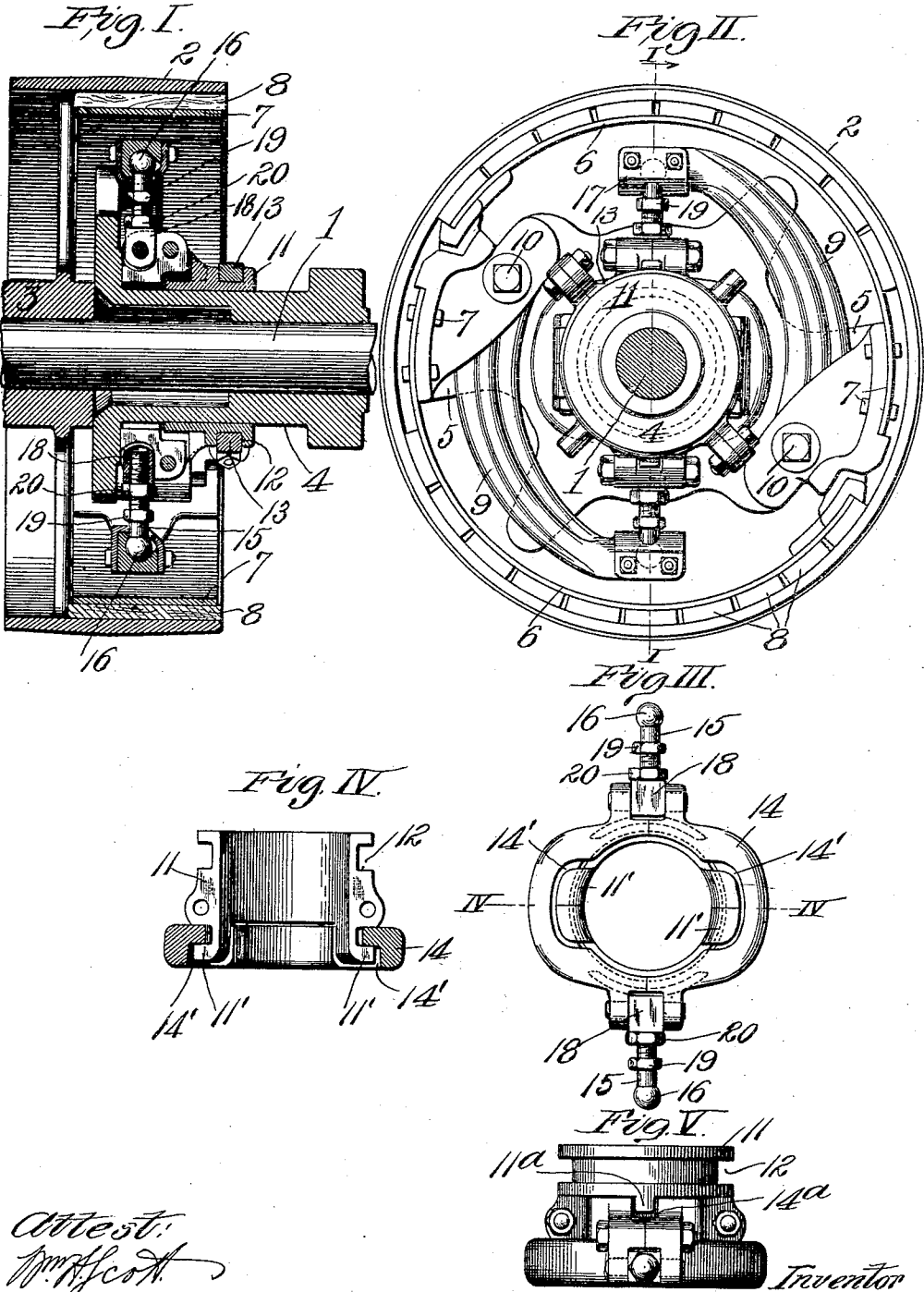


No. 824,610.

PATENTED JUNE 26, 1906.

H. L. WHITMAN.
FRICTION CLUTCH.
APPLICATION FILED JUNE 24, 1905.



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UNITED STATES PATENT OFFICE.

HENRY L. WHITMAN, OF ST. LOUIS, MISSOURI.

FRICTION-CLUTCH.

No. 824,610.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed June 24, 1905. Serial No. 266,778.

