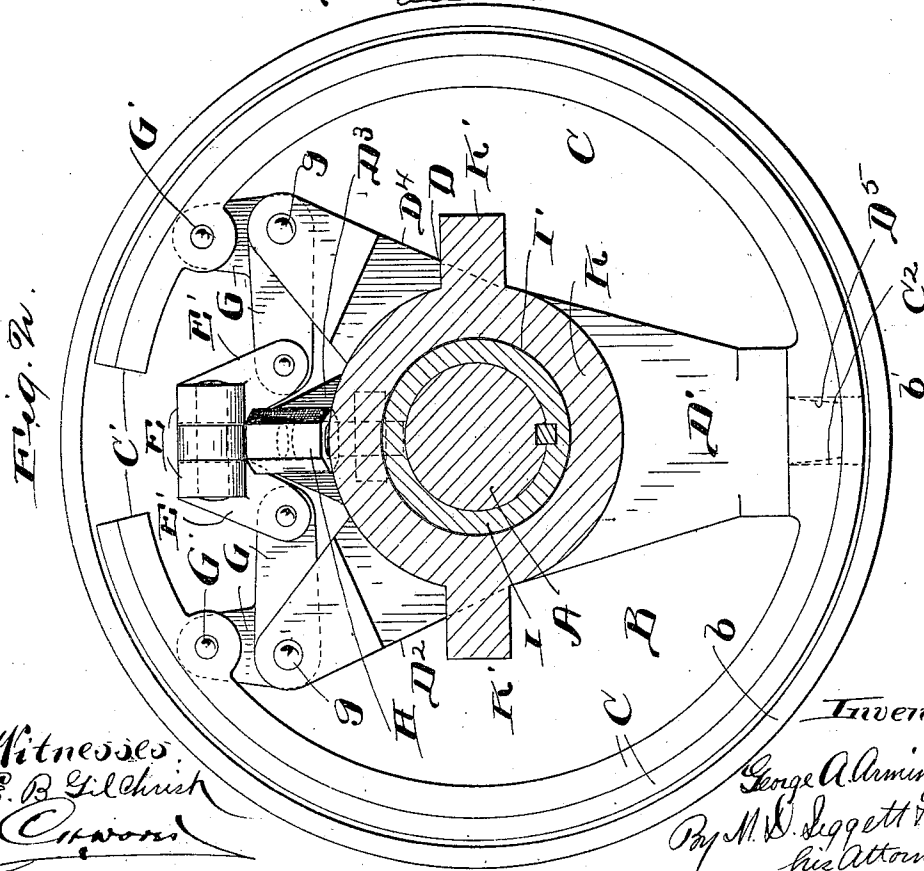
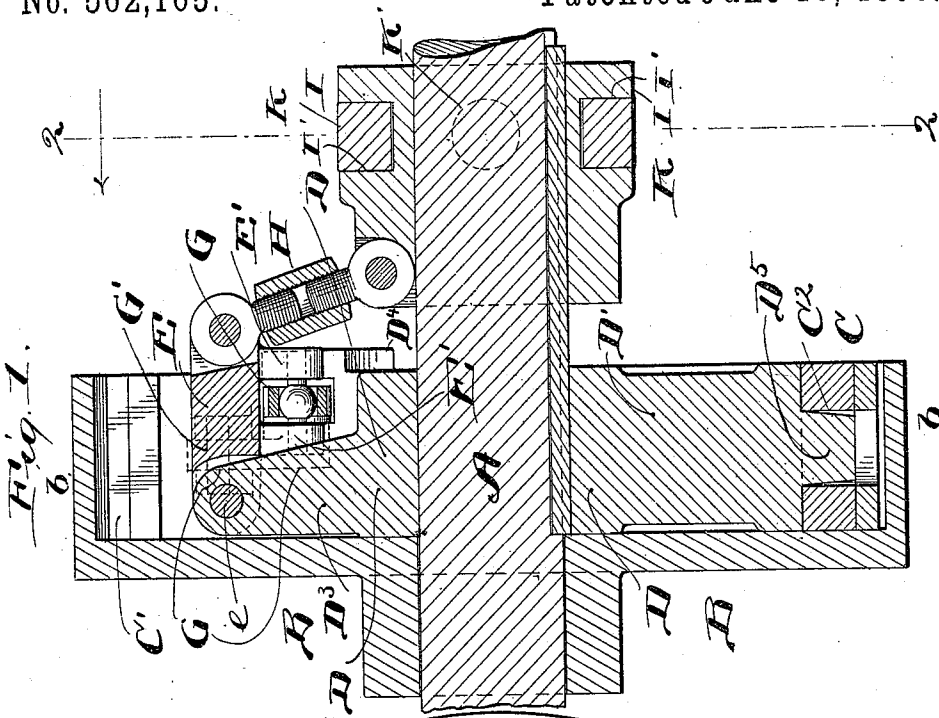


