

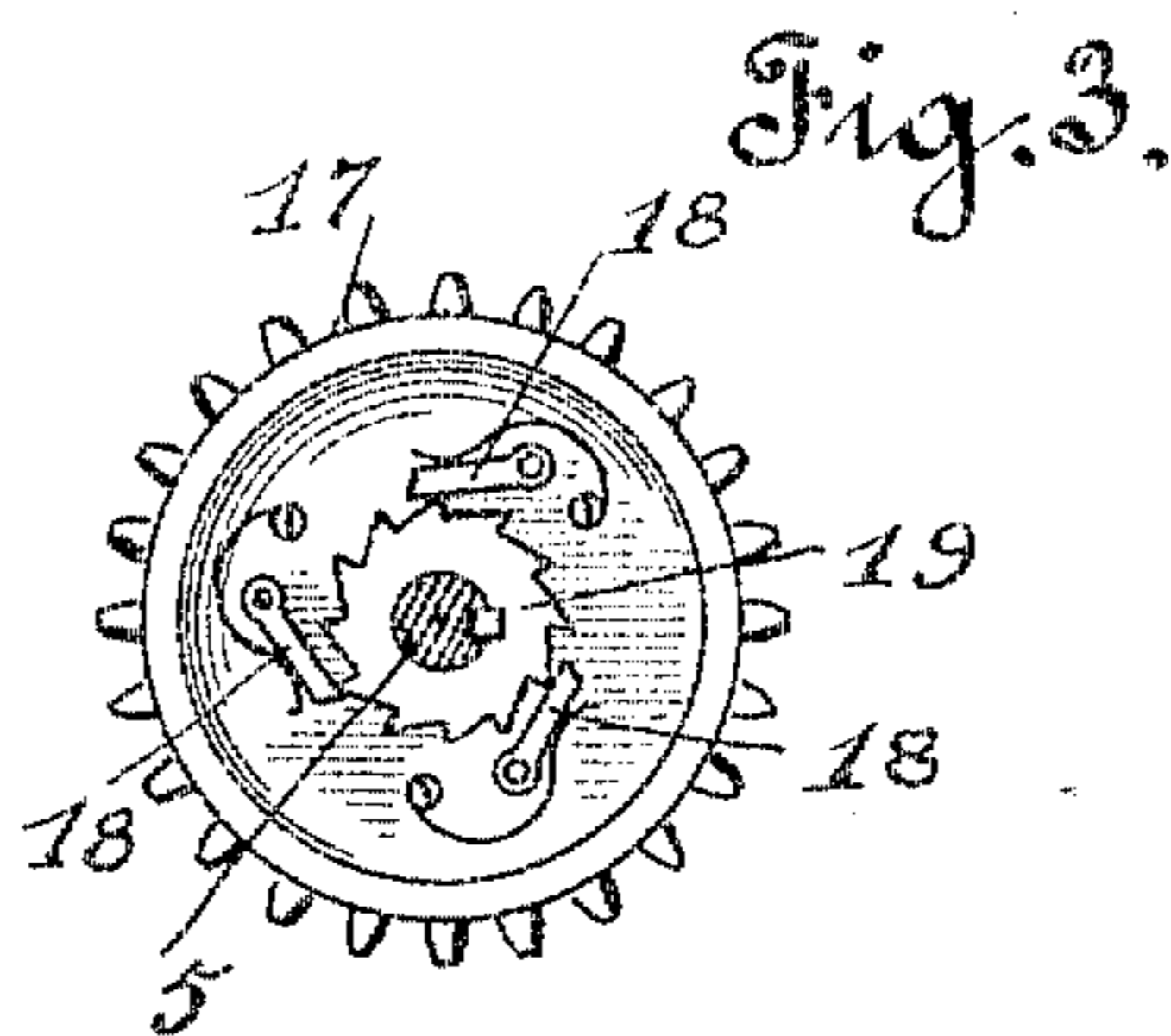
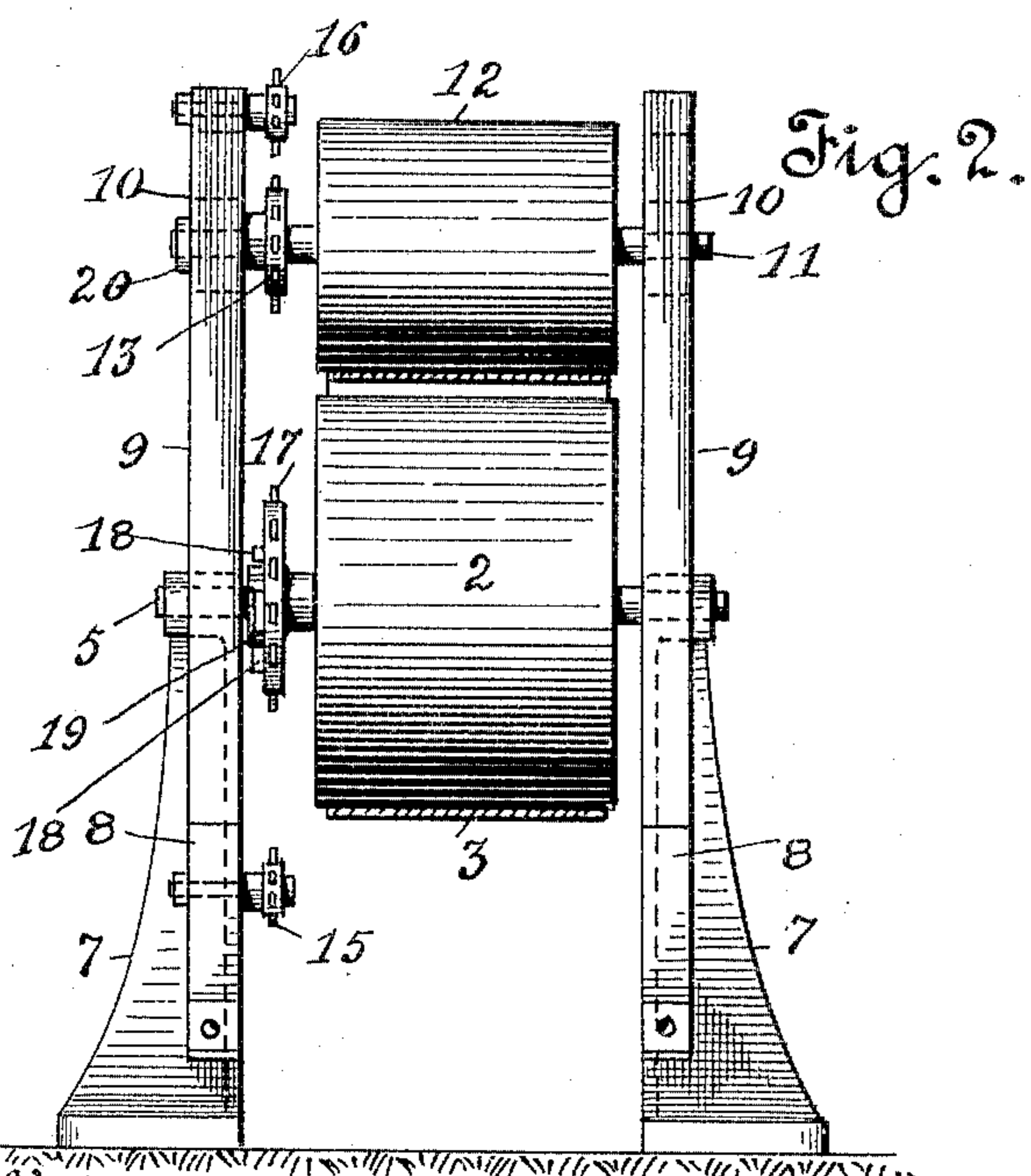