To all whom it may concern:

Be it known that I, HENRY L. WHITMAN, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have

5 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, forming part of this specification.

10 My present invention relates to an improvement upon the friction-clutch shown and described in Letters Patent of the United States issued November 13, 1888, to Charles E. Whitman and Henry L. Whitman.

15 The present improvement has for its object to provide the clutch of said patent with means whereby the ring-section-actuating levers situated within the pulley of the clutch may be adjusted in common and without the

20 necessity of manipulating the adjusting means of each lever independently and whereby when the adjustment is made the levers through the intermediary parts between them are caused to exert uniform pressure

25 against the sectional ring in the pulley of the clutch.

Figure I is a longitudinal section taken through my clutch. Fig. II is a side elevation of the clutch. Fig. III is an elevation or

30 face view of the yoke that controls the movements of the ring-section-operating levers. Fig. IV is a cross-section taken on line IV IV, Fig. III. Fig. V is a plan view of the yoke shown in Fig. III.

35 1 designates a driving-shaft to which my clutch is applied to provide for the rotation of the shaft when the clutch is put into power-transmitting condition.

2 designates the rim of a pulley, the hub 3 of which is loosely mounted on the driving-shaft. This pulley is adapted to have applied to its rim a driving-belt that when in

40 motion serves to impart continuous rotation to the pulley turning loosely on the shaft 1.

45 4 designates a sleeve fixed to the driving-shaft 1 adjacent to the pulley-hub 3 and provided with a pair of arms 5, which extend laterally from the sleeve and within the pulley-rim, though entirely independent of any connection to said rim.

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6 designates a pair of segments or ring-sections. These ring-sections, which are of yielding material, preferably sheet-steel, each has one of its ends secured at 7 to one of the

arms 5, as seen in Fig. II. Each ring-section 55 has a free end extending into juxtaposition with the fixed end of the other ring-section. The ring-sections are, as seen in Figs. I and II, located interior of the driving-pulley and adjacent to the rim 2 of said pulley, so that 60 when their free ends are forced outwardly frictional or binding engagement will occur between the ring-sections and the rim of the pulley. Instead of having the ring-sections bear directly against the inner face of the 65 pulley-rim 1 may, and preferably do, use wooden wear-blocks 8, that are carried by the ring-sections.

9 designates a pair of levers, each of which is pivotally connected to a portion of an arm 70 5 at 10, (see Fig. II,) the levers being provided with means for engaging the free ends of the ring-sections to provide for their acting against said ring-sections to force them outwardly toward the inner face of the pulley-rim 2. For a better understanding of the manner in which the levers act to move the ring-sections reference may be made to the Letters Patent hereinbefore mentioned. The ends of the levers 9 opposite those pivoted at 80 10 to the arms 5 are free to swing laterally toward and away from the driving-shaft 1 in order that they may be actuated to move their opposite ends in engagement with the ring-sections.

85

11 designates a shift-collar that is slidably arranged upon the sleeve 4 and is provided with an annular groove 12, that receives an armed ring 13, to which may be connected a lever, through the medium of which the shift-collar may be reciprocated on said sleeve. 90 The shift-collar and ring 13 are preferably formed of sections to permit of their being the more readily applied to the sleeve 4, and these sections are united by bolts passing 95 through them.

14 designates a lever-connecting yoke which unites the free ends of the levers 9. This yoke is loosely fitted to the shift-collar 11 in order that it may partake of movement transversely of said collar. The yoke is slidably held to the shift-collar by ears 11', projecting from one end of the collar and terminating in outturned portions that fit in pockets 14' in the yoke 14, as seen in Figs. III and IV. The 105 pockets 14 are of sufficient dimensions to permit a limited degree of play of the yoke in order that it may move toward and away from

the free ends of each of the levers 9, and in this movement the yoke is directed by guides 11^a, carried by the shift-collar and fitting in guideways 14^a in the yoke, as seen most clearly in Fig. V.

