

J. A. SCHMIDTMEIER.
CRANKING DEVICE FOR AUTOMOBILES.
APPLICATION FILED SEPT. 7, 1910.

993,885.

Patented May 30, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

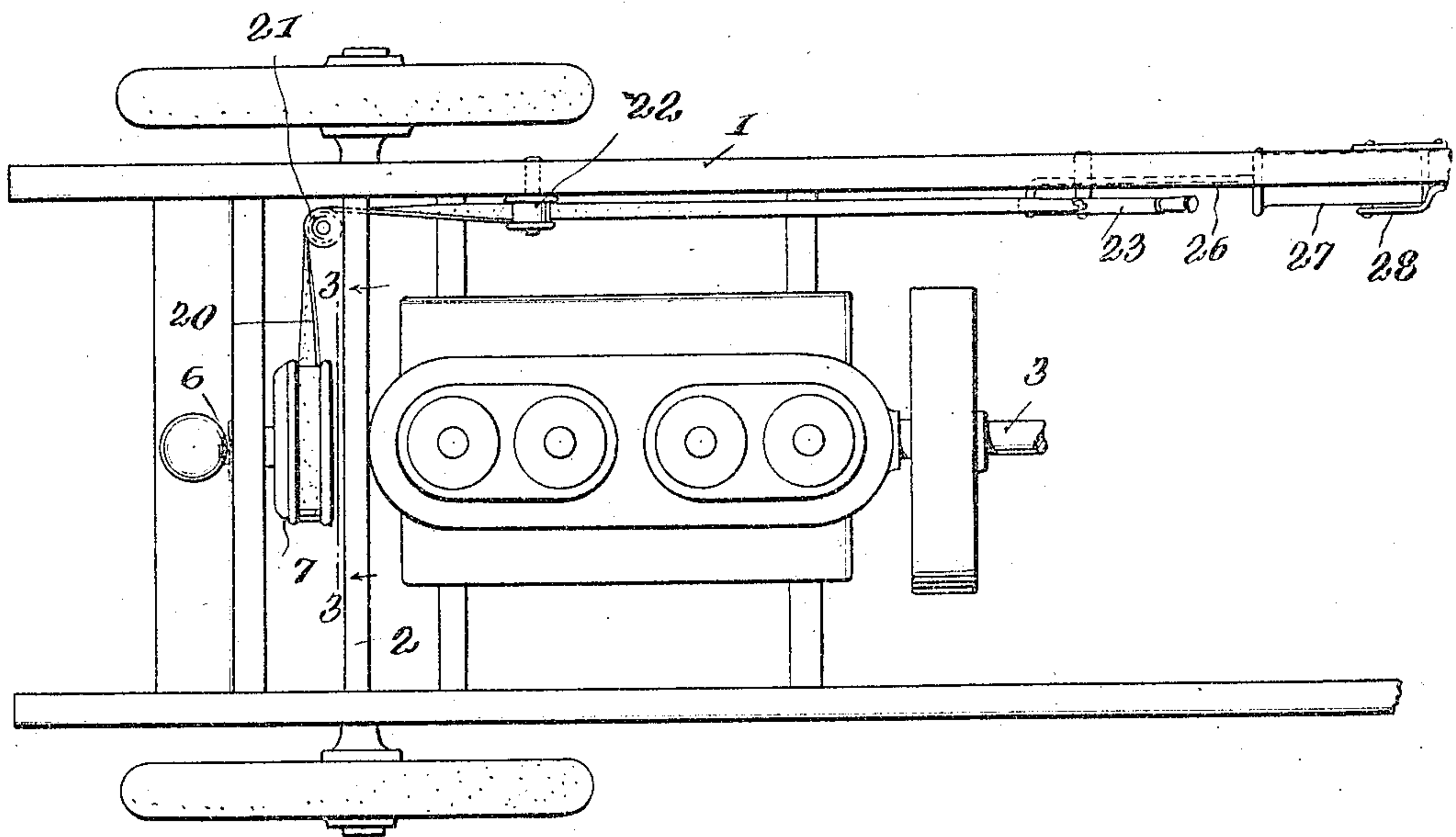
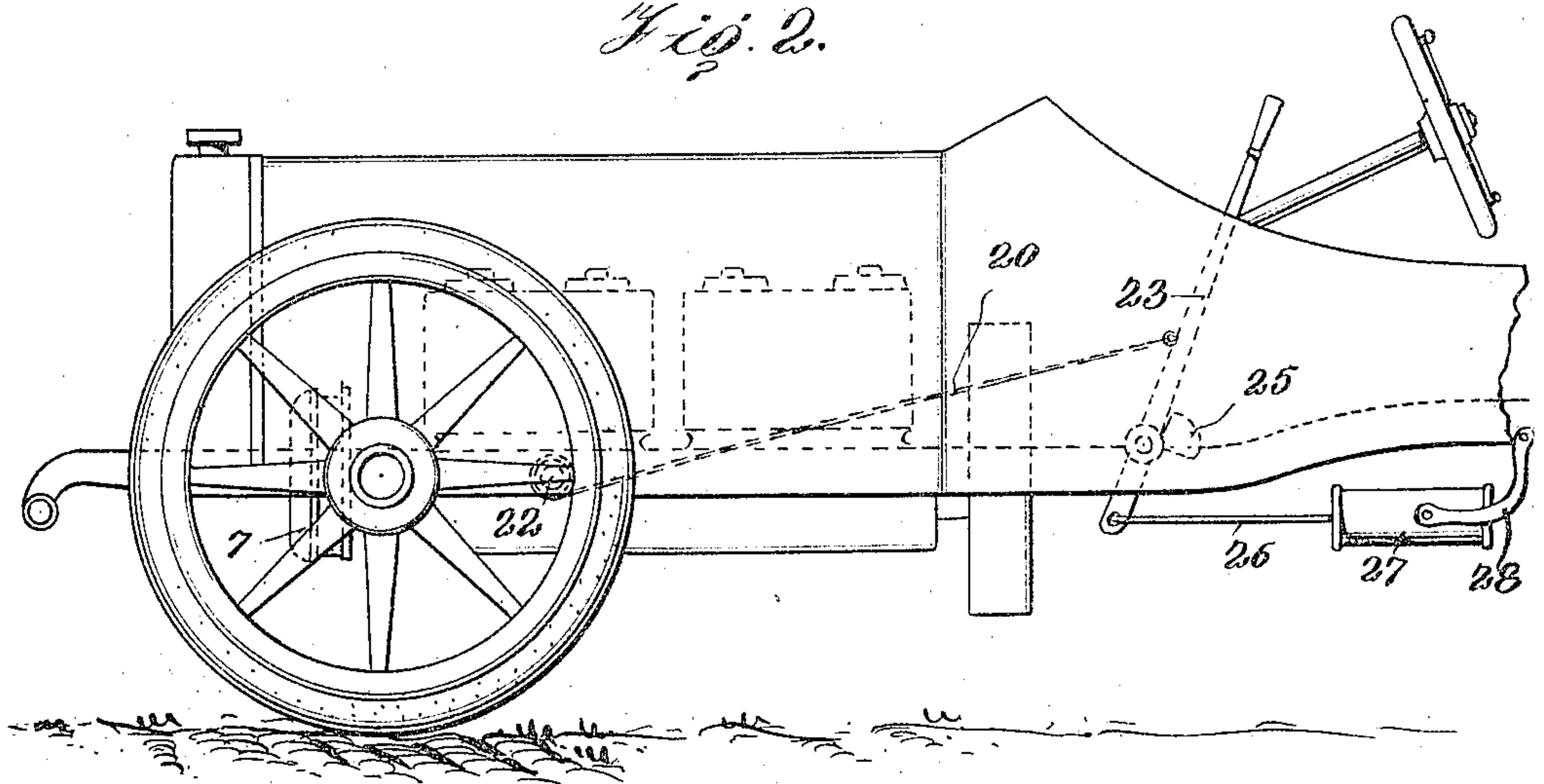


