

No. 660,570.

Patented Oct. 30, 1900.

H. GREEN.
CHAIN TIGHTENER.

(Application filed Nov. 27, 1899.)

(No Model.)



Fig. 1.



Fig. 1a.

Fig. 2.

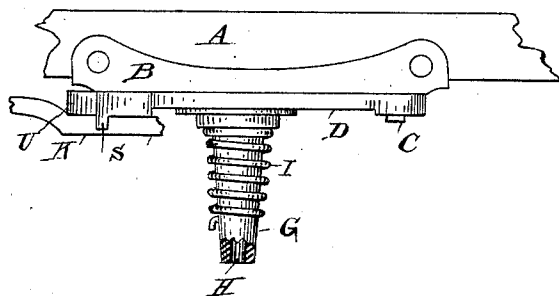


Fig. 3.

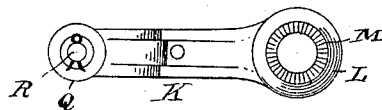


Fig. 4.

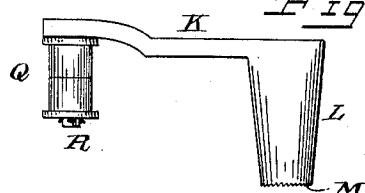


Fig. 5.



Fig. 6.

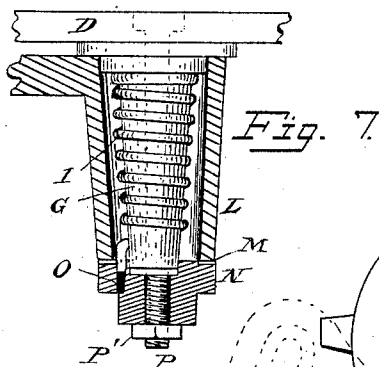


Fig. 7.

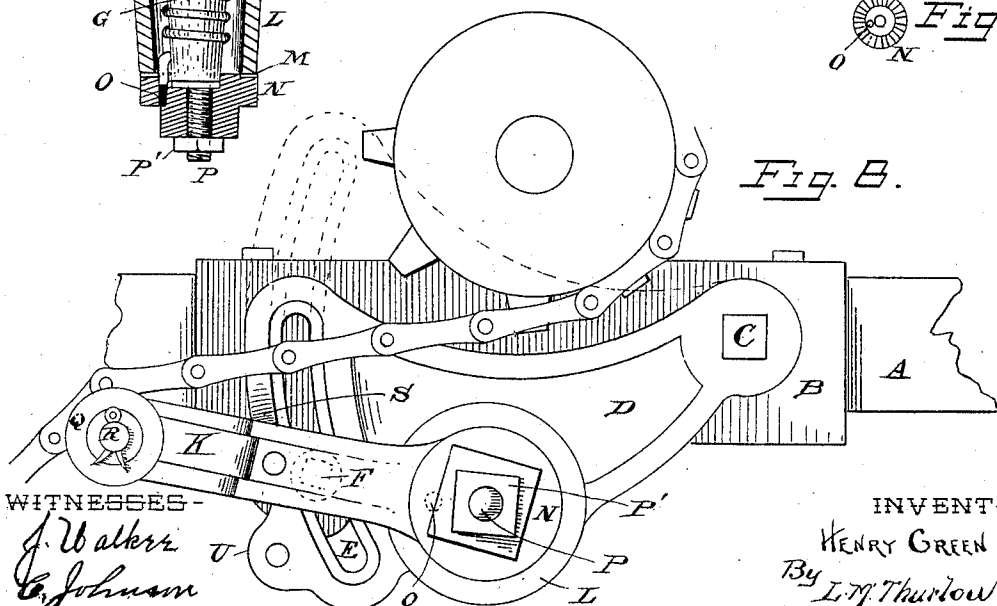


Fig. 8.

WITNESSES-

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UNITED STATES PATENT OFFICE.

HENRY GREEN, OF PEKIN, ILLINOIS, ASSIGNOR TO THE ACME HARVESTING COMPANY, OF SAME PLACE.

CHAIN-TIGHTENER.

