as described.

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