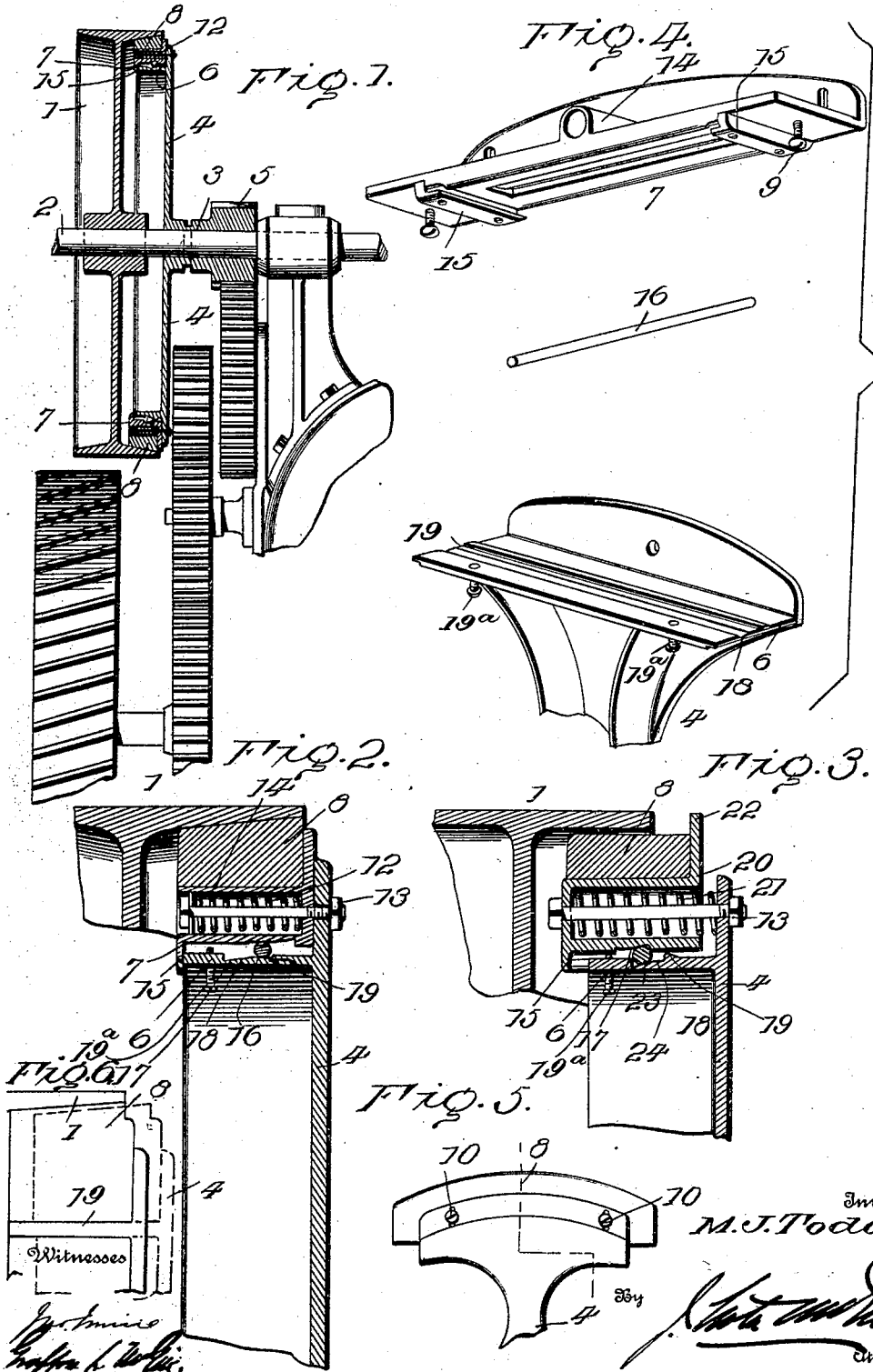


M. J. TODD.
CLUTCH FOR TRACTION ENGINES.

(Application filed May 23, 1901.)

(No Model.)



UNITED STATES PATENT OFFICE.

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CLUTCH FOR TRACTION-ENGINES.

SPECIFICATION forming part of Letters Patent No. 683,815, dated October 1, 1901.

Application filed May 23, 1901. Serial No. 61,571. (No model.)

To all whom it may concern:

Be it known that I, MARQUIS J. TODD, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Clutches for Traction-Engines; 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 ap-
10 pertains to make and use the same.

This invention relates to clutches for traction-engines, and has reference to that class wherein the shoes are thrown into and out of engagement with the fly-wheel by the longitudinal movement of the sleeve carrying the pinion which meshes with the traction-wheel gearing.

The object of the invention is to provide in a clutch of this character improved means for overcoming all binding of the shoes when the clutch is thrown out of operation.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional view showing portions of the traction-wheel gearing. Fig. 2 is a similar view, on an enlarged scale, with parts omitted. Fig. 3 is a view similar to Fig. 2, but showing a slight modification. Fig. 4 shows one of the shoe-carriers, its shelf, and roller. Fig. 5 is a rear view of one of the shoes and its carrier. Fig. 6 is a diagrammatic view.

