(No Model.)

F. VAN DE WATER.

BELT TIGHTENER.

No. 306,560. Patented Oct. 14, 1884.

Fig. 3.

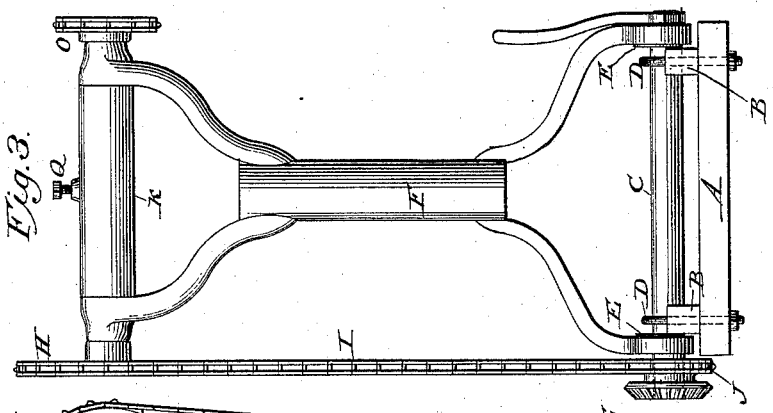


Fig. 2.

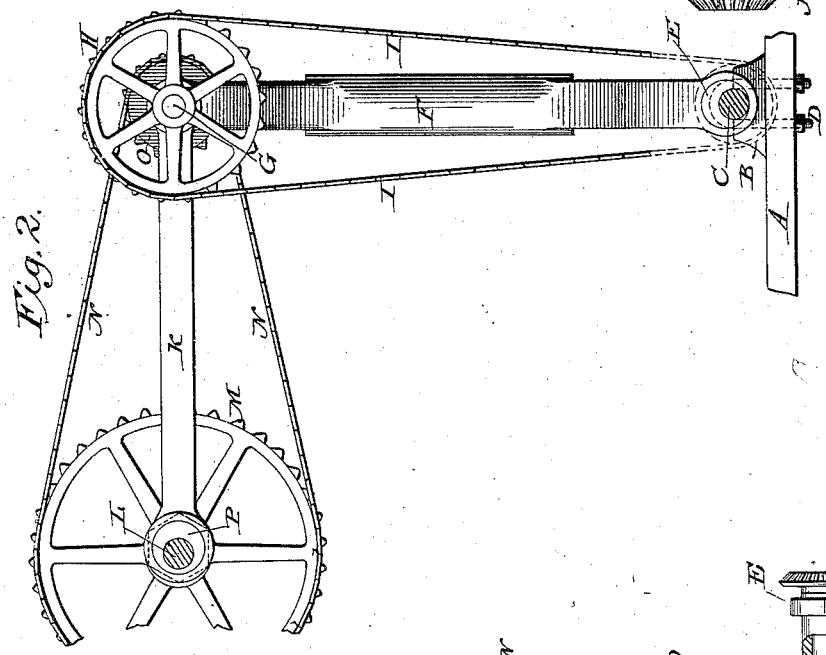


Fig. 1.

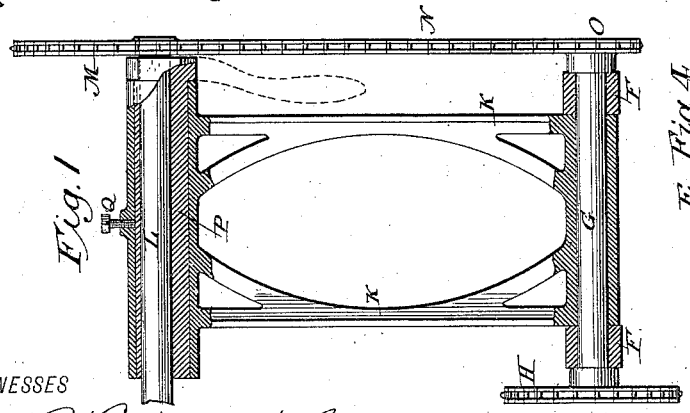
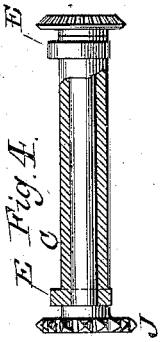


Fig. 4.



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BELT-TIGHTENER.

SPECIFICATION forming part of Letters Patent No. 306,560, dated October 14, 1884.

Application filed June 16, 1884. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK VAN DE WATER, of Whitewater, in the county of Walworth and State of Wisconsin, have invented certain Improvements in Belt-Tighteners, of which the following is a specification.

The objects of this invention are to provide a simple and convenient means of tightening driving chains and belts, and also to provide, in this connection, for the universal movement of a driven pulley with respect to the driving-pulley.

My improvements are applicable to many classes of machinery—such, for example, as harvesting-machines, drilling-machines, and engraving-machines.

Referring to the drawings, Figure 1 represents a top view of my improved mechanism, the bearings of the driven shaft being represented in section. Fig. 2 represents a vertical section on the line *x x* of Fig. 1. Fig. 3 represents a rear elevation of the mechanism, looking in the direction of the arrow in Fig. 2. Fig. 4 is a sectional view of a slightly-modified form of a portion of the device.