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

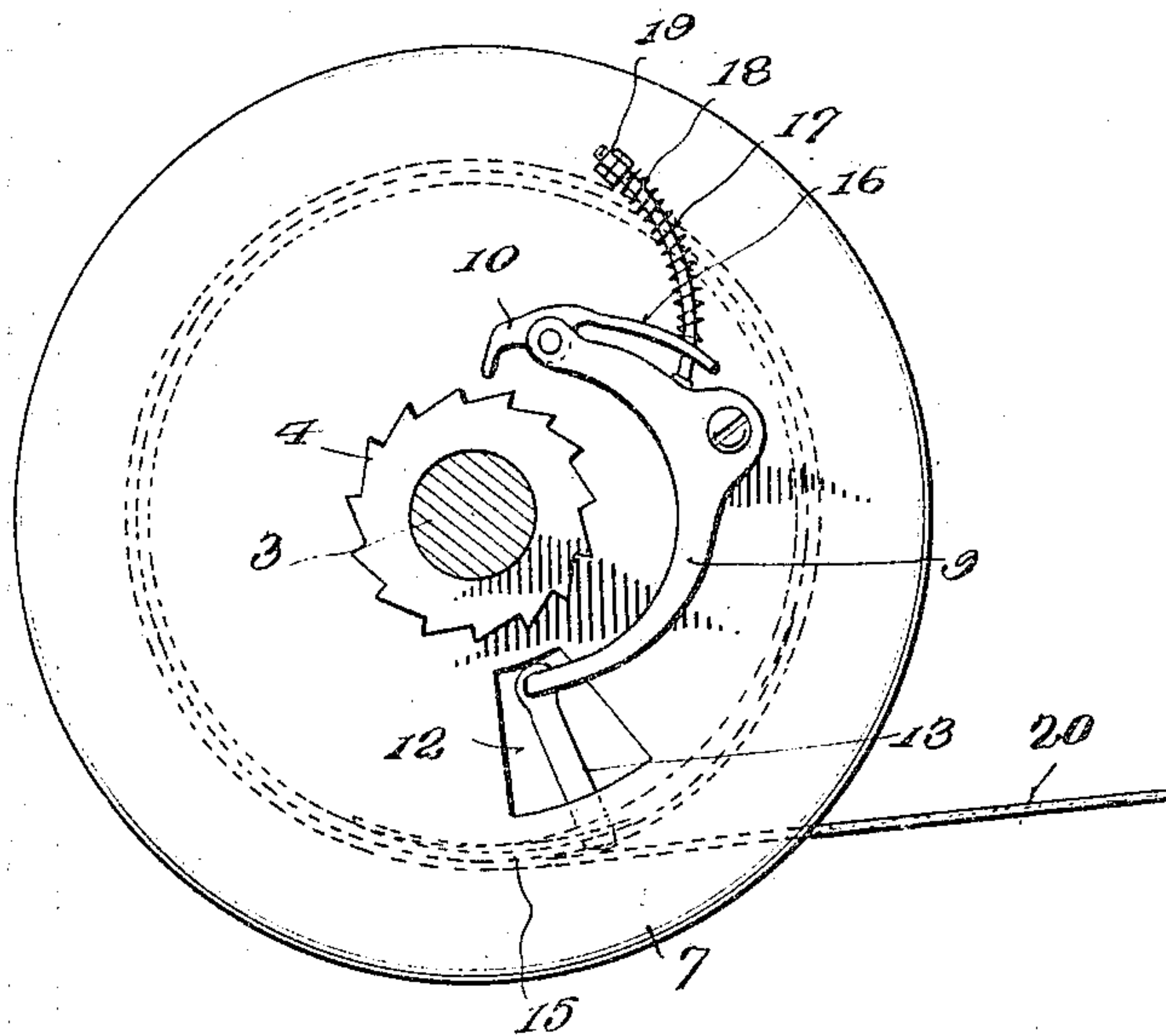


Fig. 4.

