(No Model.) 2 Sheets—Sheet 1.

A. G. ANDERSON.

TENSION DEVICE FOR BELTS.

No. 429,877. Patented June 10, 1890.

Fig 1

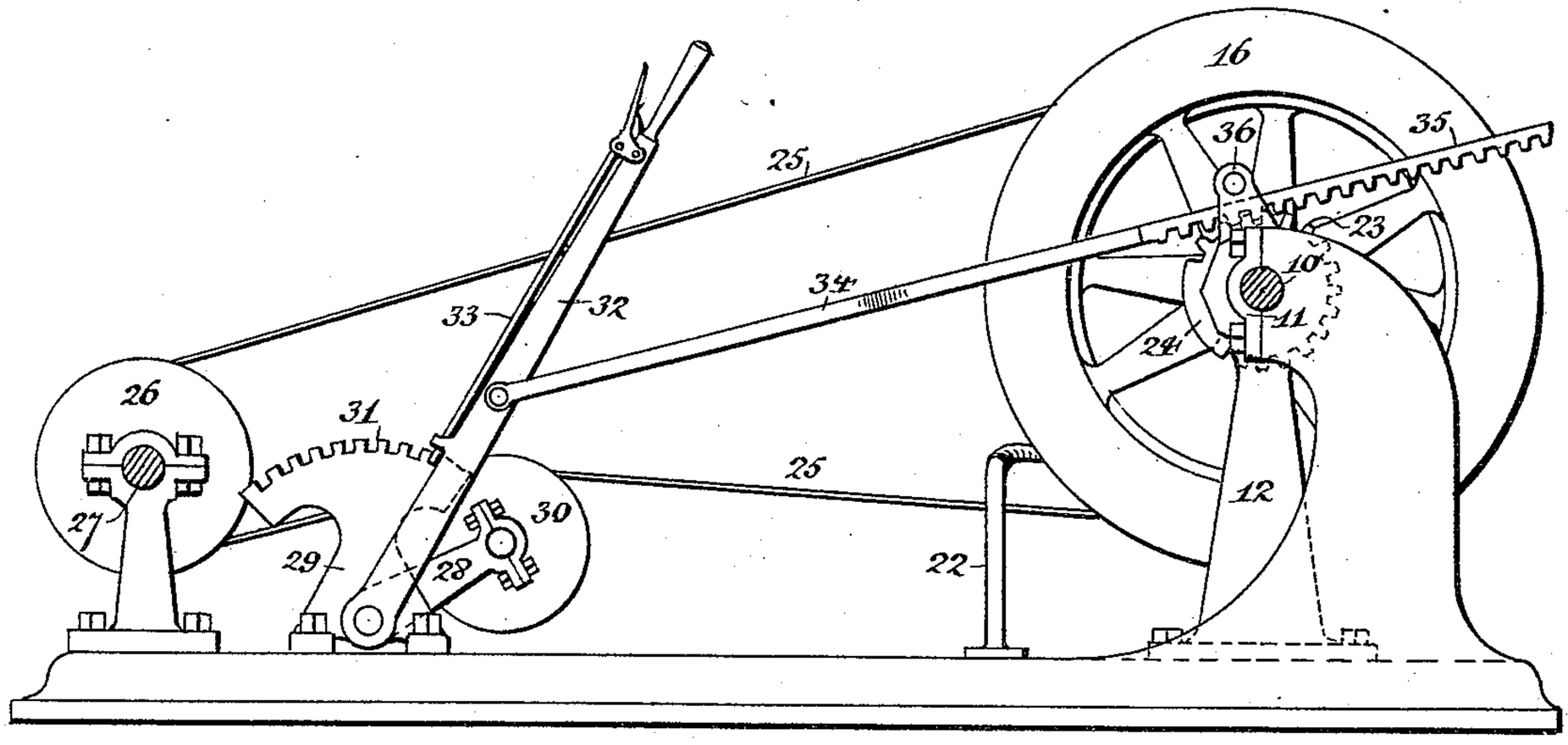
