

UNITED STATES PATENT OFFICE.

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CLUTCH MECHANISM FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 366,288, dated July 12, 1887.

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To all whom it may concern:

Be it known that we, JOSEPH L. YOST and JOSEPH B. McCUNE, citizens of the United States, residing at Worcester, county of Worcester, Massachusetts, have invented new and useful Improvements in Clutch Mechanism for Bicycles, of which the following is a specification.

This invention relates to certain new and useful improvements in clutch mechanism for the propulsion of bicycles; and it consists substantially in the same as constructed, and in such peculiar arrangement and combinations of parts as will hereinafter be more particularly described, and pointed out in the claims.

The object of the invention is to supply devices of this character of a construction and arrangement by which no lost motion will be had in the operation of the parts in propelling the machine, and also to simplify such construction and arrangement to a degree as to greatly economize in the cost of manufacture over many inventions of a like character heretofore patented.

Again, although in the use of the invention we prefer the employment of springs to restore the treadle-bar to its upward position, a further object of our invention is to so arrange the devices constituting our clutch as that the machine can, in the event of breakage of the springs, still be operated to be propelled with little or no inconvenience to the operator.

Finally, the invention has additional objects in view, all as will more fully appear from the description hereinafter following, when taken in connection with the accompanying drawings, wherein—

Figure 1 represents an inner side view of clutch mechanism embodying our improvements, wherein the inclosing or securing cap or cover is removed, and Fig. 2 is a vertical sectional view thereof with the cap in place. Fig. 3 is a similar view to Fig. 1, representing the cap in place, and also indicating more clearly the manner in which the clutch is supported upon a stud projecting from the side of the fork-extension.

Reference being had to the several parts by

the letters marked thereon, A represents the drum containing the spring *a* for restoring the treadle-bar *b* to position, the said drum and treadle-bar being preferably formed integral, and the latter being also formed with an internal screw-thread, *c*, a raised flange, *c'*, and a central aperture, *d*, through which the supporting-stud passes or is received.

B represents a thimble that is formed around its sides with a screw-thread, *e*, by which the same is screwed into the correspondingly-threaded portion *c* of the drum, the said thimble being also formed or provided with, preferably, four wings, *f*, arranged tangentially with respect to the central ring, *g*, of said thimble, the opening of which ring coincides with the aperture *d* of the drum, and through which the supporting-stud in like manner passes. Each of said wings or tangents is provided with an opening, *i*, for the reception of the screws *h*, which secure the inclosing cap or cover C in place, and pivoted in suitable openings arranged in the thimble B, and corresponding openings *j* in the cap C, are pawls or detents D, so arranged as to work in the curved or notched sides of the wings *f*, as shown, the said pawls having been found to operate sufficiently well by gravity for the performance of their intended function, hereinafter explained; but preferably we employ springs *k*, seated in the sides of the portions of the thimble intermediate of the wings, and whose tendency is to press or force the pawls outwardly.

E represents a gear-wheel designed to engage a similar smaller wheel, F, arranged upon the axle G of the machine in an obvious manner. This gear-wheel, or, as it may be termed, "gear-ring," since such is its approximate form, is formed or provided internally with a series of ratchets, *m*, of slightly less length than the diameter of said wheel or gear-ring, by which to form continuous grooves or channels *n* on opposite sides, into one of which the raised flange *c'* of the drum is received, and in the other of which fits the inclosing cap or cover C. By this form of construction of the several parts it will be seen that the said gear

has an equal bearing on both sides, thereby effecting a perfect operation in use.

H represents the fork of the bicycle, the same being formed or provided with an extension, *o*, from which projects a stud, *p*, that is screwed in said extension and secured by a nut, *q*, as shown, the said stud passing through the drum and thimble, as explained, and in the side of which the inner end of the restoring-spring is secured. The lower end of the steering-fork forms the bearing for the axle G, as shown, suitable nuts being employed to retain the same in place.

From the foregoing description it will be seen that as the treadle-bar is depressed to operate the machine the gear E by meshing with F will operate to revolve the wheel forward, the pawls or detents D acting in such manner as to engage the ratchet and transmit the power applied in a manner that will be readily understood, and then when the treadle-bar has been forced downward to the extent of its limit the spring *a* will act to restore the same to an upward position.

It should be remarked, as before stated, that although this spring is preferably employed to restore the treadle-bar, it is evident that in the event of breakage of either one or both of the springs the said bar can be readily lifted by simply forming a stirrup at the end thereof for insertion of the foot of the operator, the only effort required being a simple lifting action.

We are aware that contrivances of a nature somewhat similar to the present have been heretofore adopted; but in such former instances the arrangement of the clutch and gear has been concentric with the axle of the machine, and which arrangement renders the use of restoring-springs indispensable. Besides, other devices have been employed to one side of the axle; but it is thought that the constructions and arrangements of such substantially differ from that herein resorted to.

Having thus described our invention, what

we claim as new, and desire to secure by Letters Patent, is—

1. In clutch mechanism for bicycles, the combination, with the drum A, containing the restoring-spring, of the thimble B, fitted thereto and formed with the wings or tangents *f*, the gear-wheel E, surrounding the thimble and formed with the internal ratchets, and pawls or detents for engaging the ratchets, the said parts being held on a stud projecting from an extension of the steering-fork, and adapted to operate in substantially the manner described.

2. In clutch mechanism for bicycles, the combination, with the drum A, screw-threaded, as at *c*, and provided with raised flange *c'*, of the thimble B, screwed into said drum and formed or provided with tangential wings *f*, the gear E, having internal ratchets, *m*, and formed with annular recesses *n n*, the pivoted pawls or detents engaging said ratchets and forced outwardly by a spring, and the inclosing cap or cover C, the parts being constructed and arranged substantially in the manner shown and described.

3. In bicycles, the combination, with the axle having gear F, of the gear E, supported to one side of said axle on a stud projecting from an extension of the steering-fork, the said-gear E meshing with F and formed with the internal ratchets, the thimble B, fitting the stud and formed with the wings *f*, pawls pivoted thereto engaging the ratchets, an inclosing-cover, and a spring for restoring the treadle, through the medium of which the parts are operated, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses,

JOSEPH L. YOST.
JOSEPH B. McCUNE.

Witnesses:

WILLIAM MAYNARD,
FRANK W. AYMAR.