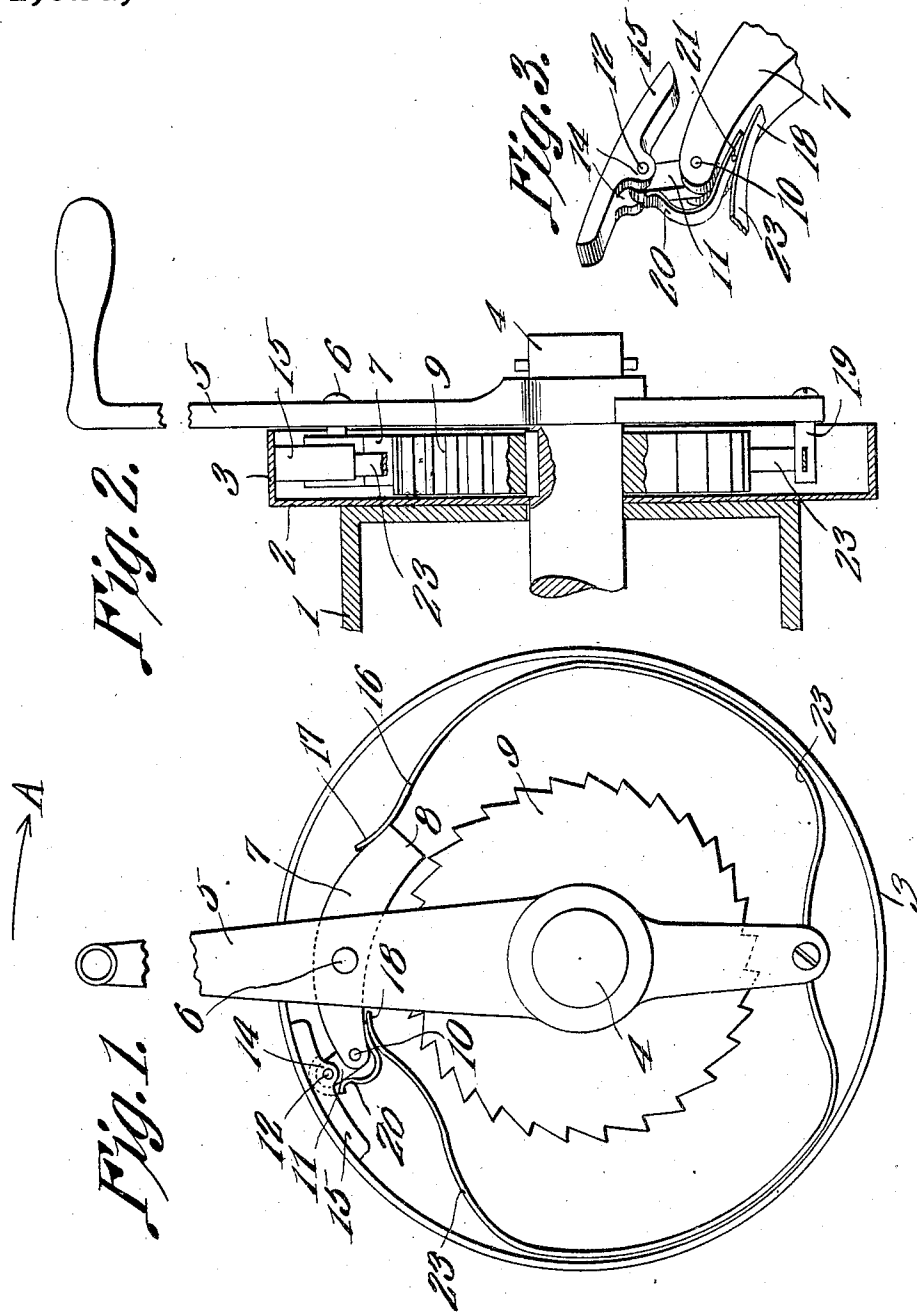


W. D. EVERLY.
ENGINE STARTER.
APPLICATION FILED MAY 26, 1911.

1,024,000.