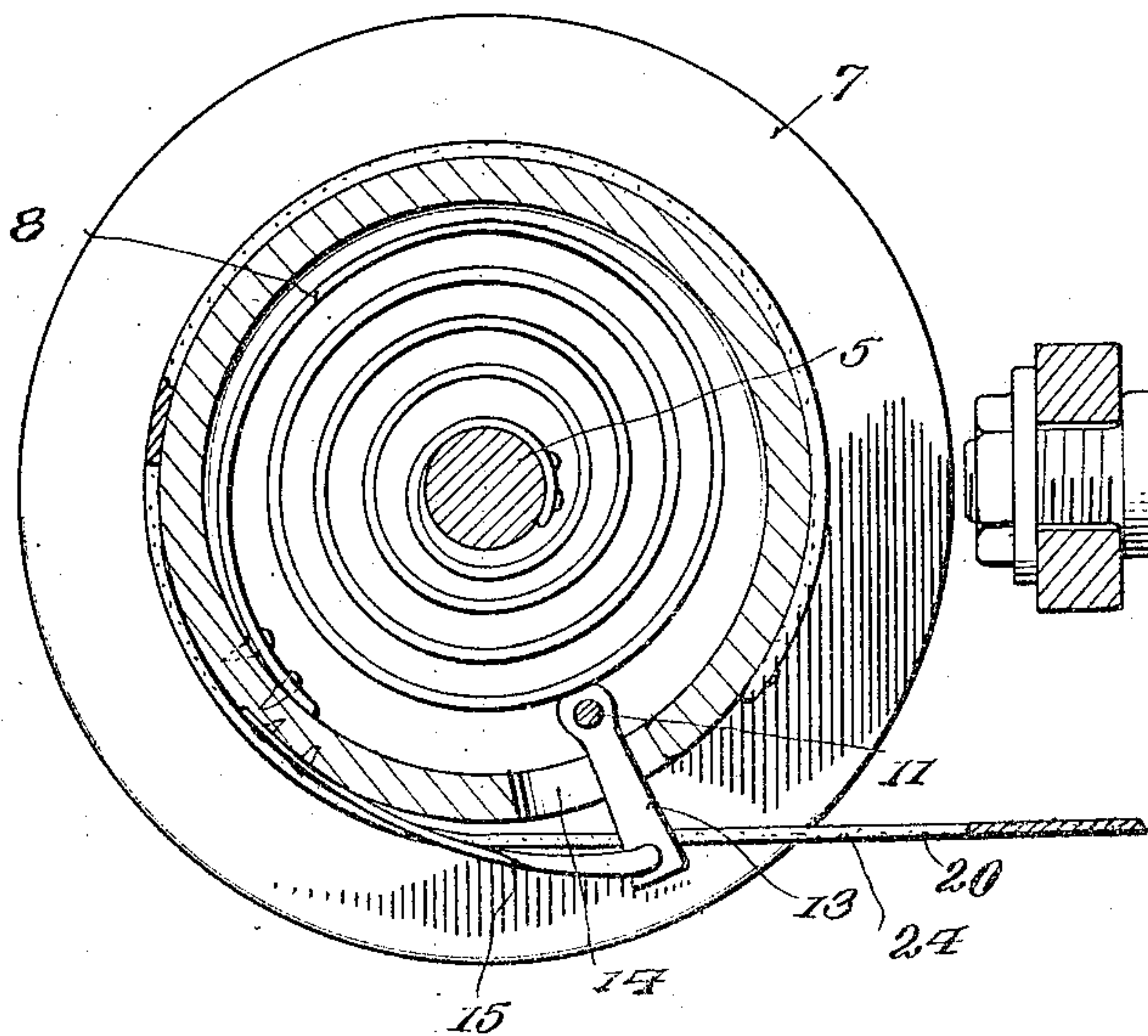
