

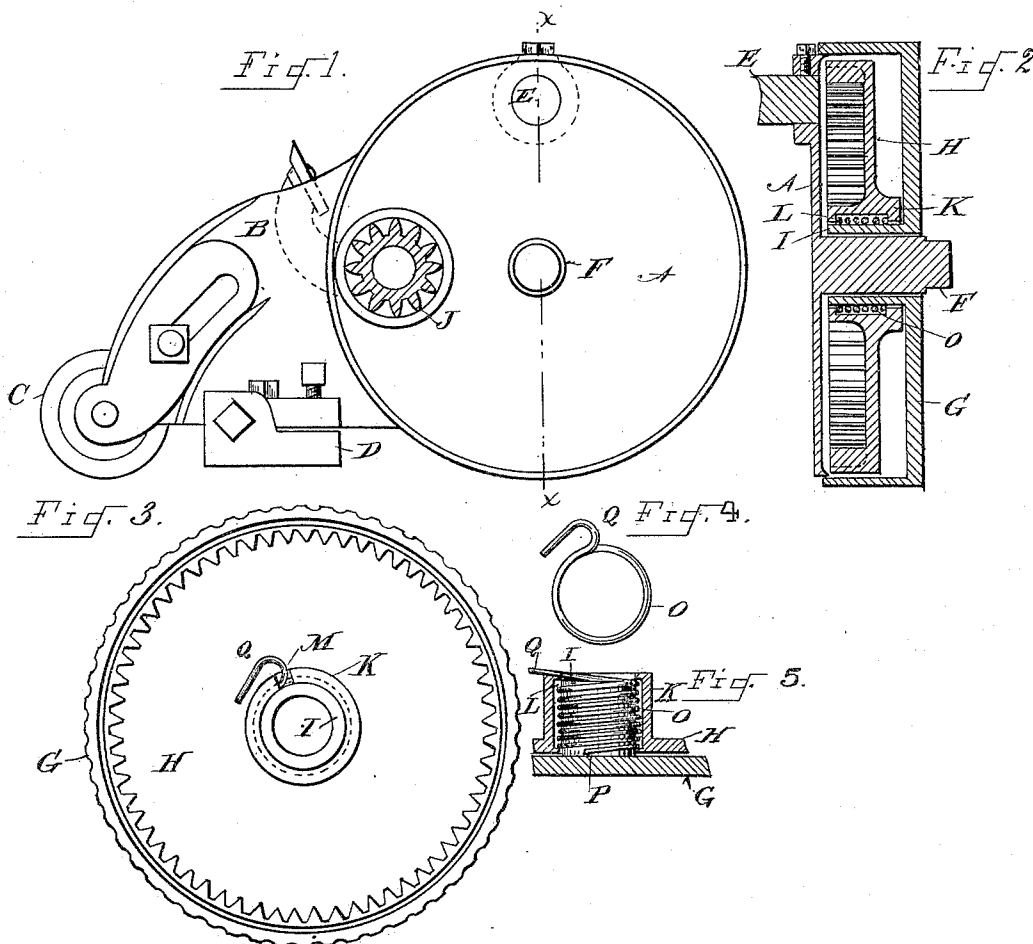
(No Model.)

2 Sheets—Sheet 1.

F. M. WATERS.
CLUTCH.

No. 467,598.

Patented Jan. 26, 1892.



WITNESSES
Wm. H. Husted
J. E. Dawley

INVENTOR
Frank M. Waters
by *Toulmin & Toulmin*
his Attorneys

(No Model.)

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Fig. 6.

