No. 721,635. PATENTED FEB. 24, 1903.

E. J. O'MALLEY.

CHAIN TIGHTENING DEVICE.

APPLICATION FILED JULY 31, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

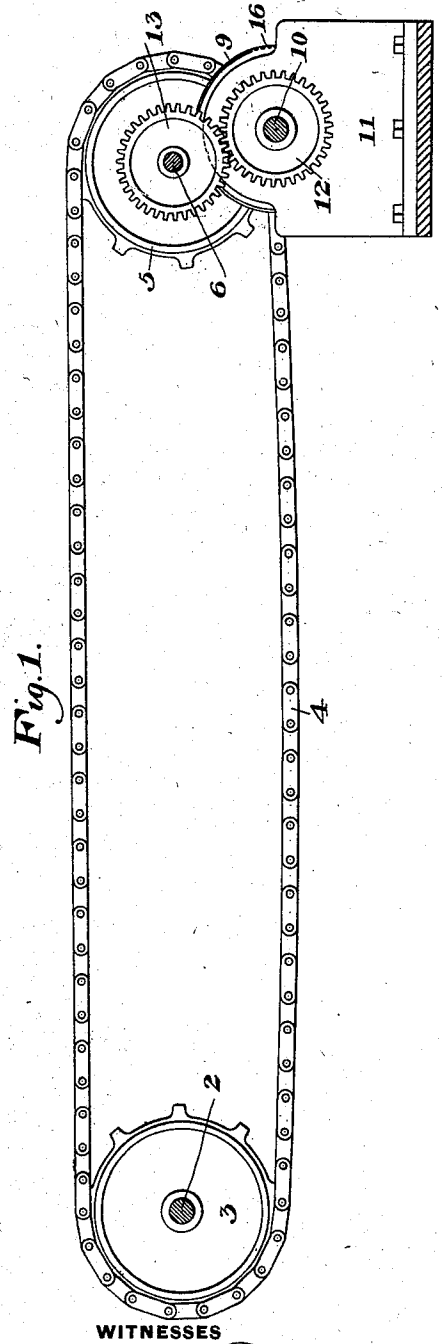


Fig. 1.

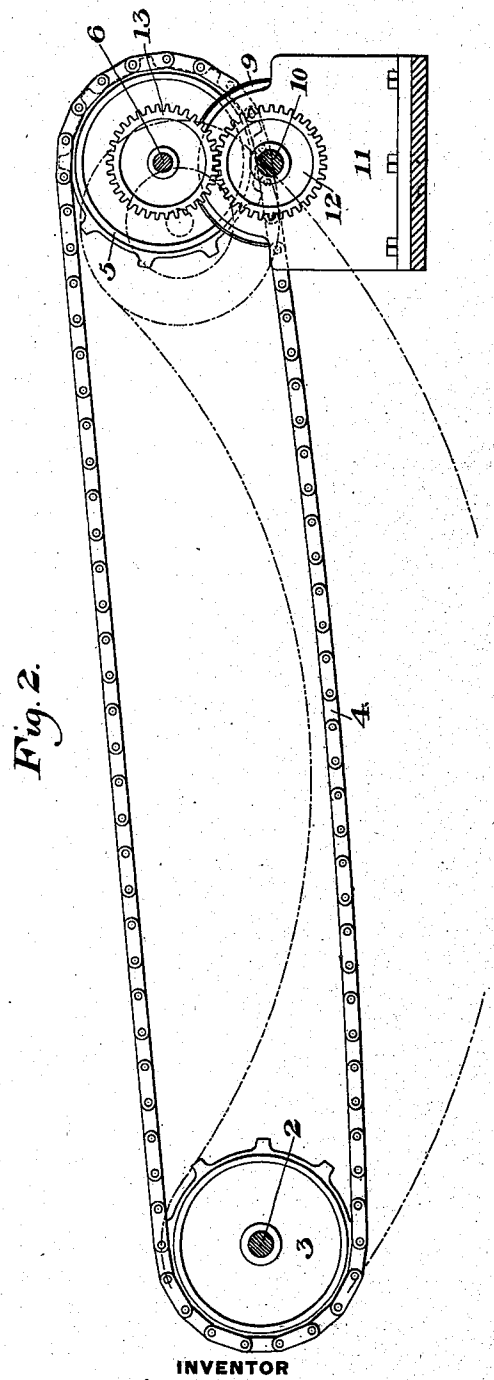


Fig. 2.

WITNESSES

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5.

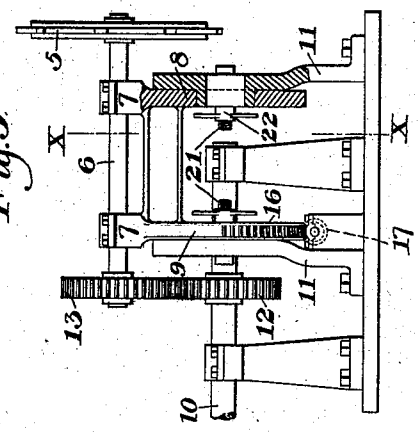


Fig. 4.

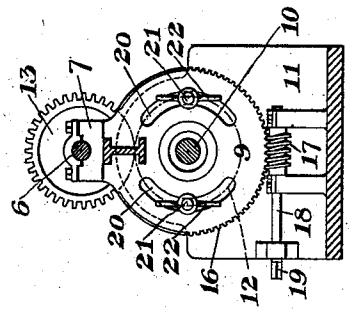
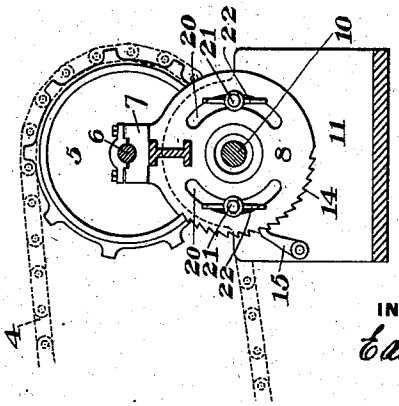


Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWARD J. O'MALLEY, OF McMECHEN, WEST VIRGINIA, ASSIGNOR OF ONE-HALF TO J. E. WRIGHT, OF WHEELING, WEST VIRGINIA.