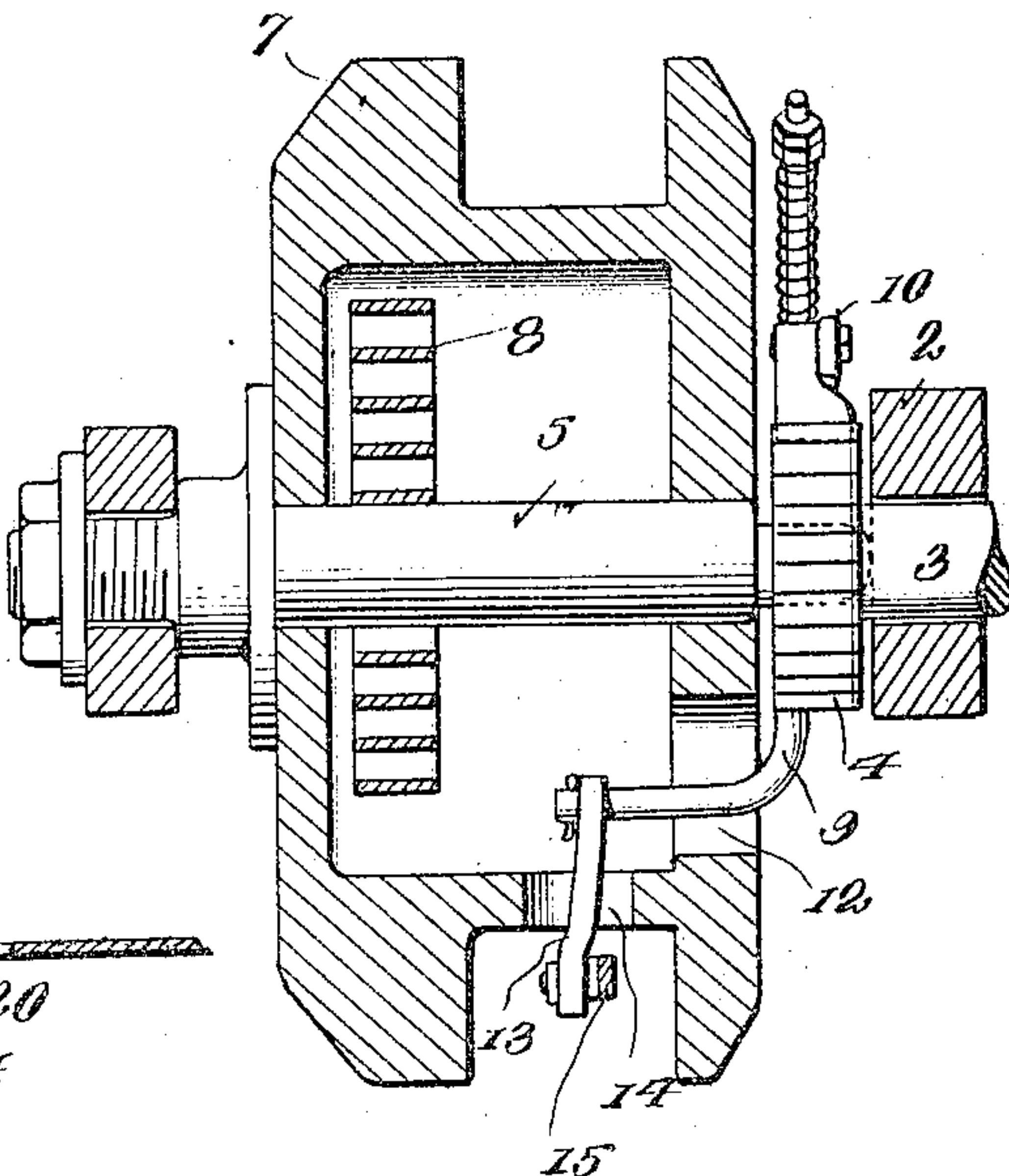