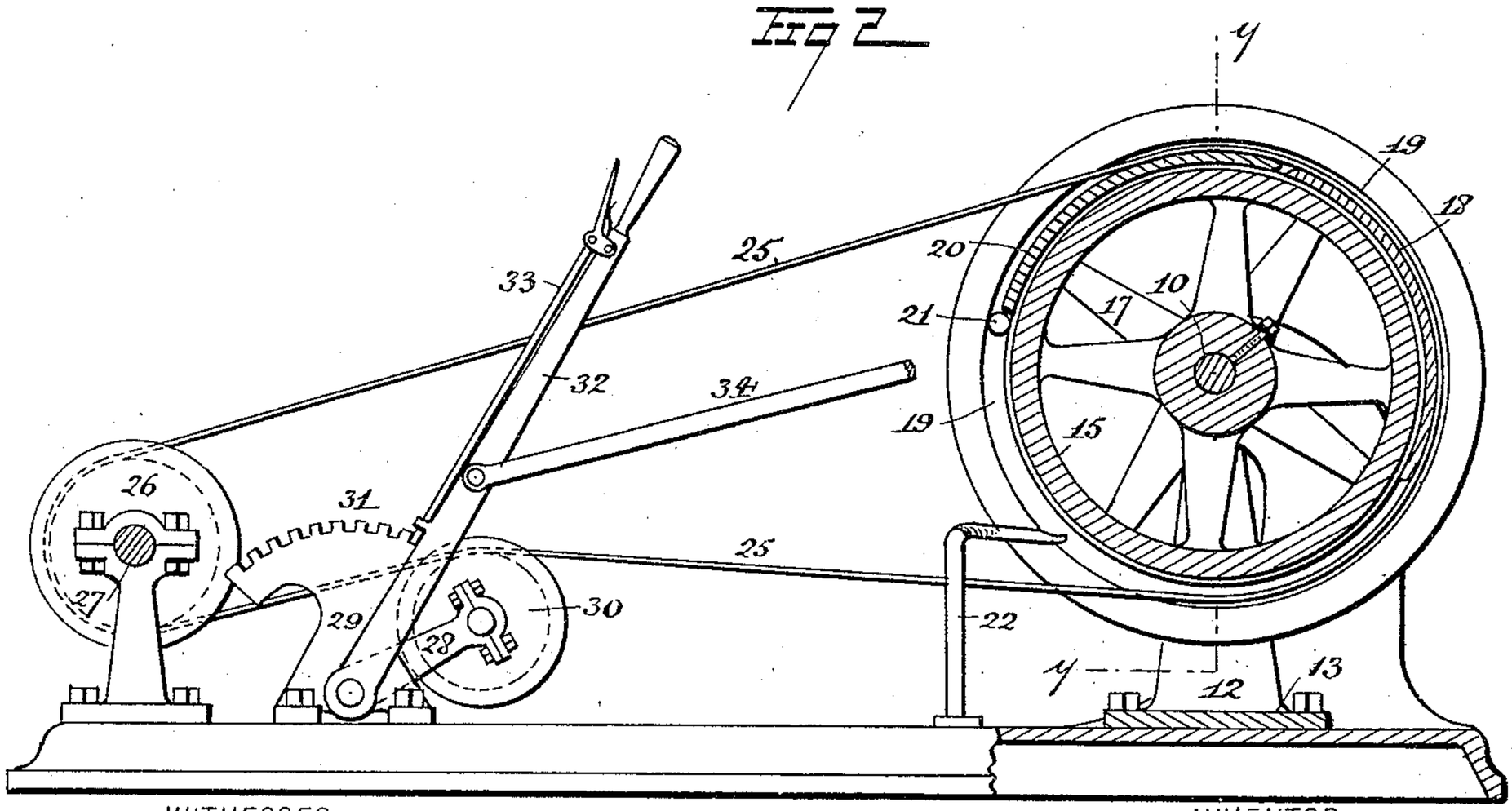


Fig 2



WITNESSES:

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(No Model.) 2 Sheets—Sheet 2.