SPECIFICATION forming part of Letters Patent No. 660,570, dated October 30, 1900.

Application filed November 27, 1899. Serial No. 738,276. (No model.)

To all whom it may concern:

Be it known that I, HENRY GREEN, a citizen of the United States, residing at Pekin, in the county of Tazewell and State of Illinois, have invented certain new and useful Improvements in Chain-Tighteners; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention pertains to improvements in chain-tighteners.

The object thereof is to furnish an adjustable tightener for sprocket-chains and belts employed on various machines. The adjustments permit of employing a rigid and a flexible tightener in one device, all of which will be hereinafter fully described.

In the appended drawings, Figure 1 is an elevation of a portion of the tightener secured to a part of the machine-frame, showing the sprocket-wheel and chain above it. Fig. 1^a is a view of a plate shown in Fig. 1. Fig. 2 is a top view of the same minus the said wheel and chain. Fig. 3 is an elevation of an adjustable arm used on the portion just described. Fig. 4 is a top view of Fig. 3. Fig. 5 is an edge view of a serrated cap. Fig. 6 is a top view of the same. Fig. 7 is a longitudinal section of portions of Figs. 2 and 4 combined, showing a spring for use therewith. Fig. 8 is an elevation of the completed tightener on a larger scale.

In the figures, A indicates a portion of the machine employing the tightener, and B is a metal plate suitably attached thereto. While this plate is not absolutely necessary in constructing and using my improved tightener, I show it and prefer to use it. To this plate is pivotally attached an arm D by means of a bolt C, or in the absence of the plate B said arm may be directly attached to A. At the free end of the arm D is a slot E, concentric with the said bolt C. Vertical adjustments may be given the said arm D, and, when adjusted to the position desired, it is fixed at that point by means of a bolt F passing through said slot and a suitable aperture *a* in the plate B. It is understood, however, that a suitable depending lug on the portion A will answer, in the absence of the plate B, through which to pass the said bolt. At right angles to the plane of the arm described is a taper-

ing post G, provided with a bolt-hole H, running longitudinally through it, the purpose of which will be presently understood. Surrounding said post is an opening helical spring I, one end of which is inserted in an aperture J, Fig. 1, near the base of the said post G. An adjustable arm K, Fig. 3, has a tapering hollow hub L, adapted to slip over the post and its spring, as shown in Fig. 7. The said hub is provided with teeth or serrations M on its outer end, and a cap N, Figs. 5 and 6, is likewise toothed on one of its faces and is adapted thereby to engage with the teeth M. The opposite face of the cap is made with a square projection to receive a wrench for purposes of adjustment. The outer free end of the spring I enters an aperture O in the said cap. A bolt P is passed through the post and cap and serves to keep the latter in engagement with said teeth M by a nut P'. It is to be observed that tension, whether little or much, may be imparted to the spring and from that to the arm K in a direction to raise the latter against the chain; but this will be more thoroughly brought out as the description of the invention is proceeded with. On the end of the arm K opposite to the hub L is a friction-roller Q, carried on a pin R, and on which the sprocket-chain runs.

The users of machinery employing chain-tighteners are often of different opinions as to the best and most reliable form of this class of attachments. While one prefers a flexible tightener, another desires a stationary one, and still another a form that can be changed from a flexible to a stationary tightener at will. I have devised, therefore, one which combines the requisites of each. In setting the machine up for use the arm D is attached to the portion A, substantially as described, the spring I is passed over the post or wrist G in the position shown and described, the hub of the arm K is passed over said spring and post, and the cap N is set upon said hub. The bolt P is then inserted, after which the desired tension is given the spring by applying a wrench to the cap and turning it against the opening action of the spring until the desired stress is imparted to the arm. Then by tightening the said bolt the device is set for action. By this means roller Q is brought up with considerable pressure against the chain to sustain it. The upward movement

of the arm K is limited by a lug S on the slotted extremity of the arm D. When it is desired to make the device perfectly rigid as against the pressure of the chain upon roller Q of the arm K, the spring, by means of the cap N, is tightened nearly to its highest limit. By this means the arm K is normally held against the said lug S. However, should an obstruction inadvertently get between the chain and either of sprockets or between the chain and roller Q the strain caused thereby causes the arm to give against the spring, and no damage is done. When the operator desires to have a flexible tightener instead of an almost rigid one, it is only necessary to partially lax the spring, and if more motion is required the bolt F is loosened and the arm D pushed upward, as shown by dotted lines in Fig. 8. This forces the lug S away from engagement with the arm, and it will be seen that a nicety of adjustment may be had.