Patented Apr. 23, 1912.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM D. EVERLY, OF SANGER, TEXAS.

ENGINE-STARTER.

1,024,000.

Specification of Letters Patent.

Patented Apr. 23, 1912.

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To all whom it may concern:

Be it known that I, WILLIAM D. EVERLY, a citizen of the United States, residing at Sanger, in the county of Denton and State of Texas, have invented a new and useful Engine-Starter, of which the following is a specification.

It is the object of the present invention to provide a device whereby the shaft of an internal combustion engine may be rotated, to effect a starting of the engine, without danger to the operator, resulting from a reverse rotation of the shaft, due to back-firing.

Specifically, it is the object of the present invention to provide novel means whereby a lever-carried pawl will be forced into engagement with a ratchet upon the engine shaft, when the lever is thrown in one direction, the construction, however being such that the pawl will normally be maintained out of engagement with the ratchet, thereby permitting a free rotation of the engine shaft.

A further object of the invention is to provide a means whereby the pawl will be moved out of engagement with the ratchet, should a forcible, reverse rotation of the shaft occur, due to back-firing.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings,—Figure 1 shows the invention in front elevation; Fig. 2 is a transverse section, wherein sundry details appear in elevation; and Fig. 3 is a fragmental perspective, showing the manner in which the shoe is operatively connected with the pawl.

In the drawings, the supporting structure is denoted by the numeral 1, this structure being any portion of the vehicle frame of the engine frame. Secured to the supporting structure 1, is a case 2, provided with an outstanding marginal flange 3. The engine shaft extends through the case 1, and is denoted by the numeral 4. Fulcrumed intermediate its ends upon the engine shaft 4, is the crank or operating member 5. Pivoted, as denoted by the numeral

6, intermediate its ends to the operating lever or crank 5, and located above the fulcrum of the lever, is a pawl 7, one end 8 of which is adapted, under circumstances to be described hereinafter, to engage with a ratchet wheel 9, which is secured to the engine shaft 4. To the opposite end of the pawl 8 there is pivoted, as shown at 10, a link 11, the outer end of which is pivoted, as shown at 12, between ears 14, formed upon the under surface of a segmental shoe 15, disposed in close relation to the outstanding flange 3 of the case 2. One end 16 of a spring strip 23, bears as shown at 17, on the end 8 of the pawl 7. This spring strip 23 extends around the case 2, in the interior thereof. The other end of the spring 23 bears, as shown at 18, upon the under face of the pawl 7, upon the opposite side of the point of suspension 6 of the pawl, from that end 8 of the pawl which is adapted to be engaged by the ratchet wheel 9. The intermediate portion of the spring 23 is engaged by a stud 19, projecting rearwardly from the lever 5, below the engine shaft 4. The invention further includes an auxiliary spring, one end of which is secured, as shown at 21 by a rivet or otherwise, to the lower end of the pawl 7, adjacent the point where the spring 23 bears against the pawl. The other end of the auxiliary spring 20 bears against the outer edge of the link 11.

When the device is not in use, the parts will be positioned as shown in Fig. 1, the end 8 of the pawl 7 being, under such circumstances, uplifted, and held free from the ratchet wheel 9. The construction, therefore, is such that the engine shaft 4 may rotate freely, without interfering with the starting device in any manner.

The ends 17 and 18 of the spring 23 co-act to tilt the pawl 7 in such a manner that the link 11 and the shoe 15 will be thrust outwardly toward the rim 3 of the case. The spring 20 serves to thrust the shoe 15 in the direction of the arrow A, and consequently the end 8 of the pawl 7 is held out of engagement with the ratchet wheel 9.

