(No Model.)

J. F. McLAUGHLIN.

FRICTION CLUTCH.

No. 468,683. Patented Feb. 9, 1892.

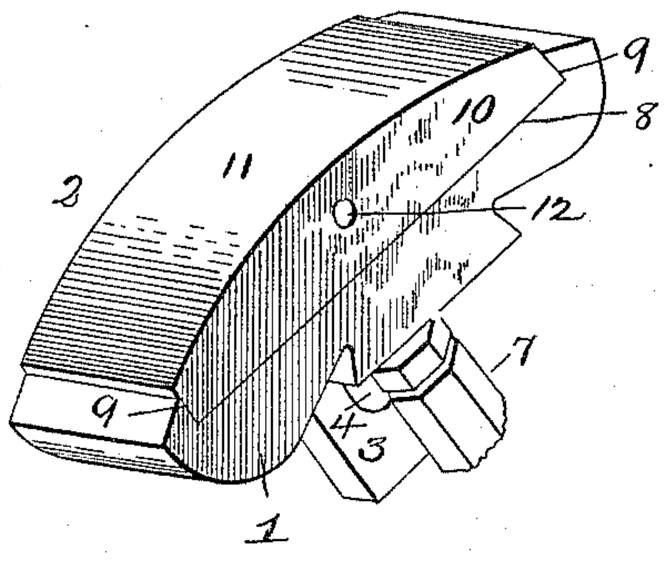


Fig. 1.

Fig. 2.

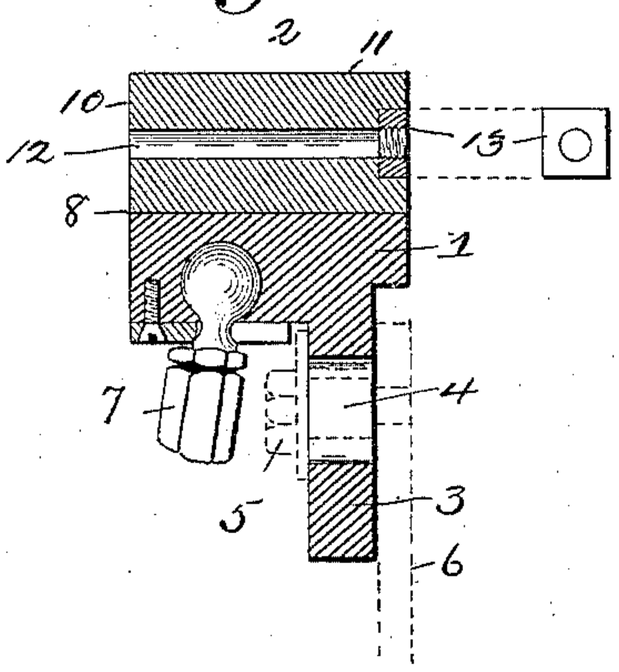


Fig. 3.

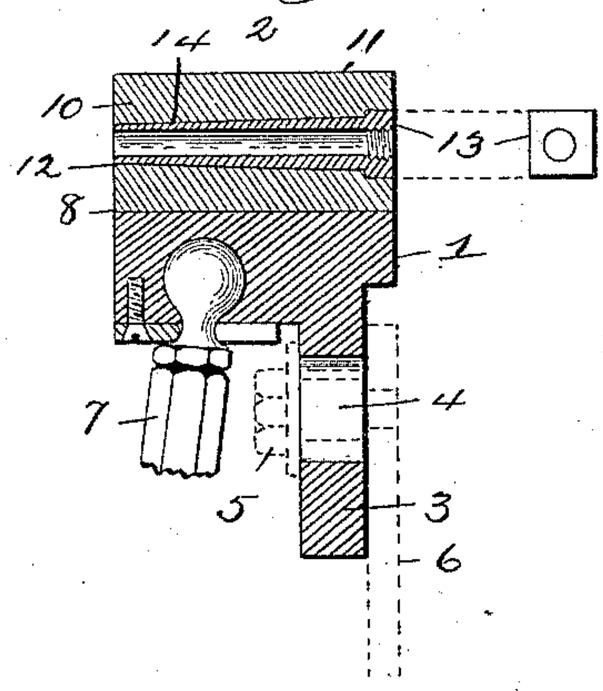
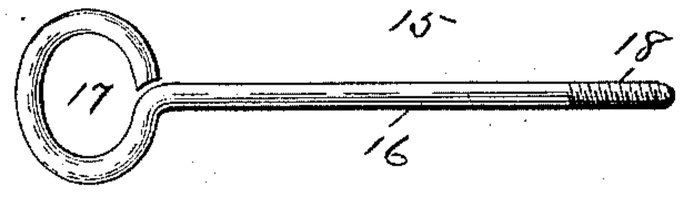