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH A. SCHMIDTMEIER, OF PENDLETON, OREGON.

CRANKING DEVICE FOR AUTOMOBILES.

993,885.

Specification of Letters Patent. Patented May 30, 1911.

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To all whom it may concern:

Be it known that I, JOSEPH A. SCHMIDTMEIER, a citizen of the United States, residing at Pendleton, in the county of Umatilla and State of Oregon, have invented certain new and useful Improvements in Cranking Devices for Automobiles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates in general to automobiles, and more particularly to a novel means for cranking the motor when starting the same, and the object of the invention is the provision of a starting device for automobiles embodying novel features of construction whereby the motor can be started by the operator without leaving his seat upon the machine, and whereby no damage will be done either to the mechanism or to the operator by a backward turning of the shaft due to premature sparking.

The invention further contemplates the provision of a safety starting device for automobiles which is comparatively simple and inexpensive in its construction, which can be readily applied to an automobile, and which will operate in an effective manner to accomplish the desired result.

With these and other objects in view, the invention consists of novel combinations and arrangements of the parts, as will more fully appear as the description proceeds, reference being had to the following description and accompanying drawings, in which:

Figure 1 is a top plan view of a safety starting device for motors constructed in accordance with the present invention. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional view on the line 3—3 of Fig. 1. Fig. 4 is a vertical sectional view through the pulley, and Fig. 5 is a transverse sectional view through the pulley.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

Specifically describing the present embodiment of the invention, the numeral 1 designates the main frame which may be of any suitable construction, and which is shown in the present instance as substantially rectangular in shape. A cross beam

2 connects the sides of the frame near one end thereof, and the motor shaft 3 which is disposed longitudinally of the frame is journaled in this cross beam and extends through the same, the extremity of the said motor shaft being provided with a ratchet or fixed clutch member 4. A short fixed shaft 5 is arranged in alinement with the motor shaft and is mounted between the end of the same and the end of the main frame 1. As indicated upon the drawing, the inner end of the fixed shaft 5 is received within a depression in the extremity of the motor shaft, while the outer end of the said fixed shaft is provided with some means such as the nut 6 by means of which the shaft can be clamped to the end of the main frame 1 and held securely against turning.

A pulley 7 is loosely mounted upon the fixed shaft 5 and has a spiral spring 8 arranged within the hollow interior thereof, one end of the spring being attached to the pulley while the opposite end is secured to the fixed shaft 5. This spring serves to return the pulley to normal position after it has been rotated for the purpose of starting the engine, as will be more fully described. A lever 9 is pivotally mounted upon one side of the pulley 7, and the two arms of this lever are shown as arranged at angles to each other. One of the arms of the said lever has a pawl 10 mounted thereon, while the opposite arm of the lever has the extremity thereof extended laterally at 11 and projecting within a recess 12 formed in the pulley. This lateral arm 11 is loosely connected to the inner end of a link member 13 which is disposed in a substantially radial direction and projects through an opening 14 in the periphery of the pulley, the outer end of the said link member being connected to a spring strip 15 which is secured to the periphery of the pulley and normally exerts an outward pull upon the link so as to move the lever 9 in the proper direction for throwing the pawl into operative position. This spring also supplies the necessary resiliency for permitting the pawl to slip over the teeth of the ratchet 4 should the motor shaft be rotating forward faster than the pulley.

The rear end of the pawl 10 is provided with an extension 16 having an opening therein through which a rod 17 loosely extends, the said rod projecting from the lever and being provided with a coil spring 18.

This coil spring bears against the extension 16 of the pawl and is interposed between the same and a nut 19 threaded upon the end of the rod, the tension in the spring being regulated by adjusting the nut. Through the medium of the spring 18 the pawl 10 is yieldably held against doubling upon itself or performing what is termed "jack kniving" so as to slide over the teeth of the ratchet 4 when the motor shaft is turning in a backward direction. Under normal conditions the spring 18 holds the pawl in operative position, but should the engine shaft be forcibly turned in a backward direction by premature sparking, the pawl would double upon itself or "jack knife" as previously described so as to prevent injury either to the mechanism or to the operator.

A strap 20 has one end thereof secured to the periphery of the pulley and is partially wound thereon; the said strap passing around suitable guide pulleys 21 and 22 and having the other end thereof secured to the operating lever 23. This operating lever 23 may be arranged adjacent to the seat of the operator so that by pulling upon the same, the strap 20 can be unwound from the pulley 7 and the said pulley rotated in the proper direction for starting the engine. As soon as the operating lever is released, the spiral spring 8 again winds the strap 20 upon the pulley 7 and returns the operating lever to its original position. Attention is directed to the fact that the portion of the strap 20 which is first wound upon the pulley 7 is formed with a slot 24 which receives the outer end of the link member and the spring strip 15 connected thereto so as not to interfere with action of the said spring strip. This slot 24, however, is of such a length that when the parts are in normal position and the maximum amount of the strap is wound upon the pulley, the said strap engages both the spring strip 15 and the link 13 so as to force the latter inwardly and swing the lever 9 to move the pawl into inoperative position.

The operating lever is shown as pivoted to one of the sides of the main frame 1, and an angular block 25 is secured to the said side of the frame 1 adjacent to the pivot of the operating lever so as to limit the swinging movements thereof in both directions. The lower end of the operating lever 23 is connected to the piston rod 26 of an air pump 27, the end of the said air pump being provided with the arms 28 which are pivotally connected to the main frame 1. This air pump acts as a buffer to prevent a quick return of the lever to its original position after being moved to start the engine, and thereby serves as a safeguard to prevent injury to the operator.