(No Model.)

G. A. ARMINGTON.
FRICTION CLUTCH.

No. 562,165.

Patented June 16, 1896.



Witnesses:
E. B. Gilchrist
C. W. ...

Inventor:
George A. Armington
By M. D. Siggott & Co.
his Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE A. ARMINGTON, OF CLEVELAND, OHIO, ASSIGNOR TO THE PHOENIX
IRON WORKS COMPANY, OF SAME PLACE.

FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 562,165, dated June 16, 1896.

Application filed October 28, 1895. Serial No. 567,128. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. ARMINGTON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Friction-Clutches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in friction-clutches wherein is employed a friction-shoe extending circumferentially of and adapted to engage the inner surface of the peripheral shell of the pulley or wheel between which and the supporting-shaft the clutch is adapted to establish and interrupt operative connection, the object being to provide a durable, simple, and comparatively inexpensive mechanism whereby the friction-shoe, when the latter is rendered operative, is caused to frictionally engage the pulley or wheel along its entire or approximately entire circumferential surface.

With this object in view, my invention consists in certain features of construction and combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, in central vertical section, of a clutch embodying my invention. A portion of a lever G is also shown in section in this figure to more clearly show the connection of said lever with radially-tilting lever E. Said figure also shows the pulley and shaft between which the clutch is adapted to establish and interrupt operative connection. Fig. 2 is a vertical section on line 2 2, Fig. 1, looking in the direction of the arrow.

Referring to the drawings, A designates a shaft, and B a pulley or wheel loosely mounted upon the shaft and provided with a peripheral shell *b* the internal surface whereof is adapted to be frictionally engaged by the friction-shoe C of my improved clutch. Shoe C extends circumferentially of the inner surface of shell *b*. The friction-shoe does not, however, extend along the entire circumferential surface of shell *b*, but its ends C' are separated a short distance, as shown in Fig. 2. An armed collar or spider D is operatively mount-

ed upon shaft A centrally of the friction-shoe. Spider D has four radially-arranged or approximately radially-arranged arms D' D² D³ D⁴, and is prevented from circumferential displacement within the friction-shoe, as will hereinafter appear. Arm D³ of the spider is preferably arranged adjacent to the space between the two ends C' of the friction-shoe. Spider-arm D' is arranged diametrically opposite arm D³, and, at its outer end, is provided with a lug or projection D⁵, that projects into and engages a corresponding hole C² formed in the friction-shoe, and thereby prevents displacement of the spider circumferentially of the friction-shoe. Spider-arms D² and D⁴ are arranged at or near opposite sides, respectively, of arm D³, and extend into suitable proximity to the friction-shoe. A radially-tilting lever E is fulcrumed at *e* to the outer end of arm D³. To the outer end of each arm D² and D⁴ is horizontally fulcrumed a bell-crank lever G, as at *g*.