15 15 designates adjustment-rods preferably having ball-shaped heads 16. The heads of these rods are fitted to the free ends of the levers 9 preferably through the medium of straps 17, which are secured to the levers and are provided with openings of greater dimensions than the shanks of the rods 15 in order that said rods may swivel in said levers. The shanks of the rods 15 are threaded and seated in oscillating blocks 18, pivotally mounted in ears carried by the yoke 14 at its sides which face the free ends of the levers 9. These blocks are so mounted in the yoke as to permit of the yoke moving in a direction longitudinally of the driving-shaft 1 with the shift-collar 11, whereby when the yoke is so moved a pull or push will be exerted upon the adjustment-rods and the free ends of the levers 9 connected thereto to occasion movement of the ring-sections 7 away from or toward the pulley-rim 2. The adjustment-rods are each provided with a wrench-receiving portion 19, to which a wrench may be applied for the purpose of turning the rods and adjusting their shanks in the oscillating blocks 18, and on the shank of each adjustment-rod is a set-nut 20, that is adapted to rest against the facing oscillating block to hold the adjustment-rod from movement after it has been set.

The operation of my clutch is in the main substantially the same as that in the clutch described in the patent referred to, and a complete description of the operation herein is therefore deemed unnecessary. The distinctive feature in the improvement herein described is that of the lever-controlling yoke being so fitted to the shift-collar of the clutch that it may be shifted transversely of said collar. By so fitting the yoke to the collar I am enabled to readily adjust the levers 9, by which the ring-sections of the clutch are actuated at either side of the yoke and without the necessity of accurate adjustment at both sides of the yoke. In the construction of the clutch described in the patent hereinbefore mentioned it was imperative that the levers be adjusted relative to the yoke at the side of the yoke corresponding to each individual lever, and therefore it has been found difficult to at all times acquire the same degree of adjustment of each lever, and as a consequence insufficient pressure has frequently been exerted by one lever against the ring-section which it actuated and abnormal pressure has been exerted by the other lever against its ring-section. By having the yoke which, with the adjustment-rods, connects the levers shiftably mounted to move in a direction corresponding to the swing of the levers

it will be seen that when the shift-collar 11 is shifted to reciprocate the yoke 14 therewith the free ends of the levers 9 will be moved outwardly or inwardly, according to the direction of movement of the yoke, and uniform pressure or pull will be exerted with relation to the two levers, this being due to the transversely-moving yoke accommodating itself to the movement of the levers and adjusting the position of one lever relative to the other, so that the strain against both of the levers will be equalized.

I claim as my invention—

1. In a friction-clutch, the combination of a driving-shaft, a pulley loosely mounted on said shaft, a sectional ring located interior of the rim of said pulley and consisting of movable members arranged to frictionally engage the pulley-rim, levers for moving said ring members, a slidable shift-collar, and a yoke surrounding said collar and having connection with said levers; said yoke having an interior diameter greater than the diameter of said collar and movable transversely to the axis of said shaft, substantially as set forth.

2. In a friction-clutch, the combination of a driving-shaft, a pulley loosely mounted on said shaft, a sectional ring located interior of the rim of said pulley and consisting of movable members arranged to frictionally engage the pulley-rim, levers for moving said ring members, a slidable shift-collar, a yoke fitted to said collar, and adjustment-rods connecting said levers to said yoke; said yoke having an interior diameter greater than the diameter of said collar and movable transversely to the axis of said shaft, substantially as set forth.

3. In a friction-clutch, the combination of a driving-shaft, a pulley loosely mounted on said shaft, a sectional ring located interior of the rim of said pulley and consisting of movable members arranged to frictionally engage the pulley-rim, levers for moving said ring members, a slidable shift-collar, a yoke surrounding said collar and having an interior diameter greater than the diameter of said collar and movable transversely to the axis of said shaft, oscillating blocks pivoted to said yoke and adjustment-rods fitted to said blocks and connected to said levers, substantially as set forth.

4. In a friction-clutch, the combination of a driving-shaft, a pulley loosely mounted on said shaft, a sectional ring within said pulley consisting of movable members to frictionally engage the pulley-rim, levers for moving said ring members, a slidable shift-collar, and a yoke surrounding said collar and having an interior diameter greater than the diameter of said collar and movable transversely to the axis of said shaft; said shift-collar being provided with ears whereby said yoke is held to said collar, substantially as set forth.

5. In a friction-clutch, the combination of

a driving-shaft, a pulley loosely mounted on said shaft, a sectional ring within said pulley consisting of movable members to frictionally engage the pulley-rim, levers for moving
5 said ring members, a slidable shift-collar, and a yoke fitted to said collar and movable transversely to the axis of said shaft; said

collar being provided with guides arranged to operate in said yoke to direct its transverse movement.

HENRY L. WHITMAN.

In presence of—

BLANCHE HOGAN,
NELLIE V. ALEXANDER.