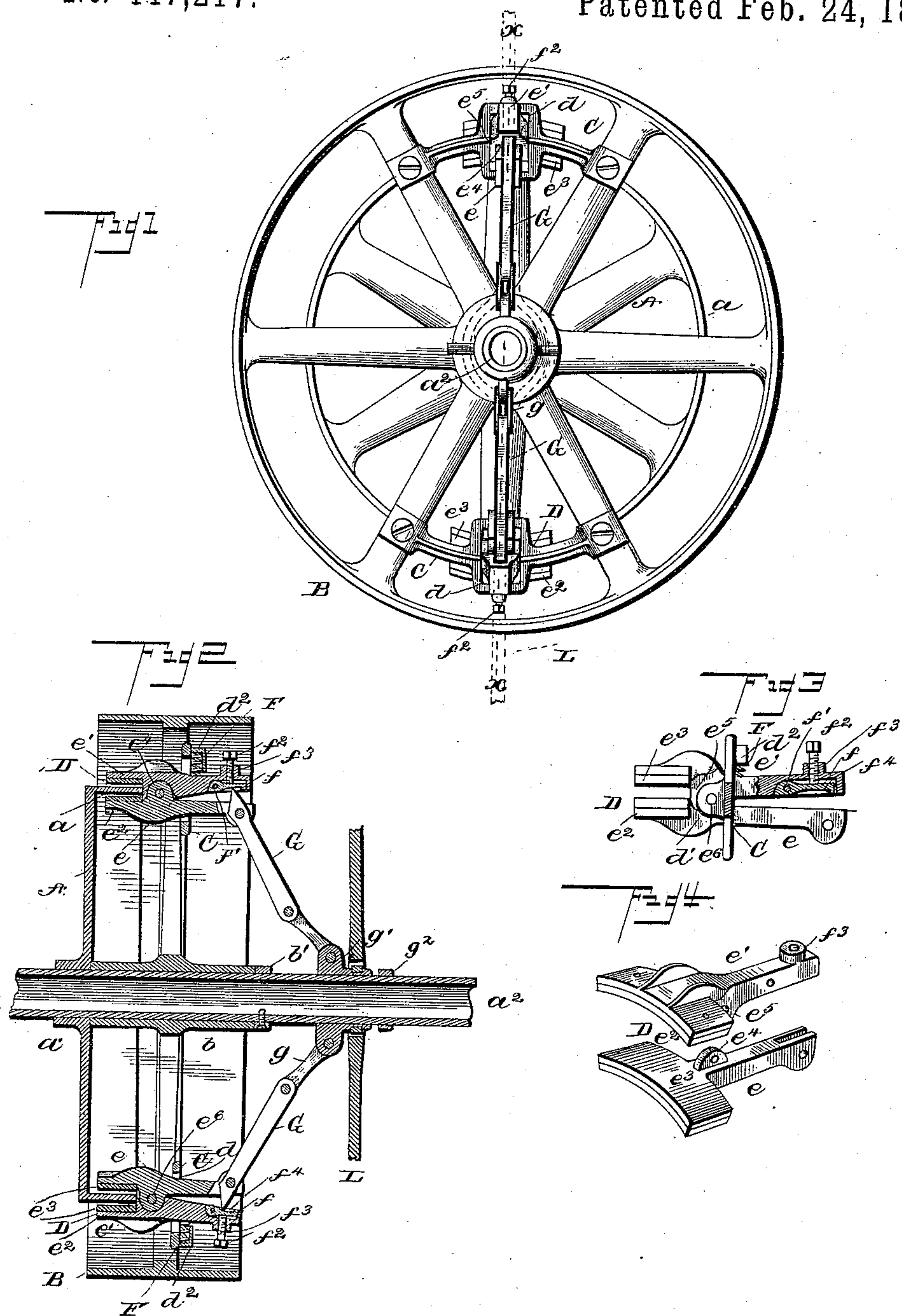


(Model.)