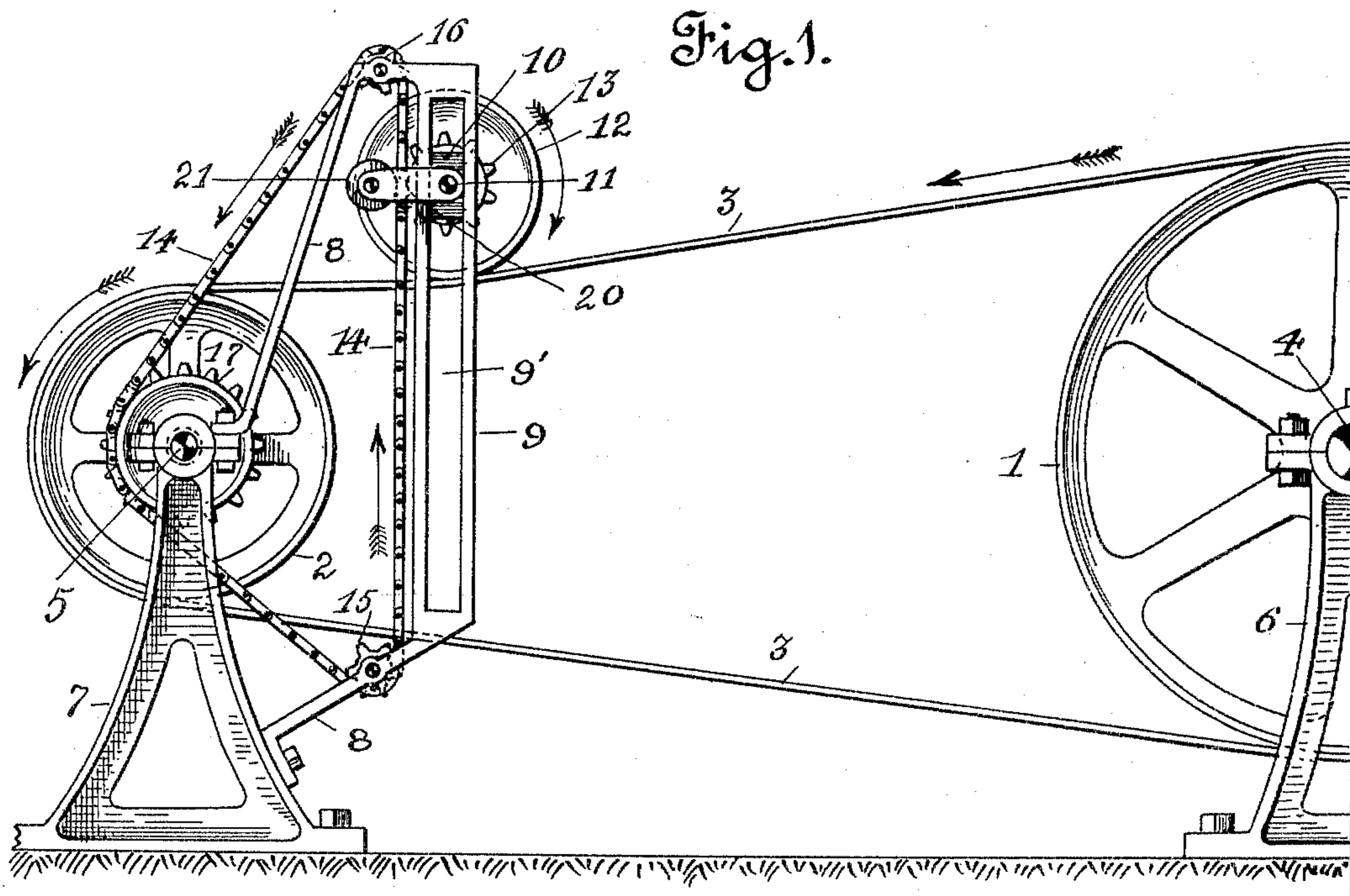
No. 776,726.

