

J. K. VOORHEES & V. V. SPEER.
SHIFTER.

APPLICATION FILED JAN. 9, 1909.

935,711.

Patented Oct. 5, 1909.

2 SHEETS—SHEET 1.

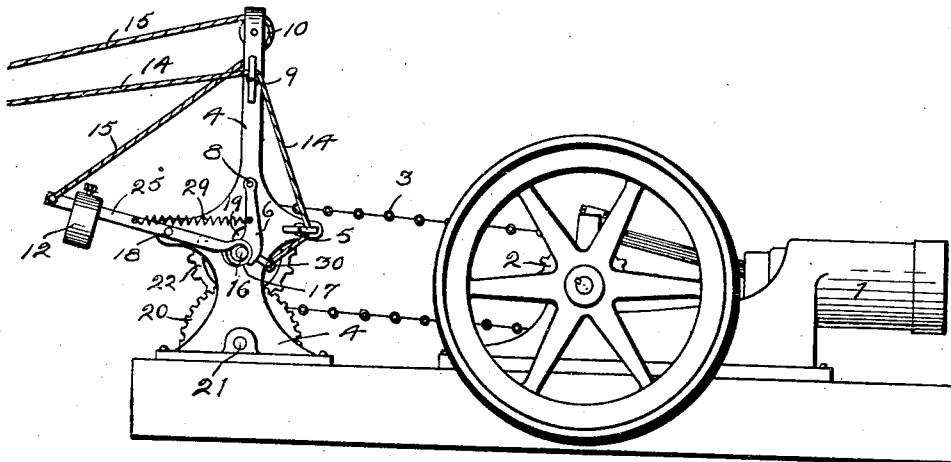


Fig. 1.

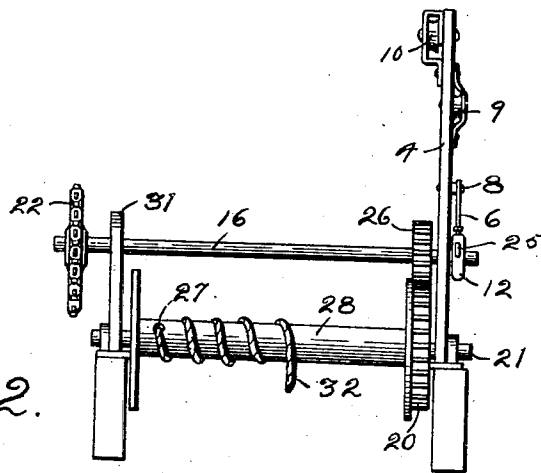


Fig. 2.

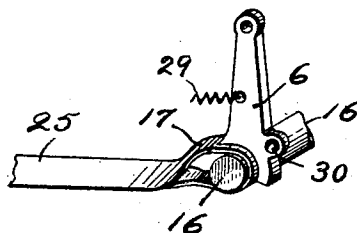


Fig. 3.

WITNESSES:

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2 SHEETS—SHEET 2.