C. H. WATEROUS, Jr. & J. N. PEEL.
FRICTION CLUTCH PULLEY.

No. 447,217.

Patented Feb. 24, 1891.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES H. WATEROUS, JR., AND JAMES N. PEEL, OF BRANTFORD, CANADA.

FRICTION-CLUTCH PULLEY.

SPECIFICATION forming part of Letters Patent No. 447,217, dated February 21, 1891.

Application filed January 4, 1890. Serial No. 335,939. (Model.) Patented in Canada February 4, 1890, No. 33,584.

To all whom it may concern:

Be it known that we, CHARLES H. WATEROUS, Jr., and JAMES N. PEEL, subjects of the Queen of Great Britain, residing at Brantford, in the county of Brant, Province of Ontario, Canada, have invented certain new and useful Improvements in Friction-Grip Pulleys, of which the following is a specification, reference being had therein to the accompanying drawings, and for which we have secured Letters Patent in Canada, No. 33,584, dated February 4, 1890.

This invention pertains to certain new and useful improvements in friction-grip pulleys, having for its object the production of a cheap, simple, and highly-efficient pulley of this class, by which the clutch connection can be readily made and the wear of the parts is reduced to a minimum, and also means by which all friction or wear can be compensated for and the parts readily replaced when worn.

The invention comprises one or more sets of friction-grips carried by a pulley upon a revolving shaft and designed to be engaged with a friction-flange of a wheel also upon said shaft, said grip or grips being tightened or loosened by a lever or levers connected thereto and to a sliding sleeve on the shaft.

The invention also comprises the detail construction, combination, and arrangement of parts substantially as hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of our improved pulley. Fig. 2 is a vertical sectional view thereof on the line $x x$. Fig. 3 is an enlarged detail view of one series of gripper-arms, parts being in section. Fig. 4 is a view of the gripper-arms detached.

Referring to the drawings, A designates a small wheel having a projecting flange a and a collar a' , which is firmly keyed to the revolving shaft a^2 , with which it revolves.

B is a large loose driving-pulley, provided with a hub or sleeve b , which is held on shaft a^2 by the hub of wheel A at one end and a collar b' , fast with said shaft, on the other end.

C designates a slightly-curved yoke or bracket rigidly secured at its ends to two spokes of pulley B; or it may be formed in-

tegral therewith, if desired. This yoke or bracket is provided with a central opening d , parallel ears d' , projecting from one face thereof, and a boss or enlargement d^2 , formed with the opposite face.

The friction-grip D consists of inner and outer lever-arms $e e'$, having widened curved ends e^2 , to the inner opposite faces of which are rigidly secured curved blocks e^3 , of wood or other material, which blocks are designed to bear upon the inner and outer surfaces of the flange of wheel A. These blocks are preferably of hard maple wood secured to the arms with the grain endwise to the frictional contact. The inner lever-arm e is provided with a central ear e^4 , and the outer lever-arm e' with two parallel ears e^5 between which ear e^4 is designed to be placed, a pivot-bolt e^6 passed through apertures of said ears serving as a fulcrum for the lever-arms. Said pivot-bolt e^6 is also passed through the apertured ears d' of the yoke or bracket C. In a groove or slot in the outer end of lever-arm e' is an adjustable block f , pivoted at its inner end by a stud or bolt f' , its outer end being capable of being forced outward by a set-screw f^2 , working in a threaded boss f^3 of lever-arm e' . A groove or recess f^4 is formed in the outer surface of this block f . A coil-spring F is located in the boss or enlargement d^2 and bears upon the outer end of lever-arm e' .