In the drawings, A represents a base or support provided with bearings or pillow-blocks B, which give support to opposite ends of a horizontal shaft, C. This shaft is held firmly in the bearings by means of stirrup-bolts D, passing over its top and thence downward through the base A, with nuts applied to its lower ends. At each end the shaft C is provided with an eccentric, E, which gives support to the arms or branches of a standard, F, the standard being free to rock forward and backward around the eccentrics as a center to a limited extent while supported thereon. The upper end of the standard is forked or divided into two arms, the ends of which are fashioned into or provided with bearings to support the opposite ends of a horizontal shaft, G, which revolves freely therein, and one end of which is provided with a pulley, H, driven by a chain, I, from a driving-pulley, J, which is mounted loosely upon the end of the first-mentioned shaft C at the base. The pulley J revolves loosely on the lower shaft, which remains normally in a fixed position. In the event of the chain becoming slack, it is only necessary to rotate the shaft C, the effect of which will be to turn the eccentrics E, which give support to the standard, and thereby elevate the standard and the shaft G at its upper end, whereby the distance between the pulleys H and J is increased.

In order to effect the convenient rotation of the adjusting-shaft C, I propose to provide it with an arm or lever on one end, as indicated in the drawings, or to construct one end of an angular form in order to adapt it to receive a wrench or lever.

While I prefer to employ the stirrup-bolts as the most convenient means of securing the shaft against rotation, it is to be understood that a worm-wheel and worm, a notched locking-wheel with a dog to engage therein, or any of the other equivalents known in the art for like purposes may be substituted.

The essence of the invention consists in supporting the standard, by means of the eccentrics, in such manner that it may be moved in an endwise direction, and so long as this mode of operation is retained the details may be modified to any extent desired.

Around the upper shaft, G, directly thereon, or upon the journals formed on the standard, I mount a horizontal frame, K, the opposite end of which gives support to a horizontal shaft, L, provided with a pulley, M, driven by a chain, N, from a pulley, O, secured to the shaft G, before alluded to. The shaft L is not mounted directly in the frame K, but within a tubular box or bearing, P, the exterior surface of which is made cylindrical and eccentric to the axis of the shaft. By rotating this tubular bearing the shaft L will be moved to and from the driving-shaft G, and thus the distance between the pulleys M and O increased or diminished, so as to tighten or loosen the belt N, as may be demanded.

Inasmuch as the frame K, which supports the bearing P and shaft L, is arranged to swing about an axis coincident with that of the driving-shaft G, it follows that the frame K and shaft L may be swung upward and downward without affecting the tension of the chain N.

I propose to provide one end of the tubular bearing P with a hand-lever, as indicated in dotted lines, or with an angular hub, or with

a series of holes, or otherwise to adapt it to receive a device by which to effect its rotary adjustment. I also propose to combine with the tubular bearing a locking device of any suitable character to prevent its accidental rotation. A simple means for this purpose consists of a set-screw, Q, seated in the frame K, and acting against the bearing, as shown in Figs. 1 and 2.

From the foregoing description it will be perceived that means are provided for the adjustment of the driving-chains I and N independently of each other, and that by the employment of the swinging standard F and the swinging frame K, jointed thereto, I am enabled to move the shaft L both vertically and horizontally at will without affecting the tension or action of the chains or belts.

While I have represented the shaft as arranged in a horizontal position, it will be obvious to the mechanic that the entire organization may be turned upon its side to bring its shafts into a vertical position when required. It will also be manifest that the swinging standard may be employed in connection with the shafts at its two extremities, and with the eccentrics, for effecting the adjustment of the chains I independently of the frame K and shaft L; also, that the eccentric-bearing P and frame K may be employed, in connection with a fixed support, in place of the swinging standard F, the means for adjusting the two chains being, in other words, capable of use independent of each other.

While it is desirable in ordinary cases to mount a driving-pulley, J, loosely on the shaft C, the latter may be made tubular and the shaft mounted on a separate sleeve or pulley extended through the same, as represented in Fig. 4.

Having thus described my invention, what I claim is—

1. The combination of a shaft and a pulley thereon, a second shaft provided with a pulley, a belt or chain connecting said pulleys, eccentrics mounted on the first shaft, and a standard or support mounted at one end upon said eccentrics, and adapted at the opposite end to sustain the second shaft, substantially as described and shown, whereby the rotation of the eccentrics is caused to vary the distance between the shafts, and thus regulate the tension of the belt or chain.

2. In combination with the shaft C and the eccentrics thereon, means, substantially as described, for supporting and locking said shaft, the frame or standard F, mounted upon and arranged to swing about said eccentrics, the shaft G, mounted in the free end of said frame, the two pulleys mounted on the respective shafts, and the intermediate chain or belt.

3. The combination of the shaft C and the eccentrics thereon, the pillow-blocks and stirrup-bolts to support and hold said shaft, the pulley J, swinging frame F, shaft G, pulley H, and belt or chain I.

4. The combination of a shaft provided with a pulley, the tubular bearing therefor having its circumference eccentric thereto, and a support in which said bearing is adapted to turn, whereby the rotation of the sleeve is caused to adjust the tension of the chain or belt acting on the pulley.

5. The shaft L, the tubular eccentric-bearing provided with means, substantially as shown, by which to effect its rotation, a support for said bearing, and a locking device, substantially as described, to hold the sleeve against rotation.

6. The pulleys O, the chain or pulley N, the pulley M and its shaft L, the eccentric sleeve or bearing P, and the support K therefor, arranged to revolve about a center coincident with the axis of the pulley O.

7. In combination with the shaft L, the eccentric-sleeve P, the support K, encircling the sleeve, and the screw R, applied as shown.

8. The swinging standard F, the shaft G, sustained thereby, and the frame K, arranged to swing about said shaft, in combination with the shaft C and its eccentrics to adjust the standard, the shaft L, and its eccentric-bearing mounted in the frame K, and the chains and pulleys connecting said shafts, as described and shown, whereby the shaft L is permitted to move both vertically and horizontally with respect to the shaft C, and the independent adjustment of the two driving-chains permitted.

FREDERICK VAN DE WATER.

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