

N. W. GALES.
 FRICTION CLUTCH.
 APPLICATION FILED JULY 27, 1910.

1,023,249.

Patented Apr. 16, 1912.

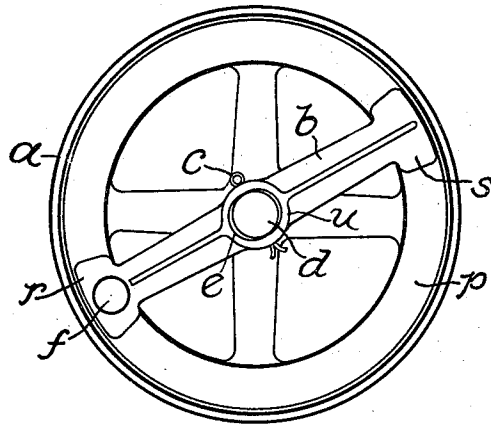


Fig. 1.

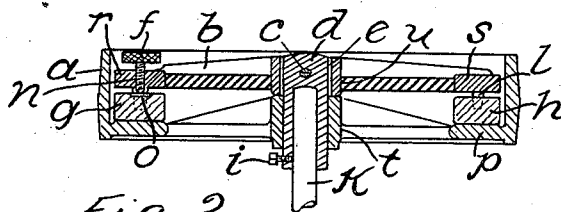


Fig. 2.

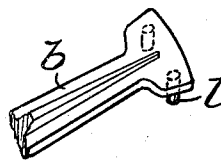


Fig. 3.

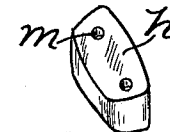


Fig. 4.

WITNESSES

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FRICITION-CLUTCH.

1,023,249.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NICHOLAS W. GALES, a citizen of the United States of America, and a resident of Waterloo, Blackhawk county, Iowa, have invented certain new and useful Improvements in Friction-Clutches, of which the following is a specification.

My invention relates to improvements in friction-clutches, and the object of my improvement is to provide a friction-clutch for the driving-shaft of a centrifugal cream separator, or for any rotary shaft, which is capable of being adjusted in its application without shock to the driven mechanism. This object I have accomplished by the means which are hereinafter fully described and claimed, and which are illustrated in the accompanying drawings, in which:

Figure 1 is an end elevation of my friction-clutch. Fig. 2 is a central vertical axial section of said friction-clutch, taken along the middle longitudinal line of the hub *u* and its arms *b*. Fig. 3 is a broken perspective detail of one of the ends of the swinging friction-head carrying lever. Fig. 4 is a perspective detail of one of the friction-heads.

Similar characters of reference designate corresponding parts throughout the several views.

While my improved friction-clutch is especially designed and useful when used in connection with the driven-shaft *k* of a centrifugal cream separator (not shown), it may be equally well applied and used on any driven-shaft.

On one end of the rotary or driven-shaft *k* a cap-sleeve *d* is removably secured by means of a set-screw *i* or by any other suitable means of fastening. The hub *t* of a driving belt-wheel *a* is loosely mounted upon the sleeve *d*. Another hub *u* is mounted upon the sleeve *d* and in contact with the hub *t*, but is removably secured to said sleeve by means of a split-key *c*. The bearing-opening *e* of the hub *u* is elongated to permit of the hub rocking upon the sleeve along the middle longitudinal line of the oppositely extended integral arms *b* of said hub. These arms with their hub *u* form a medially fulcrumed lever adapted to rock on said sleeve *d*.

The belt-wheel *a* has a flat web *p* facing the lever *b*. The ends of said lever are

widened at *r* and *s*, and the end *s* is provided with a pair of studs *l* projecting toward the web *p* but adapted to movably fit the sockets *m* of a wooden or fiber friction-head *h* which is interposed between the lever-end *s* and the abutting face of the web *p*. The other widened end *r* of said lever *b* is provided with an interiorly-threaded bearing-opening *n* to movably receive the threaded part of an adjusting-screw *f*, the point of said screw being adapted to enter a socket *o* in another friction-head *g*, also of wood or fiber, which is interposed between said end *r* and the abutting face of said web *p*.