PATENTED DEC. 6, 1904.

H. E. CLARK.
AUTOMATIC BELT TIGHTENER.

APPLICATION FILED SEPT. 20, 1904.

NO MODEL.



Witnesses.

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UNITED STATES PATENT OFFICE.

HERBERT E. CLARK, OF SAN FRANCISCO, CALIFORNIA.

AUTOMATIC BELT-TIGHTENER.

SPECIFICATION forming part of Letters Patent No. 776,726, dated December 6, 1904.

Application filed September 20, 1904. Serial No. 225,198. (No model.)

To all whom it may concern:

Be it known that I, HERBERT E. CLARK, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Automatic Belt-Tighteners; and I do hereby declare the following to be a full, clear, and exact description of the same.

The present invention relates to certain new and useful improvements over the mechanism for automatically adjusting and regulating the tension of an endless drive-belt, set forth in a companion application for an automatic belt-tightener, filed of even date herewith, the object of the invention being the same as that disclosed in the said companion application.

In order to comprehend the invention, reference should be had to the accompanying sheet of drawings.

Figure 1 is a side view in elevation of the tightening mechanism, said view disclosing the endless drive-belt, and the drive-pulley and power-pulley over which the same works. Fig. 2 is an end view in elevation, disclosing the supporting-frames for the idler-roll, the idler-roll located therein, the power-drum, the shaft for the power-drum, the sprocket-gear thereon, and the endless traveling chain arranged within the frames; and Fig. 3 is a detailed view disclosing the shaft of the power-drum, the gear thereon, and the pawl-and-ratchet connection between the said gear and the shaft.