For the purpose of starting the engine,

the operating lever 23 is grasped and pulled upwardly so as to unwind the strap 20 from the pulley and rotate the said pulley. The initial unwinding of the strap releases the spring strip 15 so that it draws the link 13 outwardly and moves the lever 9 to throw the pawl into operative position. The engine shaft 3 is then rotated with the pulley in the proper direction for starting the engine. Should the engine start in the right direction the pawl would slip over the ratchet, while should a premature sparking cause the engine shaft to turn backward, the pawl would double upon itself or "jack knife" so that no injury could result. The air pump 27 acts as an additional safeguard to prevent injury to the operator since all sudden backward movements of the operating lever are prevented. After the engine has been started, the spiral spring 8 winds the strap upon the pulley 7, and when this winding is completed the said strap engages the spring 15 and link 13 so as to force the latter inwardly and swing the lever 9 to move the pawl 10 into inoperative position.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a starting device for automobiles, the combination of an engine shaft, a ratchet upon the engine shaft, a pulley, means for rotating the pulley, a lever mounted upon the pulley, a pawl pivotally mounted upon the lever and formed with a rearward extension, the said pawl being designed to engage the ratchet of the engine shaft, means cooperating with the lever to hold the pawl in operative position, a rod carried by the lever and having a sliding connection with the extension of the pawl, and a spring upon the rod for engaging the said extension to hold the pawl yieldingly in operative position, the said spring permitting the pawl to swing into inoperative position should the engine shaft be forcibly rotated in a backward direction by a premature explosion.

2. In a starting device for automobiles, the combination of an engine shaft, a ratchet upon the engine shaft, a pulley, a strap wound upon the pulley for turning the same, a pawl carried by the pulley for engaging the ratchet, and means engaged by the strap wound on the pulley for holding the pawl in inoperative position when the starting device is not in use and moving the pawl into an operative position when the strap is being unwound from the pulley for rotating the same.

3. In a starting device for automobiles, the combination of an engine shaft, a ratchet upon the engine shaft, a pulley, a strap wound upon the pulley for turning the same, a pawl carried by the pulley for engaging the ratchet, a spring strip mounted

upon the periphery of the pulley so as to be compressed against the pulley when the strap is wound and spring away from the pulley when the strap is unwound, and means connected to the spring for moving the pawl into an inoperative position when the device is not in use and moving the pawl into an operative position when the pulley is rotated by unwinding the strap therefrom.

4. In a starting device for automobiles, the combination of an engine shaft, a ratchet upon the engine shaft, a pulley, a lever pivotally mounted upon the pulley, a pawl carried by the lever and designed to engage the ratchet upon the engine shaft, a spring strip upon the periphery of the pulley, connecting means between the spring strip and the lever whereby the spring strip normally moves the lever to hold the pawl in operative position, and a strap wound upon the pulley for rotating the same, the said strap engaging the spring strip and compressing the same to swing the lever and move the pawl into an inoperative position when the device is not in use, and the said spring strip being released by the strap when the strap is unwound from the pulley for rotating the same.

5. In a starting device for automobiles, the combination of an engine shaft, a ratchet upon the engine shaft, a pulley, a lever pivotally mounted upon the pulley, a pawl carried by the lever and designed to engage the ratchet upon the engine shaft, a spring strip secured to the periphery of the pulley,

a link connecting the spring strip to the lever whereby the spring strip normally tends to move the lever to hold the pawl in operative position, and a strap wound upon the periphery of the pulley for rotating the same, the said strap engaging the spring strip to move the pawl into inoperative position when the device is not in use, and releasing the spring strip when it is unwound from the pulley for rotating the same.

6. In a starting device for automobiles, the combination of an engine shaft, a ratchet upon the engine shaft, a pulley, a pawl carried by the pulley for engaging the ratchet, a spring strip upon the periphery of the pulley, means actuated by the spring strip for normally holding the pawl in operative position, but for moving the pawl into an inoperative position when the spring strip is compressed against the periphery of the pulley, and a strap wound upon the pulley for rotating the same, the inner convolutions of the strap being slotted so as not to interfere with the action of the spring strip while the outer convolution of the strap engages the spring strip to hold the same in a compressed position when the device is not in use.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH A. SCHMIDTMEIER.

Witnesses:

JOE. H. PARKES,
A. G. RIDLING.