I aim to prevent shocks being transmitted from a prime-motor such as particularly an internal-combustion engine of the reciprocating type and its belt-wheel *a* to the driven-shaft *k*, and my friction-clutch is so devised as to permit the friction heads to be applied gradually and with some slippage to said wheel while the latter is rapidly rotating. This device is operated to connect the shaft at times with the driving pulley, and when adjusted by means of the screw *f*, for driving, the tension of the friction-heads may be made such against the web of the pulley as to ordinarily drive the shaft but yet slip under unusual jars or strains. This adjustment is secured by means of the manually-operable adjusting-screw *f*. When the screw *f* is turned, in one direction, it bears against the friction-head *r*, and brings the latter gradually into tight contact with the web *p* of the rapidly rotating belt-wheel *a*. Since the lever *b* is medially fulcrumed on the sleeve *d*, the action of the screw *f* in moving out the end *r* thereof, has the effect of forcing the end *s* against the other friction-head *h*, and the head *h* is thus equally gradually brought into engagement with the web *p*. By these means all shock is avoided in setting the shaft *k* in rotation, and the clutch is disengaged by merely turning back the screw *f*.

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

1. In combination, a driven-shaft, a driving-wheel rotatably mounted thereupon, a hub loosely mounted and secured to said shaft to rotate therewith and to rock thereon, said hub having oppositely-projecting arms, removable friction-heads located be-

tween said arms and the said driving-wheel, and means connected to one of said arms and to the friction-head interposed between it and said wheel adapted to gradually separate them, to move the end of the arm outwardly and the friction-head inwardly to gradually engage the abutting face of said driving-wheel, and simultaneously cause the other arm to move inwardly and cause the other friction-head to engage the abutting face of the drive-wheel gradually.

2. In combination, a driven-shaft, a driving-wheel rotatably mounted thereon, a hub connected to said shaft suitably to both rotate therewith and rock thereon, said hub having oppositely-projecting arms, removable friction-heads located between said arms and the abutting face of said drive-wheel, and an adjusting-screw movable in an interiorly threaded opening in one of said arms against the adjacent friction-head, and adapted when turned in one direction to gradually press said friction-head against said wheel, and to rock said arms to cause the other of said arms to press the other friction-head gradually against said wheel.

3. In combination, a driven-shaft, a cap-sleeve detachably secured upon one end thereof, a driving-wheel rotatably mounted upon said sleeve, a hub loosely mounted on said sleeve and secured thereto to both rotate therewith and rock thereon, said hub having oppositely-projecting arms, removable friction-heads located between said arms and the said driving-wheel, and means connected to one of said arms and to the friction-head interposed between it and the said wheel adapted to gradually separate them, to move the end of the arm outwardly and the friction-head inwardly to gradually engage the abutting face of said driving-wheel, and simultaneously cause the other arm to move inwardly and cause the other friction-head to engage the abutting face of the drive-wheel gradually.

4. In combination, a driven-shaft, a cap-sleeve detachably secured upon one end thereof, a driving-wheel rotatably mounted upon said sleeve, a hub loosely mounted on said sleeve and secured thereto to both rotate therewith and rock thereon, said hub having oppositely-projecting arms, removable friction-heads located between said

arms and the abutting face of said driving-wheel, and an adjusting-screw movable in an interiorly-threaded opening in one of said arms against the adjacent friction-head, and adapted when turned in one direction to gradually press said friction-head against said wheel, and to rock said arms to cause the other of said arms to press the other friction-head gradually against the abutting face of said driving-wheel.

5. In combination, a driven-shaft, a cap-sleeve detachably secured on one end thereof, a driving-wheel having its hub rotatably mounted on said sleeve and having a friction web, a hub provided with an elongated bearing-opening and mounted upon said sleeve, means for securing said hub to said sleeve to both rotate therewith and rock thereon, said hub having oppositely-projecting arms, one of said arms having guide-studs extending toward said driving-wheel, a friction-head between said arm and said wheel and having sockets adapted to movably receive the studs on said arm, a friction-head between the other arm and said wheel, and having a socket on its outer face, an adjusting-screw movable through an interiorly-threaded opening in the latter arm to engage the adjacent friction-head movably in its socket, and adapted to gradually force said friction-head into engagement with the face of the web of said driving-wheel while rocking said arms to simultaneously cause the other arm to equally and gradually force its adjacent friction-head against the abutting face of the web of said driving-wheel.

6. In combination, a driven-body, a driving-body, independently rotatable, a lever medially fulcrumed to said driven body at its axis to rock longitudinally but turn therewith, friction-blocks located between the arms of said lever and said driving-body, and means adapted to so rock said lever as to gradually engage the interposed friction-blocks against said driving-body and cause the driven-body to be gradually set in rotation therewith.

Signed at Waterloo, Iowa, this 8th day of July 1910.

NICHOLAS W. GALES.

Witnesses:

FRANK RICE,
O. D. YOUNG.