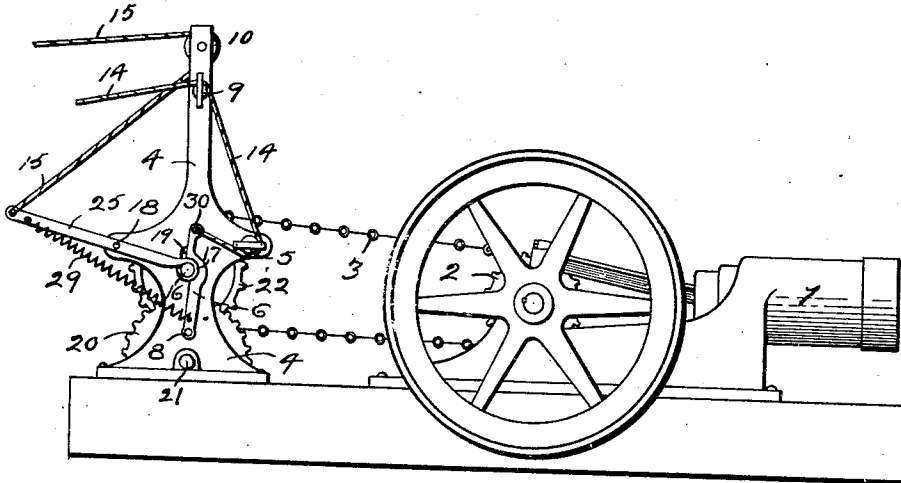


Fig. 4

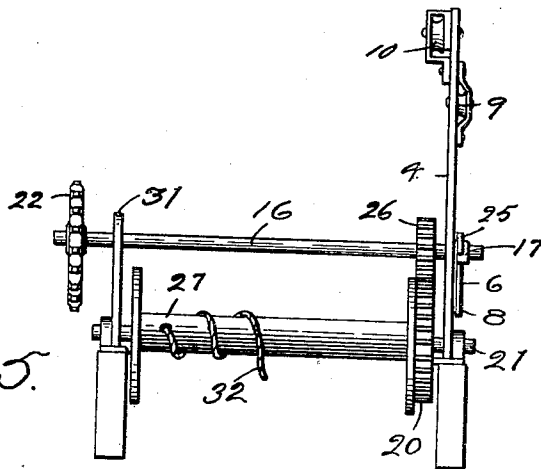
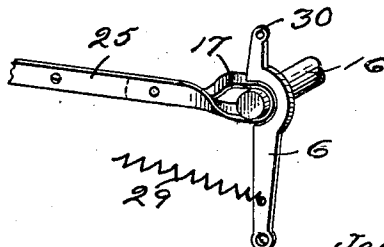


Fig. 5

Fig. 6



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JOHN K. VOORHEES AND VICTOR V. SPEER, OF CEDAR FALLS, IOWA.

SHIFTER.

935,711.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed January 9, 1909. Serial No. 471,416.

To all whom it may concern:

Be it known that we, JOHN K. VOORHEES and VICTOR V. SPEER, citizens of the United States of America, and residents of Cedar Falls, Blackhawk county, Iowa, have invented certain new and useful Improvements in Shifters, of which the following is a specification.

Our invention relates to improvements in shifters, and the object of our improvement is to provide means for shifting the position of one end of a rotary shaft in opposite directions as desired, such means being adapted especially to cause said shaft to intermittently communicate motion to another shaft or to gearing, and the means for causing the shipping action being arranged to obviate peripheral wear by the interposition of a suitable body between said means and said shaft. This object we have accomplished by the mechanism which is hereinafter fully described and claimed, and which is illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of our invention as employed in connection with a winding-drum, and being driven by a prime-mover. Fig. 2 is a forward end elevation of said mechanism. Fig. 3 is a perspective detail, broken and enlarged, of a portion of the shifting-mechanism. Fig. 4 is a side elevation of our invention, with a slightly varied construction and emplacement of the shifting mechanism for moving the shaft in one direction. Fig. 5 is a forward end elevation of the same. Fig. 6 is a perspective detail, broken and enlarged, of a portion of the shifting-mechanism shown in Fig. 4.

Similar numerals refer to similar parts throughout the several views.

The power-shaft 16 has its right-hand end mounted in a bearing in the upright 31, and this end of the shaft carries a sprocket-wheel 22, the latter being driven by a sprocket-chain 3 passed about a sprocket-wheel 2 on the crank-shaft of an engine 1. The left-hand end of said shaft is seated in a vertical bearing-slot 19 in the upright 4 to permit of its moving therein, and this end of said shaft carries a pinion 26. A winding-drum 28, to which may be secured one end of a cable 32 at 27, is mounted on a rotary shaft 21, whose ends are seated in bearings in the said uprights. A gear-wheel 20 is secured to the shaft 21 and is adapted to intermesh with the teeth of the pinion 26.

A medially-pivoted lever 25, whose ful-

crum is a stud 18 projecting from the upright 4 has a weight 12 slidably and adjustably secured to the outer member of the lever, and to the same end of the lever is secured a pull-cord 15 which is then passed over a pulley 10. The other end of the lever has a band 17 which loosely encircles the left-hand end of the power-shaft 16.

A pendulous lever-arm 6 is pivotally suspended from a stud 8 projecting from the upright 4. The lower end of the arm 6 is formed to conform to a portion of the outer periphery of the circular band 17, along its upper side. A pull-cord 14 is secured to the right-hand side of said arm 6 near its end at a projecting eyelet 30. This pull-cord is then passed about the pulleys 5 and 9, which are supported by the upright 4. A tension-spring 29 is connected between the arm 6 and the lever 25.