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Fig 3

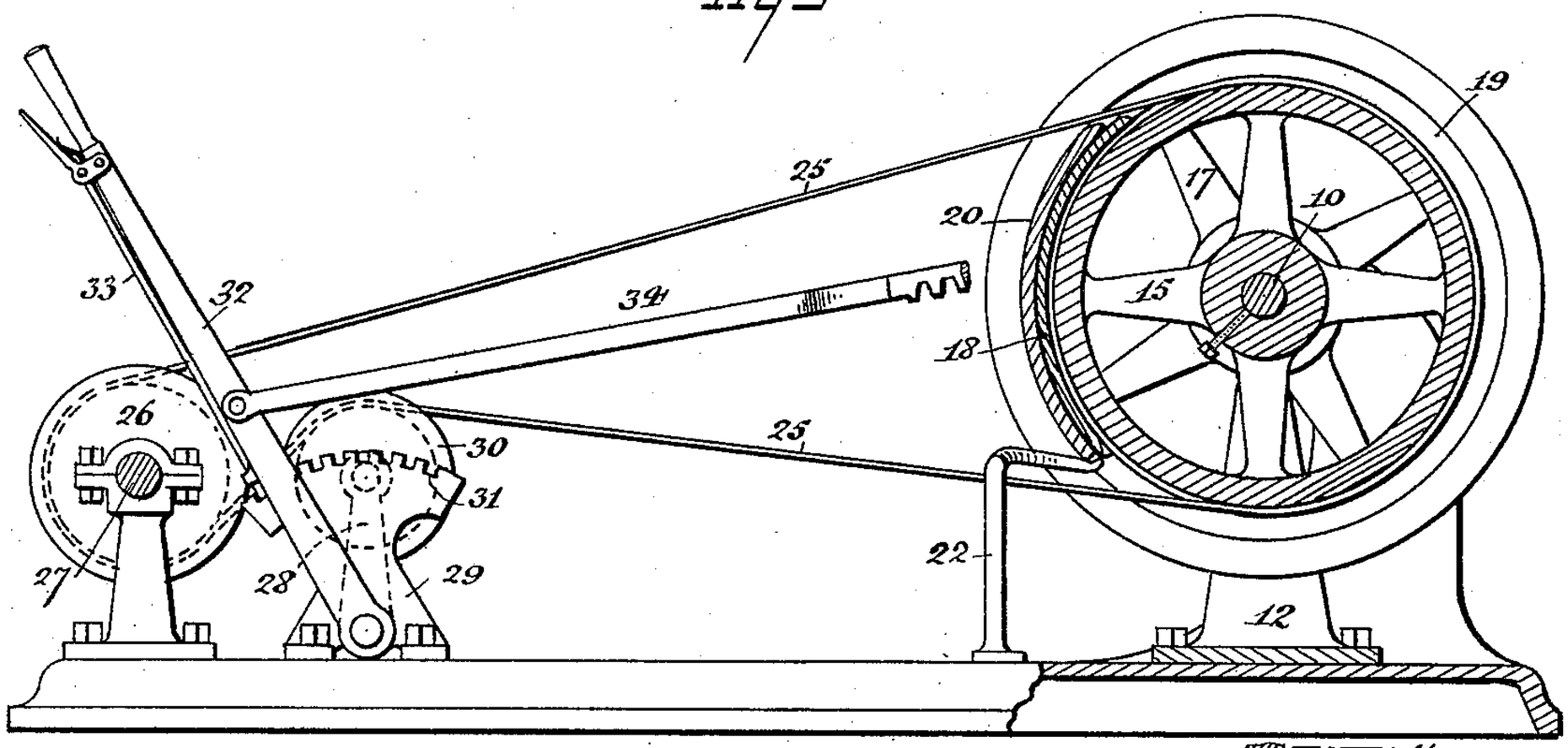


Fig 4