Thus far I have described two methods of adjustment of my tightener; but still another is possible by depressing arm K and passing a pin or bolt through it and a lug U, formed with the arm D, as shown. Should an operator wish a perfectly rigid chain-tightener, this form will meet his desires. When so adjusted, it is only necessary to raise the said arm D by its slot and bolt F to the needed height to bring the roller Q and chain into contact. I do not limit myself to any particular construction nor to the exact arrangement shown and described, as it may be varied in a number of ways and accomplish the desired ends. This device is equally well adapted as a belt-tightener and may be used for that purpose.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a chain-tightener of the character described, a fixed arm secured to the machine-frame and adapted for vertical adjustment thereon and a spring-controlled arm pivoted to the first-mentioned arm and adapted to receive pressure of the chain of the machine for the purposes set forth.

2. In a chain-tightener of the character described, a fixed arm secured to the machine-frame but adapted for adjustment thereon in a vertical direction and a spring-controlled arm adapted to receive the pressure, or strain, of the chain or belt of the machine for the purposes set forth.

3. In a chain-tightener of the character described, an arm rigidly attached to the machine-frame, when in actual use, but capable of vertical adjustment thereon, a spring-controlled vibrating arm pivoted to such rigid arm and adapted to withstand pressure of the driving-chain to give under undue or unexpected strains, and a rigid stop for limiting the movement of said arm in the direction in which it is forced by the tension of the spring, substantially as set forth.

4. In a chain-tightener of the character described, an arm D pivoted to the machine-

frame, means for adjusting same vertically thereon, a vibrating or rocking arm thereon, a spring for controlling said arm and means for adjusting the tension thereof for imparting the desired pressure of the arm against the chain substantially as and for the purposes set forth.

5. In a chain-tightener, an arm, at one end, pivoted to the machine-frame, the other end adapted for vertical adjustment on said pivot, substantially as described, a vibrating, or rocking arm pivoted on said adjustable arm and an adjustable spring for controlling the rocking arm as against the pressure of the chain substantially as set forth.

6. In a chain-tightener of the character described, an arm D pivoted on the machine-frame at one end, there being a slot in its opposite end, means passing through said slot and the machine for permitting adjustment of said arm, a post, or wrist on the arm standing at right angles to the plane thereof, a spring surrounding the latter and secured at one end against movement, an arm having a hollow hub adapted to inclose the spring and post, a cap seated on said hub and adapted to receive the opposite end of the spring, and means for imparting tension to the spring through the cap and holding the same after adjustment whereby tension is given the said arm controlled thereby, substantially as set forth and means for locking the two arms rigidly together.

7. In a chain-tightener of the character described, an arm D pivoted at one end to the machine, there being a slot E in the opposite end thereof concentric with the pivot of said arm, a bolt F passing through said slot and secured to the machine-frame for adjusting the arm, a post, or wrist G at right angles to the face of the latter and a spring I surrounding the post and entered in an aperture J, an arm K having the hollow hub L; the latter surrounding said spring and post and permitted to swing thereon, there being teeth, or serrations on the outer end of the hub, a cap N having similar serrations on its face adapted to engage with those of the hub, and an aperture O in said cap for receiving the free end of the spring, a bolt P with its tightening-nut passing through the post, hub and cap for permitting the adjustment of the spring tension, a roller Q on the free end of said arm K, there being a bolt-hole through the arm, a lug U forming part of said arm D, there being a bolt-hole T in the lug, and means for locking the lug and arm together after bringing the said holes into register, all arranged substantially as and for the purpose herein set forth and described.

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

HENRY GREEN.

Witnesses:

W. H. BINNIAN,
JAMES H. FITZMAURICE.