When it is desired to impart a rotation to the shaft 4, by means of the crank 5, the upper, free end of the shank is swung in the direction of the arrow A in Fig. 1. Under such circumstances, the shoe 15, engaging frictionally with the rim 3, will act as a drag, tilting the pawl 7 until its end 8 is engaged with the ratchet wheel 9, where-

upon the ratchet wheel and the shaft 4 may be rotated by means of the crank 5. As soon as the engine shaft 4 starts to rotate, the ratchet 9 will tilt the end 8 of the pawl 7 into the position shown in Fig. 1. At the same time, the opposite end of the pawl 7 will be tilted inwardly toward the shaft 5, whereupon the spring 20, bearing against the link 11, will advance the shoe 15 in the direction of the arrow A, and hold the pawl 7 out of engagement with the ratchet wheel 9, as shown in Fig. 1. If, however, the engine should back-fire during the time that the pawl 7 is engaged with the ratchet wheel 9, the lever 4 moving in the direction of the arrow A, a slight movement will be imparted to the lever 5, in a direction opposite to that indicated by the arrow A. Under such circumstances, the spring 20 will hold the shoe 15 against the rim 3, and the link 11 will cause a tilting of the pawl 7, so that the end 8 of the pawl will be thrown out of engagement with the ratchet wheel 9. Injury to the operator, due to back-firing, will thereby be avoided.

Having thus described the invention, what is claimed is:—

1. In a device of the class described, a shaft; an operating member fulcrumed upon the shaft; a ratchet wheel secured to the shaft; a pawl pivoted intermediate its ends upon the operating member, and adapted at one end to engage with the ratchet wheel; a case; a shoe adapted to engage the case; a link connecting the shoe with the pawl to effect a tilting of the pawl out of engagement with the ratchet wheel, upon a reverse rotation of the shaft; a spring carried by the pawl and engaging the link to move the shoe circumferentially of the case; and means for causing the pawl to engage the ratchet and for holding the shoe engaged with the case.

2. In a device of the class described, a shaft; a lever fulcrumed upon the shaft; a pawl pivoted intermediate its ends upon the lever; a ratchet wheel upon the shaft, with which one end of the pawl is adapted to engage; a link pivoted to the other end of the pawl; a shoe pivoted to the link; a case with which the shoe is adapted to engage; spring means for maintaining the shoe in engagement with the case; and spring means for moving the shoe circumferentially of the case, thereby to hold the pawl out of engagement with the ratchet wheel.

3. In a device of the class described, a shaft; a lever fulcrumed intermediate its ends upon the shaft; a ratchet wheel secured to the shaft; a pawl pivoted intermediate its ends upon the lever, and adapted at one end to engage with the ratchet; a case; a shoe adapted to engage with the case; means for pivotally connecting the shoe with the other end of the pawl; and a spring secured in its intermediate portion to the lever, upon the opposite side of the shaft from the pawl, the ends of the spring bearing against opposite edges of the pawl, upon opposite sides of the pivotal mounting of the pawl.

4. In a device of the class described, a shaft; a lever fulcrumed adjacent the shaft; a ratchet wheel secured to the shaft; a pawl pivoted intermediate its ends upon the lever, and adapted at one end to engage with the ratchet wheel; a case; a shoe adapted to bear against the case; a link pivotally connecting the shoe with the other end of the pawl; a spring secured to the pawl and bearing against the link, to move the shoe circumferentially of the case and to hold the pawl out of engagement with the ratchet, when the device is not in use; and spring means for maintaining the shoe in engagement with the case.

5. In a device of the class described, a shaft; a lever fulcrumed intermediate its ends upon the shaft; a ratchet wheel secured to the shaft; a pawl pivoted intermediate its ends upon the lever, and adapted at one end to engage with the ratchet wheel; a case; a shoe adapted to bear against the case; a link connecting the shoe with the other end of the pawl; a spring engaged in its intermediate portion with the lever, upon the opposite side of the shaft from the pawl, the spring, at its ends, bearing against opposite edges of the pawl, upon opposite sides of the pivotal mounting of the pawl; and an auxiliary spring, secured at one end to the pawl and at its other end bearing against the link, to move the shoe circumferentially of the case.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM D. EVERLY.

Witnesses:

E. D. YEATTS,
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