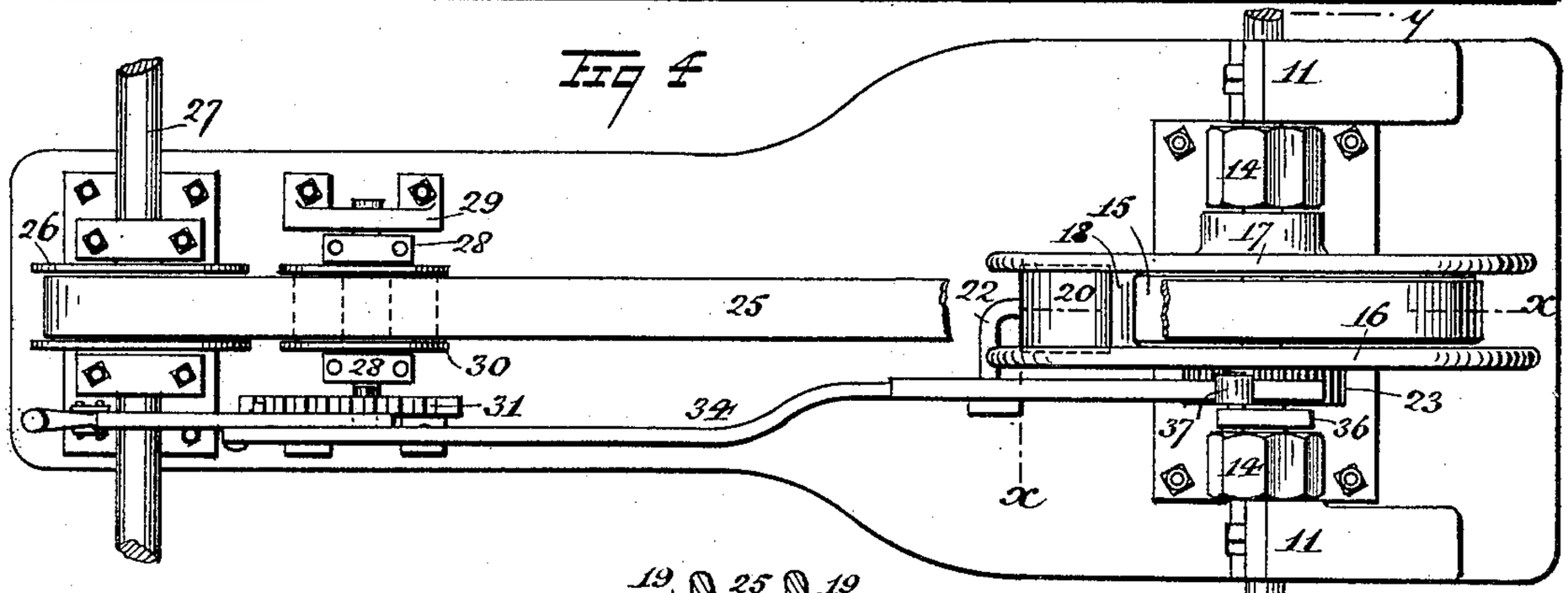
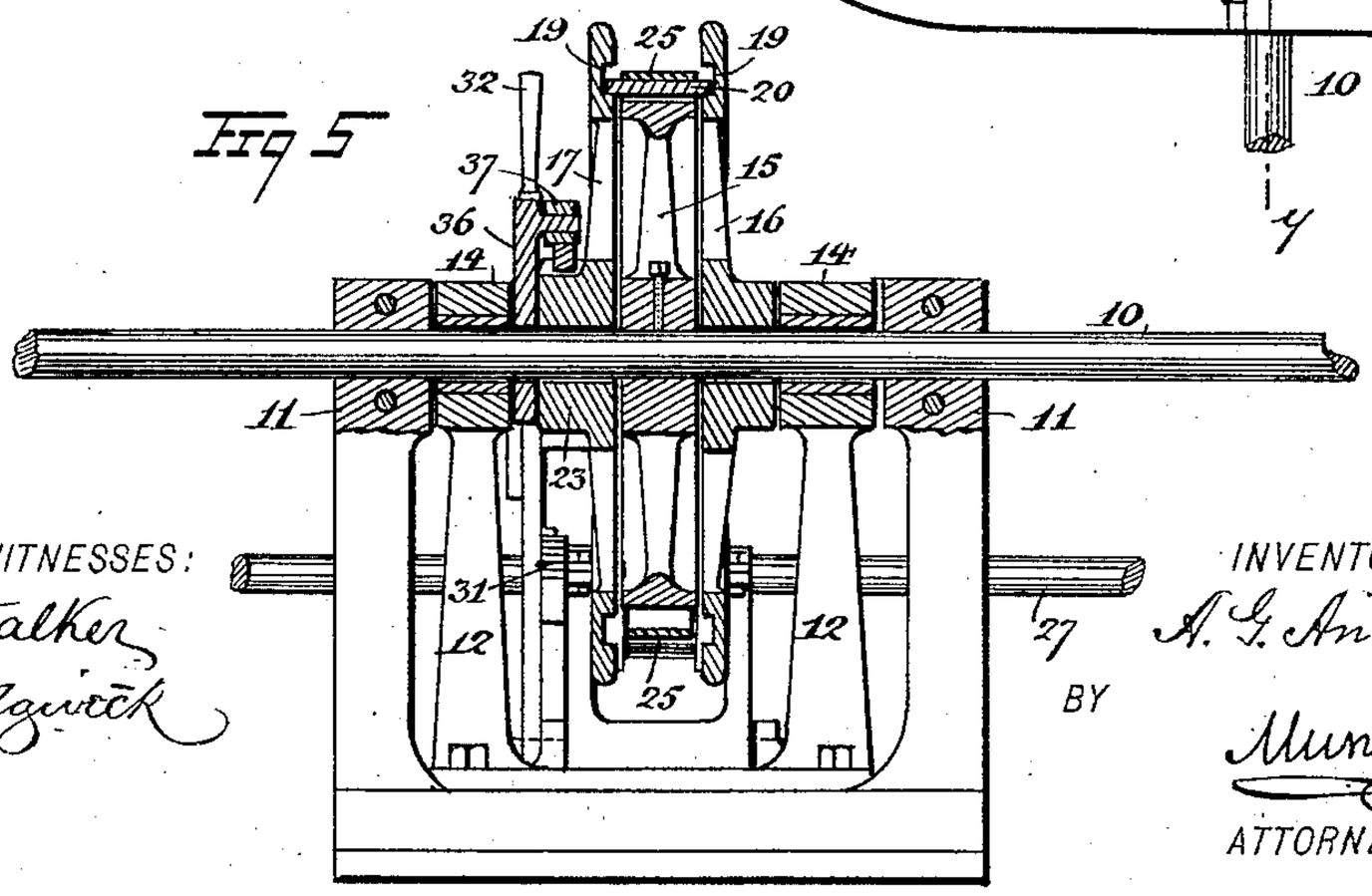