Fig. 4.



Witnesses:
J. B. McGirr.
F. T. Chapman.

Inventor:
James F. McLaughlin
By Joseph Lyons.
Attorney.

UNITED STATES PATENT OFFICE.

JAMES F. McLAUGHLIN, OF PHILADELPHIA, PENNSYLVANIA.

FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 468,683, dated February 9, 1892.

Application filed November 13, 1891. Serial No. 411,804. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McLAUGHLIN, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Friction-Clutches, of which the following is a specification.

This invention has reference to improvements in clutch-shoes for friction-clutches; and its object is to provide a means whereby the wearing-face of the clutch-shoe may be readily replaced when worn by a new facing without removing the clutch-shoes from the clutch or otherwise disturbing or disorganizing the mechanism of which the clutch forms a part.

The invention can be applied with great advantage to the clutch shown and described in Letters Patent No. 451,653, granted to me on May 5, 1891, in which is shown a number of clutch-shoes disposed around a carrier keyed to a shaft and movable radially thereon into and out of engagement with the inner bearing-face of an overhanging gear or pulley. In the construction shown in the said patent (and also in other forms of friction-clutches) it is necessary, in order to remove the wearing-faces of the clutch-shoes when worn, to remove the said clutch-shoes from the clutch, thus in a great measure disorganizing the latter. In the case of electric-motor cars such operation could only be performed under great disadvantage in the repair-shop, and then only at a considerable expense of time and trouble. This is entirely obviated by the present invention, as the wearing-faces of the clutch-shoes when made in accordance therewith may be replaced by new ones at any time and place without trouble and in a very short time and without in any manner disturbing or dismounting the clutch-shoes. All this will more fully appear from the following detail description, taken in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of a clutch-shoe provided with the improved wearing-face. Fig. 2 is a central cross-section of the same. Fig. 3 is a similar section showing another form of socket for the removing-tool, and Fig. 4 is a plan view of the tool for removing the facing of the clutch-shoe.

Referring to the drawings, there is shown a clutch-shoe consisting, essentially, of an expanded head 1, a wearing-facing 2 seated therein, and a flange 3, projecting from the head on the opposite side to that in which the facing 2 is seated. The flange is perforated, as shown at 4, for the passage of a bolt 5, which latter secures the clutch-shoe to the holder, a portion 6 of which is shown in dotted lines, Fig. 2.

By reference to the aforesaid Letters Patent it will be seen that the clutch-shoes are actuated by a toggle mechanism. A portion 7 of one of the toggle-levers is shown in the drawings, but as it forms no part of the present invention no description of the same is deemed necessary herein.