One arm of each bell-crank lever is pivoted, as at G', to the adjacent end of the friction-shoe and the other arm of said lever is operatively connected in any approved manner with one or more ears or arms E' formed upon lever E between said lever G and the fulcrum *e* of said lever E. The friction-shoe-engaging arm of each bell-crank lever is pivoted to said shoe at a point between the adjacent extremity of the shoe and a line arranged radially of the shoe and traversing fulcrum or pivot *g* of said lever, so that, when the connected lever E is tilted radially and outwardly, bell-crank levers G shall be actuated in the direction required to expand the friction-shoe, and the friction-shoe-engaging arms of the bell-crank levers shall constitute links capable of guiding the friction-shoe during its expansion, and capable of causing the entire or approximately entire circumferential surface of the shoe to frictionally engage the internal surface of the shell *b* of pulley or wheel B. This guiding of the friction-shoe and causing substantially its entire external circumferential surface to frictionally engage the opposing surface of pulley or wheel B is due solely to the peculiar arrangement of the friction-shoe-engaging lever-arms or links hereinbefore described.

Lever E, at its outer end, is operatively connected, by means of a link H, with a collar I, that is operatively and slidingly mounted upon shaft A. By the construction hereinbefore described, it will be observed that upon actuating sliding collar I in the direction of spider D, lever E is tilted outwardly toward the periphery of pulley B, and actuates bell-crank levers E in the direction required to effect frictional engagement between shoe G and the opposing surface of the pulley. Collar I is preferably provided externally with an annular groove I', engaged by a loosely-mounted armed ring K, the arms K' whereof are adapted to be engaged by lever mechanism (not shown) employed in actuating sliding collar I in the one direction or the other according as operative engagement between the friction-shoe and pulley is to be established or interrupted.

What I claim is—

1. The combination with the supporting-shaft and pulley or wheel loosely mounted upon the shaft and provided with a peripheral shell, of a friction-shoe extending circumferentially of and adapted to frictionally engage the internal periphery of the aforesaid shell and having its ends separated, a spider suitably mounted upon the shaft centrally of the friction-shoe, two bell-crank levers fulcrumed to the aforesaid spider and pivotally connected at one end to opposite ends, respectively, of the friction-shoe and arranged substantially as indicated, and the other ends or arms of said levers projecting toward each other, and mechanism for actuating the bell-crank levers in the one direction or the other according as frictional engagement between the friction-shoe and opposing surface of the aforesaid shell is to be established or interrupted, substantially as set forth.

2. The combination with the supporting-shaft and pulley or wheel loosely mounted upon the shaft and provided with a peripheral shell, of a friction-shoe extending circumferentially of and adapted to frictionally engage the internal periphery of the aforesaid shell and having its ends separated, a spider suitably mounted upon the shaft centrally of the friction-shoe, a radially-tilting lever E ful-

crumed to the spider adjacent or in suitable proximity to the ends of the friction-shoe, two bell-crank levers G G fulcrumed to the spider and pivotally connected at one end to opposite ends, respectively, of the friction-shoe and arranged substantially as indicated and operatively connected, at their other ends, with the aforesaid radially-tilting lever, and means for actuating the radially-tilting lever in the one direction or the other according as frictional engagement between the friction-shoe and opposing surface of the aforesaid shell is to be established or interrupted, substantially as set forth.

3. The combination with the supporting-shaft and pulley or wheel loosely mounted upon the shaft and provided with a peripheral shell, of the friction-shoe C extending circumferentially of and adapted to frictionally engage the internal periphery of said shell and provided with a hole C², and having its ends C' separated, a spider D provided with arms D', D² and D⁴ and the spider-arm D' having the lug or projection D⁵, the bell-crank levers G G horizontally fulcrumed to spider-arms C² and C⁴ and operatively connected with the friction-shoe, and mechanism for actuating said levers, all arranged and operating substantially as shown, for the purpose specified.

4. The combination with the supporting-shaft and pulley or wheel loosely mounted upon the shaft and provided with a peripheral shell, of the friction-shoe C extending circumferentially of and adapted to frictionally engage the internal periphery of said shell and provided with a hole C², and having its ends C' separated; the spider D provided with arms D', D², D³, D⁴, and the spider-arm D⁴ having the lug or projection D⁵, the bell-crank levers G G, the radially-tilting lever E, sliding collar I, and the link H, all arranged and operating substantially as shown, for the purpose specified.

In testimony whereof I sign this specification, in the presence of two witnesses, this 26th day of September, 1895.

GEORGE A. ARMINGTON.

Witnesses:

C. H. DORER,
ELLA E. TILDEN.