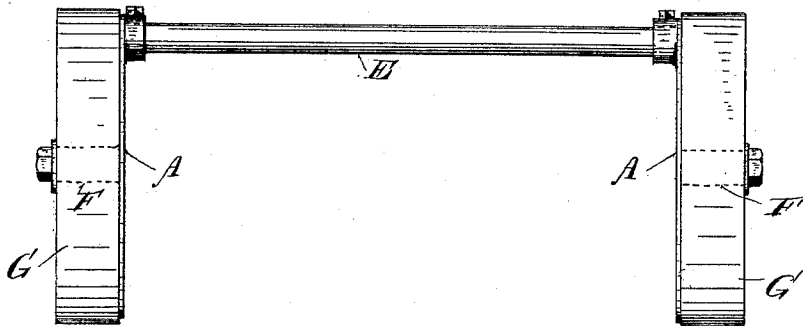
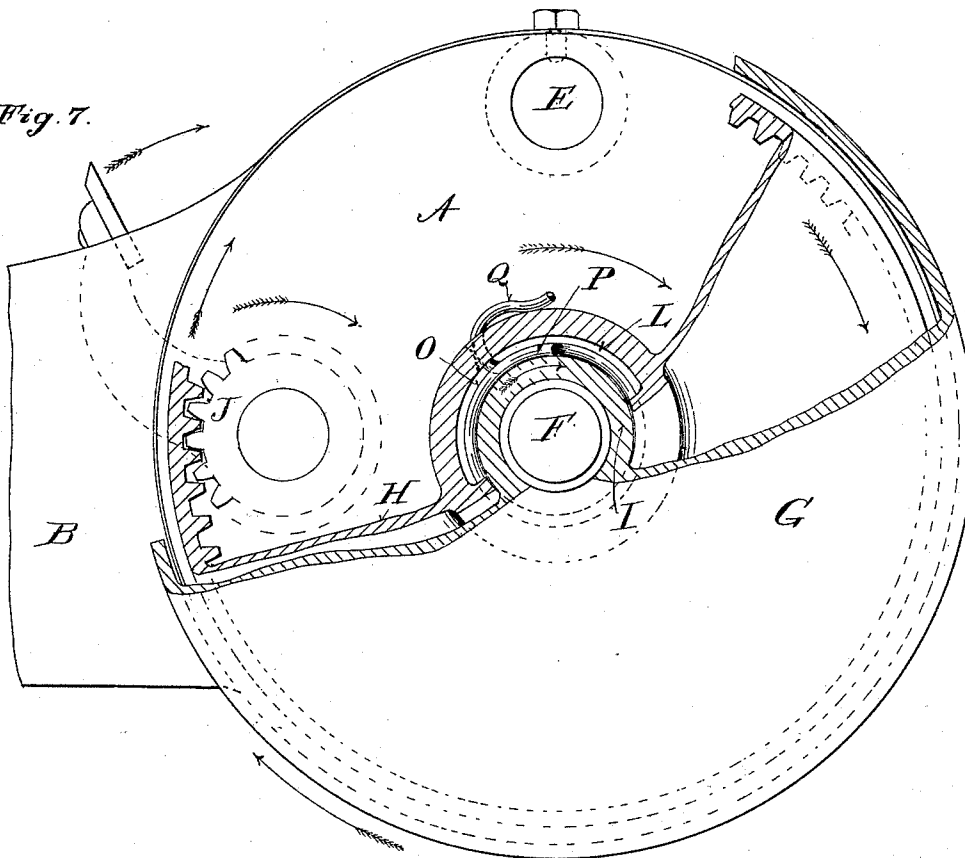


Fig. 7.



WITNESSES

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UNITED STATES PATENT OFFICE.

FRANK M. WATERS, OF DAYTON, OHIO, ASSIGNOR TO THE FARMERS FRIEND
MANUFACTURING COMPANY, OF SAME PLACE.

CLUTCH.

SPECIFICATION forming part of Letters Patent No. 467,598, dated January 26, 1892.

Application filed July 30, 1891. Serial No. 401,166. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. WATERS, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Clutches, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in lawn-mower clutches, the peculiarities of which are hereinafter described, and more particularly pointed out in the claims.

In the accompanying drawings, forming a part of this specification, and on which like reference-letters indicate corresponding parts, Figure 1 represents a side elevation of a lawn-mower with one of the ground-wheels and internal gear-wheels removed; Fig. 2, a diametrical sectional view of the ground-wheel, driving-gear, and side, &c., on the line *xx* of Fig. 1; Fig. 3, a detail view of the ground-wheel and driving-gear, looking into the wheel from the inner side and showing a part of the clutching-coil; Fig. 4, a detail elevation of the clutching-coil; Fig. 5, a sectional view of a part of the ground-wheel and driving-gear, showing the clutching-coil in plan; Fig. 6, a front view of the ground-wheels, their respective side plates and connecting-bar; Fig. 7, an enlarged view of one side of the machine, showing the ground-wheel and internal gear-wheel broken away to illustrate the connection and arrangement of the parts.