Fig 5



WITNESSES:
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UNITED STATES PATENT OFFICE.

ANDERS GUSTAF ANDERSON, OF WEST OAKLAND, CALIFORNIA.

TENSION DEVICE FOR BELTS.

SPECIFICATION forming part of Letters Patent No. 429,877, dated June 10, 1890.

Application filed December 12, 1889. Serial No. 333,428. (No model.)

To all whom it may concern:

Be it known that I, ANDERS GUSTAF ANDERSON, of West Oakland, in the county of Alameda and State of California, have invented a new and Improved Tension Device for Belts, of which the following is a full, clear, and exact description.

My invention relates to an improvement in tension devices for belts, and has for its object to provide a device of simple and durable construction, capable of attachment to any driving-pulley, for instance, and which will dispense with the necessity of loose pulleys.

A further object of the invention is to dispense with the use of a shifter in contact with the belt, and to so construct the device that the movement of a lever in one direction will cause the drive-wheel to transfer motion to the driving-belt, and when the lever is moved in the opposite direction wherein the driving-pulley may rotate without engaging the belt.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement applied to the driving-pulley of a machine. Fig. 2 is a partial side elevation and section, the section being taken practically upon the line *x x* of Fig. 4, the device being in position to permit the pulley to rotate without engaging with the driving-belt. Fig. 3 is a view similar to that illustrated in Fig. 2, the device being in position to cause the driving-belt to be rotated by the driving-pulley. Fig. 4 is a plan view of the device, and Fig. 5 is a transverse section taken practically upon lines *y y* of Figs. 2 and 4.

The ends of the drive-shaft 10 are journaled in any suitable form of bearings 11, and between the said bearings 11 two pillars 12 are projected vertically upward from a base-plate 13. Upon the upper end of each pillar a journal-box 14 is secured or formed integral therewith, the bore of said boxes being preferably of much greater diameter than the diameter of the drive-shaft. These boxes 14 are ordinarily located one at each side of the center of the drive-shaft, and between the said boxes a drive-pulley 15 is keyed or otherwise attached to the shaft, as shown in Fig. 5. At each side of the drive-pulley 15 a disk 16 and 17 is respectively located, loosely mounted upon the drive-shaft, each of the disks being ordinarily provided with a hub, and the boxes 14 are so located with respect to the disks that their inner ends virtually contact with the outer ends of the hubs, as is also best shown in Fig. 5, so as not to come in contact with the drive-shaft. The disks 16 and 17 are tied together by a fender 18, located near the periphery, the side edges of the said fender being secured in the inner faces of the disks. The fender 18 is semicircular, and is ordinarily made of a length corresponding to about one-third of the circumference of the disks. Upon the inner face of each disk a groove 19 is produced, which groove follows the peripheral contour of the disk, and in said grooves 19 the fender 18 is secured. The grooves 19 of the disks are of greater width than the fender 18, whereby a second movable fender 20, held to slide in said grooves, may, when occasion demands, slide over to a contact with the outer face of the fixed fender. The movement of the fender 20 is limited in one direction by contact with stop-pins 21, one of said pins being preferably located in each of the grooves 19, and the movement of the said sliding fender 20 is limited in the other direction by contact with an arm 22, located in front of the drive pulley between the disks.

Upon the hub of the disk 17 a pinion 23 is formed, which pinion is provided with a toothless surface 24, which toothless surface constitutes about one-eighth of the circumferential surface of the said pinion, as illustrated in Fig. 1.

The driving-belt 25 is illustrated as passed over the drive-pulley 15, and also over a smaller pulley 26, mounted upon a counter-shaft 27. Near the said counter-shaft 27 an

essentially U-shaped hanger 28 is journaled in brackets or standards 29, secured to any suitable support, and between the members of said hanger a friction-pulley 30 is journaled, the said pulley being provided with a peripheral groove to receive the driving-belt 25. One of the brackets or standards 29 is carried upward above the other, and the upper surface is formed with a series of teeth 31 to constitute a rack, and the hanger is provided with a trunnion, which extends through and beyond the bracket or standard constituting the rack, and to the said trunnion the lower end of a lever 32 is secured, which lever is provided with the usual thumb-latch 33, adapted to engage the toothed surface 31 of the bracket or standard, as is best shown in Figs. 1 and 2.

At or near the center of the lever 32, upon its outer face, one extremity of a rod 34 is pivoted, and upon the under face of the other end of the said rod teeth are produced to form a rack 35, which rack is adapted to contact with the pinion 23. In order to prevent the rack from leaving the pinion, an arm 36 is loosely mounted upon the drive-shaft, which arm carries at its upper extremity a friction-roller 37, which roller engages with the upper surface of the rack 35.