In the drawings the numeral 1 indicates an ordinary drive-pulley; 2, the power-pulley, and 3 the endless drive-belt. The pulleys 1 2 are mounted on the shafts 4 5, respectively, which shafts work in bearing-boxes supported by the standards 6 7. Preferably to the standards 7 the upwardly-extending side frame-pieces 8 are secured, which frames carry the slotted standard or connecting-pillar 9. Within the slotted portion 9' of the said standard or connecting-pillar is fitted the slide bearing-blocks 10, which support the cross-shaft 11. On this cross-shaft is secured or mounted the idler-roll 12, which carries a sprocket-pinion 13, which sprocket-pinion meshes with an endless sprocket-chain 14, working over support-

ing sprocket-pinions 15 and 16, arranged, respectively, at the lower and upper portions of one of the side frames 8, and over the sprocket-gear 17, loosely mounted on the cross-shaft 5. The sprocket-gear 17 carries the pawls 18, which pawls engage with the ratchet-wheel 19, secured to the cross-shaft 5, so that the rotation of the said cross-shaft 5 is imparted or transmitted to the sprocket-gear 17, and the said gear is positively driven with and in the same direction as the said cross-shaft 5.

One of the bearing-blocks 10 is provided with an extending hanger 20, which hanger carries the keeper-roll 21. This keeper-roll bears against the endless sprocket-chain 14 and holds the same against or up to the sprocket-pinion 13, so as to maintain the pinion in mesh therewith and preventing the chain moving outward under the strain placed thereon.

The operation of the described means is substantially the same as that set forth in the before-mentioned companion application—that is to say, as the endless drive-belt 3 slips upon the power-drum 2 the frictional contact of the said endless drive-belt with the idler-roll 12 imparts rotation to the said idler-roll 12, and as the same rotates in the direction of the arrow marked thereon the idler-roll will be forced downward by reason of the sprocket-pinion 13 carried thereby, during its rotation working over the held sprocket-chain 14. The working of the sprocket-pinion 12 within the held endless sprocket-chain 14 causes the slide-blocks 10 to move downward within the guide-ways formed by the slotted portion 9' of the standards 9 to such a distance as will cause the pressure of the idler-roll 11 onto the endless traveling belt 3 to throw onto the power-drum 2 the requisite tension for the working load. The moment such tension has been thrown or placed on the power-drum 2 the same is driven or rotated, which imparting its rotation to the shaft 5 causes the sprocket-gear 17 to rotate in a corresponding direction. As this sprocket-gear rotates it actuates the endless sprocket-chain 14 and drives the same at the same proportionate rate of speed as that of the sprocket-gear 17 and idler-roll 12. As movement is imparted to the said endless sprocket-chain 14 downward

movement of the blocks 10 within the slotted portion 9' of the standard 9 ceases, and the sprocket-pinion 13 will then simply work idle within mesh with the said driven endless sprocket-chain 14. So long as the parts are traveling at the proportionate rate of speed for the working load of the power-drum the traveling chain 14 in conjunction with the sprocket-pinion 13 will act as a lock against vertical movement of the idler-roll and serve to maintain or hold the same in its adjusted position, thereby holding the endless drive-belt 3 at the proper tension. However, the moment a change or variation in load placed on the working drum takes place of necessity a corresponding change is required in the tension of the endless drive-belt, which is accomplished by the upward or downward movement of the idler-roll, occasioned by the difference in speed at which the roll is driven over the rotation of the power-drum 2. It will thus be noticed that any variation in the relative speed of rotation of the various parts occasioned by slippage of the endless drive-belt 3 due to a variation in the working load is automatically compensated for or taken up by the adjustment permitted the idler-roll, which shifts its vertical position the moment any variation takes place in the tightening of the drive-belt 3.

I do not wish to be understood as confining myself to the described form of supporting-

frame for the idler-roll, inasmuch as any frame-support having a slotted portion which will permit of vertical play of the idler-roll may be utilized.

Having thus described the invention, what is claimed as new, and desired to be protected by Letters Patent, is—

In an automatically-operated belt-tightener, the combination with the endless drive-belt, of the power-drum over which the same works, of the shaft therefor, a sprocket-gear mounted thereon, pawl-and-ratchet connection between the said shaft and the gear, slotted frames, slide-blocks working within the slotted frames, a cross-shaft carried by said blocks, an idler-roll mounted thereon which roll bears onto the endless drive-belt, an endless sprocket-chain working over the sprocket-gear on the power-drum shaft and over sprocket-pinions held within the frames, a sprocket-pinion which meshes with the sprocket-chain, said pinion being actuated by the idler-roll, and means carried by the slide-blocks for holding the sprocket-chain against the sprocket-pin-

ion.
In witness whereof I have hereunto set my hand.

HERBERT E. CLARK.

Witnesses:

N. A. ACKER,
D. B. RICHARDS.