CHAIN-TIGHTENING DEVICE.

SPECIFICATION forming part of Letters Patent No. 721,635, dated February 24, 1903.

Application filed July 31, 1901. Serial No. 70,354. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. O'MALLEY, of McMechen, in the county of Marshall and State of West Virginia, have invented a new and useful Chain-Tightening Device, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation showing my invention applied to sprocket-chain driving mechanism. Fig. 2 is a similar view showing the parts in two different positions. Fig. 3 is a vertical section on the line X X of Fig. 5 looking toward the right. Fig. 4 is a similar view looking toward the left, and Fig. 5 is an end view of the device.

My invention relates to devices for taking up the slack in chains and flexible driving connections, and is designed to provide a tightener which may be operated while the chain is in motion without disturbing its connections and which acts upon one of the sprocket-wheels over which the chain passes, no separate idler being necessary.

In the drawings, 2 represents a shaft carrying a sprocket-wheel 3, over which extends a sprocket-chain 4, passing over a sprocket-wheel 5 at the other end of its path. The shaft 6, carrying the sprocket-wheel 5, is mounted in arms 7, which project in parallelism from a pair of disks 8 and 9. These disks loosely surround a driven shaft 10, which is mounted in suitable bearings, the disks being mounted on side supports 11. The shaft 10 carries a toothed wheel 12, intermeshing with a pinion 13, secured to the shaft 6, which carries the sprocket-wheel 5. The disk 8 is provided with a series of ratchet-teeth 14 on its edge, with which engages a pivoted pawl 15, which may be held in engagement therewith by gravity or spring tension. This pawl is located on the inner or chain side of the disk and holds the arms 7 in any adjusted position to which they are moved.

To turn or rock the disks, and thereby move the arms 7 to tighten the chain, I show the disk 9 as provided with worm-teeth 16 on its periphery, which are engaged by a worm or screw 17, secured to shaft 18, having an outer squared portion 19 for application of a wrench.

In order to clamp the disks in their different adjusted positions, I provide them with arc-shaped slots 20, through which extend the screw-threaded stems 21, carrying hand-nuts 22. These stems are secured in standards 11 and project toward each other between the disks, as shown.

In operating the device when slack is to be taken up the clamping-nuts for the disk are loosened and the worm-shaft is turned with a wrench. This action turns the disks 8 and 9, and consequently the arms 7, carrying the bearings for the shaft 6, are swung away from the shaft 2, thus tightening the chain. When the desired amount of tightening has been obtained, the pawl 15 holds the arms in place and the disks are clamped by tightening the nuts 22. By making the holes through the disk larger than the shaft 10 they are prevented from exerting a binding strain upon it. The device affords convenient means for putting on or taking off the chain, since by loosening the nuts, throwing back the pawl, and then turning the screw in the other direction the arms 7 may be rocked toward the shaft 2 into the position shown in dotted lines in Fig. 2.

The advantages of my invention result from the mounting of the sprocket-wheel shaft upon a swinging or rocking support and in providing means for rocking this support, since a convenient mechanism is thus afforded by which the chain may be adjusted while in motion without interfering with its driving connections through the gear-wheels or other connections.

The sprocket-wheels may be placed upon the intermediate portions of the shaft, other mechanism may be used for rocking the arms carrying the shaft-bearings, and many other changes may be made without departing from my invention. The device may be applied to other endless drive mechanism, such as belts or ropes, and I intend to cover the same by my broader claims.

I claim—

1. A driving-shaft, a counter-shaft having gear connection therewith, a chain-wheel on

the counter-shaft, a pair of disks adjustable in a circular direction about the axis of the driving-shaft, projecting arms on the disks having bearings for the counter-shaft, and means for adjusting and clamping the disks; substantially as described.

2. A driving-shaft, a counter-shaft, gear connections between the shafts, a chain-wheel at the outer end of the counter-shaft, a pair of disks adjustable in a circular direction about the axis of the driving-shaft, at least one of the disks surrounding said driving-shaft, supports for the disks independent of the driving-shaft, said disks having projecting arms carrying bearings for the counter-shaft, and mechanism for adjusting and clamping the disks; substantially as described.

3. A driving-shaft having a toothed wheel, a counter-shaft having a toothed wheel engaging that of the driving-shaft, a pair of disks adjustable in a circular direction, one of the disks surrounding the driving-shaft, supports for the disks independent of the driving-shaft, both disks having projecting arms carrying bearings for the counter-shaft, a worm-gear device engaging one of the disks, and mechanism for clamping the disks in adjusted position; substantially as described.

4. A driving-shaft, a counter-shaft, gear connection between said shafts, a pair of disks adjustable in a circular direction about the axis of the driving-shaft, supports for the disks independent of the driving-shaft, said disks having projecting arms carrying bearings for the counter-shaft, a worm engaging worm-teeth upon one of the disks, a pawl engaging ratchet-teeth upon the other disk, and additional clamping mechanism for securing the disks in adjusted position; substantially as described.

In testimony whereof I have hereunto set my hand.

EDWARD J. O'MALLEY

Witnesses:

GEORGE W. BARON,

F. M. WORK.