In Figs. 4 to 6 inclusive, are shown a slight variation in the construction, the lever-arm 6 being pivoted below the band 17 and projecting upwardly. In this latter construction, the spring 29 is connected between the arm 6 and the outer member of the lever 25 below the band 17, and this location of the spring by pulling downward on the outer member of the lever 25, obviates the use of a weight 12 thereon. When it is desired to disengage the gears 20 and 26 from each other, the cord 14 is pulled which moves the arm 6 out of the upward path of the shaft 16. The weight 12 then acts to tilt up the end of the shaft 16, or if the construction is used as shown in Fig. 4, the tension of the spring 29 will be sufficient to lift the end of said shaft. To reengage said gears, the cord 15 is pulled, which lifts the outer end of the lever 25 and lowers the band 17, thus moving down the end of the shaft 16. The cord 14 being loose the spring 29 contracts and causes the arm 6 to drop, its curved portion engaging and securing the end of said shaft in its lowermost position. The band 17 may be formed as shown in an elongated loop or closed curve to allow for the swing of the lever 25, or the band may be circular and a slotted bearing orifice provided in said lever to receive the stud 18 to effect the same object. The substitution or interposition of a bearing-band 17 between the shaft 16 and the swing-arm 6, causes the frictional wear due to the shaft's rotation to be taken up by said band, and thus prevents rapid wearing away and con-

sequent shortening of the arm 6, which would derange the action of the device by not holding the end of the shaft and the gears in secure mesh.

- 5 This device may be used in any mechanism where the shifting of the power-shaft is necessary, but is especially needed in connection with a winding-drum as shown.

10 Having described our invention, what we claim as new, and desire to secure by Letters Patent, is:

1. In combination, a rotary shaft, a band seated about one end of said shaft, means adapted to cause said band to move with said shaft in one direction, and a removable body formed to fit over a part of the outer periphery of said band and movable to engage said band and hold it and its contained shaft in one position.

2. In combination, a rotary shaft, a band seated about one end thereof and secured to a pivoted lever, means adapted to move said lever and band in one direction, a swing-arm formed to fit over a part of the outer surface of said band, and means for shifting said swing-arm out of or into engagement with said band, said means adapted to hold said arm in engagement with said band and secure said shaft in a certain position.

3. In combination, a rotary shaft, a pinion on one end thereof, a gear-wheel enmeshed with said pinion, means for moving one end of said shaft to unship said pinion from said gear-wheel, means for returning said pinion into mesh with said gear-wheel, and a swing-arm adapted to be moved toward or away from said shaft, said arm being adapted to hold said shaft when swung toward it, in a certain position to enmesh said pinion and gear-wheel.

4. In combination, a rotary shaft having one end in a fixed bearing and the other end mounted to move to and fro, a pinion mounted on the movable end of said shaft, another rotary shaft having a winding-drum and gear-wheel mounted thereon the latter adapted to enmesh with said pinion, a pivoted lever having a band at one end formed to surround the movable end of the first-mentioned shaft, means for moving said lever to disengage said pinion from said gear-wheel, a swing-arm having one end formed to fit over part of said band, means for moving

said swing-arm toward and away from said band, and means adapted to hold said swing-arm in engagement with said band when seated thereon to hold said shaft in one position and said pinion in mesh with said gear-wheel.

5. In combination, a rotary shaft, a band encircled about one end thereof, means adapted to cause said band to move the contained end of said shaft in opposite directions alternately as desired, a removable swinging-arm formed to fit over a portion of the outer periphery of said band, and means adapted to move said arm out of engagement with said band.

6. In combination, a rotary shaft, a band seated loosely about one end thereof, said shaft being mounted to have the end seated in said band movable to and fro, means for moving the inclosed end of said shaft to and fro, a movable swinging-arm adapted to swing into engagement with and lock said band in a certain position, and resilient means connected to said swinging-arm adapted to hold it in engagement with said band.

7. In combination, a rotary shaft, a band seated loosely about one end thereof, means adapted to move said band in one direction, a swing-arm adapted to fit over said band when the latter is shifted to a certain position, and a yieldable resilient body connected between said band moving-means and said swing-arm.

8. In combination, a rotary shaft one end of which is mounted for to and fro movement, means for moving said shaft-end to and fro, a swing-arm adapted to be moved into the path of movement of said shaft-end, and a body interposed between said shaft-end and said swing-arm adapted to be engaged therebetween and therewith to secure said shaft-end in a certain position and to transfer the rotary frictional wear of said shaft from said swing-arm to said interposed body.

Signed at Waterloo, Iowa, this 21st day of Dec. 1908.

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Witnesses:

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