I have illustrated my invention in connection with so much of two types of lawn-mowers as is necessary to make plain the mode of operation of my invention.

The letter A designates the end plates of a lawn-mower having the usual rear extension B for carrying the gage-roller C and cutter-bar D, such plates being connected together by a cross-bar E and each having a trunnion or stud F, forming the shaft for each ground-wheel G. In the form of machine shown in Figs. 1, 2, and 3 this ground-wheel carries an inclosed internal gear-wheel H, mounted upon a hub or sleeve I of the ground-wheel. This gear-wheel meshes with the pinion J, mounted on the reel-shaft, and imparts motion to that

shaft when driven by the ground-wheel. The hub H of this internal gear-wheel is recessed, as shown at L, and is provided with an opening, as shown at M, Fig. 3. In this recess and around the hub of the ground-wheel is placed my clutching-coil O, the same consisting of a wire tape or band fashioned after the manner of a spiral spring and encircling the wheel-hub or sleeve as many times as the nature of the work to be done may require. The inner end P of the coil, as shown in Fig. 5, terminates at any convenient place, and the outer or other end Q engages with the device to be driven (the internal gear-wheel in this exemplification) by passing through the hole M in the hub K of such wheel. The inner end P of the coil is not permanently fixed to the sleeve I, but merely hugs or grasps the same when the other end of the coil is rotated in the direction to wind up the coil.

When the driving-wheel is put in motion by rolling the machine over the ground, the clutching-band, which is wound on the sleeve or hub of this wheel, contracts or tightens and binds or grips upon the sleeve or hub. In consequence of this the clutching-coil rotates with the driving member and communicates this motion to the driven member with which it is suitably connected. In a reverse rotation the driving wheel or member will immediately disengage itself from the clutching-coil, which expands or loosens upon such reverse movement taking place.

It will be observed that the driving member or that member upon which the gripping-coil is wound rotates in the direction in which the coil is wound when operating to contract the coil, while when operating to release the coil the movement is opposed to the direction in which the coil is wound.

In Fig. 7 the arrows show the direction of rotation of the connected parts when the ground-wheel is rotated. A portion only of the pinion is shown meshing with its gear-wheel H, which is clutched by the coil-spring connection interposed between the ground-wheel and internal gear-wheel, as shown in Figs. 7 and 2. The operative connection between the ground-wheel and reel-shaft is therefore clearly shown, and the direction of

the arrows indicate the motion of the parts in their clutched condition.

It will be understood that the manner of arranging the driving and driven member and the details entering into the connection of the spring with the driven member may be modified to suit the particular use to which the invention may be put, and I would therefore have it distinctly understood that I do not confine myself to any particular arrangement of such parts or way of making the connection between the coil and the driven member, but lay claim, broadly, to the clutch involving the principle and mode of operation herein described.

It will be understood that I prefer to make the coil of some resilient material, as steel or brass, the latter having more or less resiliency when drawn down in the form of a wire. I have shown the driving member—that is, the internal gear-wheel in Fig. 2—as rotating about the same axis as the driving member or ground-wheel, the driven member in such instance being the female element. The clutching-coil is adapted to application to structures in which the driven member may be either a male element or a female element.

Having thus fully described my invention,

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

1. The combination, with a lawn-mower ground-wheel having a sleeve or hub, of a gear-wheel mounted upon such sleeve or hub, and a resilient coil also mounted upon said sleeve or hub and having one of its ends connected to said gear-wheel, whereby when the ground-wheel is rotated in one direction the coil tightens upon its hub or sleeve and causes the gear-wheel to rotate with it.

2. The combination, with a lawn-mower side plate having a stud *h* and a ground-wheel mounted on the stud and having a sleeve, of an internal gear-wheel rotatably mounted on such sleeve, and a resilient coil wound on the sleeve and within the bore of the gear-wheel, one end of the coil being fixed to the gear-wheel and the remainder of the coil adapted to clamp upon the sleeve when the wheel is rotated in one direction.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK M. WATERS.

Witnesses:

HANEY CONOVER, Jr.,
MARTIN FONHEIM.