In operation, when it is desired to stop the revolution of the counter-shaft 27, the lever 32 is thrown in direction of the drive-pulley, as shown in Figs. 1 and 2, whereupon the hanger 28, carrying the friction-pulley 30, is thrown downward to such an extent as to elongate the belt 25. In throwing the lever 32 in the direction of the drive-pulley the rod 34 is also pushed in the direction of the said pulley, and the racked surface 35, acting upon the pinion 23, turns the said pinion and causes the disks 16 and 17 to make a partial revolution, the result of which is to cause the loose or movable fender 20 to drop into the grooves 19 of the disks and contact virtually at one end with the fixed fender 18, as shown in Fig. 2, and at the opposite end with the stop-pins 21. Thus the two fenders 18 and 20 form a shield covering the upper or two-thirds' portion of the drive-pulley, and with said fenders the driving-belt 25 contacts, and is thereby held out of engagement with the drive-pulley. Thus the movement of the counter-shaft 27 is suddenly stopped and the belt 25 is idle.

In order to set the counter-shaft 27 in motion, the lever 32 is carried in the direction of the said counter-shaft, as illustrated in Fig. 3, and the racked surface of the rod 34 acting upon the pinion causes the disks 16 and 17 to make a partial revolution in the direction of the said counter-shaft, whereupon the movable fender 20 is made to slide upon the fixed fender 18 as the latter is carried downward, and when the revolution of the disks has been stopped by the lever 32 reaching its greatest forward pitch the movable fender 20 drops by gravity and contacts with the stop 22, whereupon both fenders are concentrically situated and located between the upper and lower members of the drive-belt out of contact with the latter. The said belt, when the disks and the fenders are in this position, contacts virtually with the drive-pulley and is moved thereby, the slack in the belt 25 being taken up by the friction-pulley 30, which acts as an idler, and is carried upward by the hanger being brought to a vertical position, as is shown in the said Fig. 3.

It will be observed by reference to the drawings and to the foregoing description that the necessity of a shifting-fork or of a loose pulley is dispensed with, and, further, that motion may be communicated to the counter-shaft from the drive-shaft, or the revolution of the counter-shaft be stopped by an exceedingly simple and conveniently-manipulated mechanism, thus saving the wear and tear of two belts, two sets of shafts and boxes, and the wear of the shifting-fork on the edges of the belt, and last, but not least, the wear of the loose pulley, which has always been bothersome.

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

1. The combination, with the drive-shaft and drive-pulley, of disks arranged at the side of said pulley connected by a fixed fender and provided with a movable or gravity fender, a friction-pulley adapted for contact with the belt of the drive-pulley, a lever secured to the hangers of the friction-pulley, and a rack-and-pinion connection between the said lever and the disks located near the drive-pulley, substantially as shown and described.

2. The combination, with a drive-shaft and a pulley fixed thereon, of a disk loosely mounted upon the drive-shaft at each side of the drive-pulley, a semicircular fender uniting and attached to the said disks, a movable semicircular fender capable of sliding in the disks and upon the fixed fender, a friction-pulley adapted for contact with the belt of the drive-pulley, a lever secured to the hanger of said pulley, a pinion secured to one of said disks, and a rack attached to the lever and contacting with said pinion, substantially as and for the purposes specified.

3. The combination, with a drive-shaft, a drive-pulley mounted thereon, and a disk loosely mounted upon said drive-shaft each side of said pulley, each disk being provided upon its inner face with an annular groove located near the periphery, of a fender fixedly secured in said grooves, the disks connecting the same, a second fender held to slide in said grooves over the fixed fender, and means for limiting the movement of the sliding

fender, a friction-pulley adapted to contact with the belt of the drive-pulley, a lever secured to the hanger of the friction-pulley, a pinion attached to one of the disks, a rack pivoted at one end to the lever and contacting at its opposite end with said pinion, and a guide-arm loosely mounted upon the drive-shaft and engaging with the rack, all combined for operation substantially as and for the purpose specified.

ANDERS GUSTAF ANDERSON.

Witnesses:
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ALFRED A. ENQUIST.