The outer face of the head 1 is provided with a recess or channel 8, the end walls 9 of which are undercut or dovetailed, as shown, and are rather close to the ends of the head 1. Seated within the channel 8 is a facing 10, preferably a wooden block conforming in shape to the said channel and projecting a short distance beyond the outer edge or face of the clutch-shoe head. The outer or bearing face 11 of the block 10 is concentric with the surface to be clutched, so as to present a large friction-surface. The bottom of the channel 8 is flat, as shown, so that the central portion of the block 10 is thicker than the ends, and extending centrally through this thickened portion of the block is a perforation 12. At one end of this perforation there is a nut 13, square or polygonal and considerably larger than the perforation, sunk into the side of the block 10, so as to be flush therewith, and having its threaded portion forming a continuation of the perforation 12, the whole constituting a socket terminating in a short threaded section. As shown in Fig. 2, the perforation 12 is a plain hole through the wooden block, and in Fig. 3 there is a metallic sleeve 14, cylindrical on the interior and conical on the exterior, seated in the perforation 12, which in this instance is suitably shaped to receive it. The sleeve 14, as will be readily understood, may be formed in one piece with the nut 13, if so desired, and in the

drawings it is so shown; but the sleeve may be driven into the perforation 12 and the nut then sunk into the side of the block 10, as before described.

In Fig. 4 there is shown a tool 15, composed of a straight body portion 16, terminating at one end in a loop 17, forming a handle by means of which the tool is manipulated, and at the other end terminating in a screw-threaded section 18.

The tool 15 is of such size and length that it may be inserted in the perforation 12 until the threaded end enters the nut 13, when by turning the tool the threaded end 18 will be securely seated in the nut. It will now be seen that on pulling on the tool the block 10 will be drawn along the channel 8 until entirely removed from the clutch-shoe head.

I have found by actual use that the facing-block 10 can be fitted into the channel of the clutch-shoe so as to be tightly held therein without the liability of lateral displacement and still be capable of being withdrawn for inspection, repair, or exchange without the application of an excessive force to the tool 15. The facing-block must fit snugly the dovetailed channel formed in the clutch-shoe; but it should fit so close as to require a considerable force to drive it home. On the contrary, it is all sufficient that there be a close fit without strain.

The block 10 is inserted into or withdrawn from the channel 8 in a direction at right angles to the direction of travel of the clutch-shoe in the operations of clutching or unclutching, and for this reason constructions, such as shown in the aforesaid Letters Patent, offer no obstacle to the ready removal or insertion of the wearing-face of a clutch-shoe, and therefore this operation may be performed while the clutch-shoes are in place in the clutch without dismantling the latter or disturbing the organization of the machine of which the clutch forms a part.

Having now described my invention, I claim and desire to secure by Letters Patent—

1. In a friction-clutch, the combination, with the clutch-shoe, of an exchangeable bearing-facing for the same provided with a perforation extending parallel to the clutching-surfaces and terminating in a nut for the reception of a tool for removing the facing from the clutch-shoe, substantially as described.

2. In a friction-clutch, the combination, with a clutch-shoe, of an exchangeable bearing-facing provided with a perforation parallel with the clutching-surfaces, a sleeve seated in said perforation, and a nut sunk into the bearing-facing at one end of the sleeve, the said sleeve and nut constituting a socket for the reception of a tool for removing the facing from the clutch-shoe, substantially as described.

3. In a friction-clutch, the combination, with a clutch-shoe, of an exchangeable bearing-facing for the same formed thicker in the middle than at the end and provided with a perforation parallel with the clutching-surfaces, and a nut at one end of said perforation, the said perforation and nut constituting a socket for the reception of a tool for removing the facing from the clutch-shoe, substantially as described.

4. In a friction-clutch, the combination, with a clutch-shoe having a channel extending parallel with the clutching-surface and at right angles to the direction of movement of the clutch-shoe, of an exchangeable bearing-facing fitted to the channel for insertion in and removal therefrom and provided with a perforation parallel with the clutching-surfaces, a nut sunk into the bearing-facing at one end of the perforation, and a tool provided at one end with a threaded section adapted to said nut, whereby the tool may be inserted in the perforation and screwed into the nut for removing the bearing-facing from the channel in the clutch-shoe, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES F. McLAUGHLIN.

Witnesses:

EDWARD ELDRED,

H. F. REARDON.