G is the grip-lever, which is fulcrumed in the slotted end of the inner lever-arm e , its inner end being connected by links g to a sliding sleeve g' on shaft a^2 . To this sleeve g' is secured an ordinary operating-lever L, and to shaft a^2 is keyed a collar g^2 to limit the movement of said sliding sleeve. The extreme outer end of this grip-lever G extends beyond lever-arm e and is designed to be always in contact with block f , the spring F bearing on arm e' , serving to hold said block continuously against the end of said lever. When the grip is not in engagement with the flanged wheel, the end of lever G is extended into the groove f^4 of block f , so as to permit of the inward movement of this end of lever-arm e' under the action of the spring bearing thereon.

We have shown in the drawings two sets of grips located at diametrically-opposite points

on the pulley; but it is obvious that, if desired, one or any number of such grips may be employed, any multiplicity thereof merely requiring that the respective grip-levers be connected at their inner ends to the sliding sleeve.

In practice by forcing the sliding sleeve toward the loose pulley by the lever L the grip-lever G will be passed slightly beyond a central diametrical line, causing its outer end to press against the adjustable end of block *f* in the outer lever-arm *e'*, and drawing inwardly the end of the inner lever-arm *e* thus closes the friction grip or jaw on the flange of the wheel, whereby the pulley is firmly locked to said wheel and the sliding sleeve is relieved of all strain. By adjusting the set-screw in the end of the outer lever-arm *e'* any desired strain or tension can be placed upon the frictional bearing and all wear can be readily compensated.

The advantages of our invention will be apparent to those skilled in the art, and it will be especially observed that, in addition to those hereinbefore specified, when the pulley is not in engagement with the wheel it, together with all the grip mechanism, remains idle, thus avoiding wear and friction of the parts.

The manner hereinbefore described of carrying out our invention is after the preferred form; but it is obvious that changes may be made in the invention without departing from the spirit thereof.

We claim as our invention—

1. The combination, with a wheel having a flange, of a pulley, a friction-grip comprising inner and outer lever-arms, and an operating-lever connected to said inner lever-arm and having its end engaging said outer lever-arm, closing the contact ends of said lever-arms on said flange, as set forth.

2. The combination, with a fast wheel, of a loose pulley, a frictional grip comprising inner and outer lever-arms having widened contact ends carrying removable blocks, the yoke or bracket to which said lever-arms are pivoted, the spring bearing on said outer lever-arm, and the operating-lever connected to one of said lever-arms and bearing against the end of the other lever-arm, substantially as set forth.

3. The combination, with a fast wheel, of a

loose pulley, a friction-grip comprising inner and outer lever-arms having widened contact ends, an adjustable block secured in the end of said outer lever-arm, the yoke or bracket to which said lever-arms are pivoted, and the grip-operating lever pivoted to one end of said inner lever-arm and engaging said adjustable block, substantially as set forth.

4. The combination, with a fast wheel, of a loose pulley, a friction-grip comprising inner and outer lever-arms having widened contact ends, an adjustable block pivotally secured in said outer lever-arm and having a groove or recess, a set-screw bearing against the free end of said block, the operating-lever connected to said inner lever-arm and having its end in contact with said block, and the sliding sleeve to which said lever is connected, substantially as set forth.

5. The combination, with a fast wheel having a flange, of a pulley, the yoke or bracket secured to said latter pulley and having a boss or enlargement and parallel ears, the friction-grip comprising inner and outer arms having ears fulcrumed by a pin or bolt to said former ears, the adjustable lock in one end of said outer arm, the set-screw bearing thereon, the spring located in said boss or enlargement, the operating-lever fulcrumed on said inner arm and having its end in contact with said block, the sliding sleeve, and the connecting-links, substantially as set forth.

6. The combination, with a wheel having a flange, of a pulley having a pair of friction grip-arms pivotally secured thereto and secured together, said arms acting as levers, a sliding collar, and an operating-lever connected to one of said lever-arms and to said collar, as set forth.

7. The combination, with a wheel having a flange, of a pulley, two lever-arms having their contact ends in juxtaposition to said flange for engagement therewith, the sliding collar, and lever connection between the latter and said lever-arms for forcing said lever-arms apart at one end and toward each other at the other end, as set forth.

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