Referring to the drawings, 1 designates the fly-wheel of a traction-engine, 2 the crank-shaft, 3 the sliding sleeve, and 4 4 fixed arms at right angles to and formed with or secured to sleeve 3. The latter carries pinion 5, which meshes with the gearing of the traction-wheels. Near the outer end of each arm 4 is a shelf 6, upon which is fitted a shoe-carrier 7, right angular in cross-section. The shoes 8 are beveled and may be adjusted on the carriers by screws 9 and 10 to compensate for wear. The carriers are held in their normal positions against arms 4 by springs 12 and stop-bolts 13, fitted each in a boss 14, said bolts being secured to the arms 4. Depending flanges 15, engaging shelf 6, form guides and stops for the carriers, preventing displacement in throwing in and out the clutch.

The engagement between the shoes and the beveled face of the fly-wheel rim is effected by the inward longitudinal movement of the sleeve 3. If in throwing off the clutch the shoes bind against the wheel-rim, a relative right-angular movement between the shoe-carriers and the arms will occur as against the tensions of the retaining-springs, and at the same time the shoes and their carriers will be brought nearer the axis of the fly-wheel by the action of rollers 16, located in beveled grooves 17 and 18 in the opposite face of each carrier and its supporting-shelf. When the carriers are in their normal position, the rollers will bear on the flattened portions 19 adjacent to grooves 18, and thus practically hold the carriers locked. When, however, in uncoupling there is a relative movement between the carriers and their supporting-arms and the rollers pass into the grooves 18, the carriers and their shoes will be moved nearer to the axis of the fly-wheel and all binding will be overcome. The lateral movement of each roller over the flattened portion 19 of its respective support is limited by stops 19^a. When the clutch is fully disengaged, the shoes and their carriers, again moving at right angles relatively to the arms, will resume their normal positions under the action of springs 12, with the rollers on the flattened portion 19 forming a lock.

In the form hereinbefore described it is contemplated that the face of each shoe and the contacting face of the wheel-rim will be oppositely beveled. It is obvious, however, that the principles of this invention are equally applicable to clutches the shoes of which are not beveled, but are formed to engage flat or truly concentric surfaces of the fly-wheel rim. In Fig. 3 I have shown the shoe-carrier 20 as being normally held in the outer position relative to its arm by spring 21, which is overcome as the flange 22 is brought into contact with the edge of the wheel-rim, whereupon the shoe is thrown into engagement with the wheel and is locked by the roller 23 bearing on the flattened portion 24 of the shelf supporting the carrier. In un-
100 clutching, recoil of the spring will move the carrier relatively to the arm and by the action of the roller the shoe and carrier will be brought nearer the axis of the fly-wheel.

While this latter form is desirable when the wheel-rim is flat on its inner face, yet I prefer the arrangement first described.

The advantages of the present improvement are apparent. It will be noticed that the clutch-shoes are synchronously movable at right angles relatively to the carrying-arms and nearer the axis of the fly-wheel to overcome all binding in throwing off the clutch.

I claim as my invention—

1. The combination with a fly-wheel, its shaft, the sliding sleeve, and the pinion, of rigid arms carried by such sleeve and extending therefrom at right angles, the shoes on the arms, and means intermediate each shoe and its supporting-arm for permitting the shoes to move at right angles to the arms, substantially as set forth.

2. The combination with a fly-wheel, its shaft, the sliding sleeve, and the pinion, of arms carried by such sleeve, the shoes on the arms, and means for permitting them to move synchronously at right angles thereto and nearer to the shaft, substantially as set forth.

3. The combination with a fly-wheel, its shaft, the sliding sleeve, and the pinion, of arms carried by such sleeve, the shoes, means yieldingly holding the shoes to said arms to permit a relatively right-angular movement between the shoes and arms, and means acting on such shoes during such movement to allow them to draw nearer to the shaft, substantially as set forth.

4. The combination with a fly-wheel, its shaft, the sliding sleeve, and the pinion, of arms radiating from said sleeve, the shoes, carriers therefor mounted on said arms, springs

holding the carriers in normal position relatively to such arms, and rolling bearings for the carriers for effecting the radial movement of the shoes and carriers synchronously with their movements relatively to said arms, substantially as set forth.

5. The combination with a fly-wheel, its shaft, the sliding sleeve, and the pinion, of the arms radiating from such sleeve having right-angular shelves, the shoes, carriers therefor mounted on said shelves, said carriers and shelves having inclined grooves in their opposite faces, rollers fitted in said grooves, and springs acting on said carriers to move them relatively to the arms, substantially as set forth.

6. The combination with a fly-wheel, its shaft, the sliding sleeve, and the pinion, of the arms radiating from such sleeve having right-angular shelves, the shoes, carriers therefor mounted on said shelves, said carriers and shelves having inclined grooves in their opposite faces, one of said parts having a flattened portion adjacent to its groove, rollers fitted in said grooves and designed to rest on said flattened portions when the carriers and shoes are at one limit of movement, and springs acting on said carriers to move them relatively to the arms, substantially as set forth.

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

MARQUIS J. TODD.

Witnesses:

H. S. CUNNINGHAM,
JOHN M. OLMSTED.