March 4, 1930. L. NEAS 1,749,645

STARTING DEVICE FOR TRACTOR ENGINES

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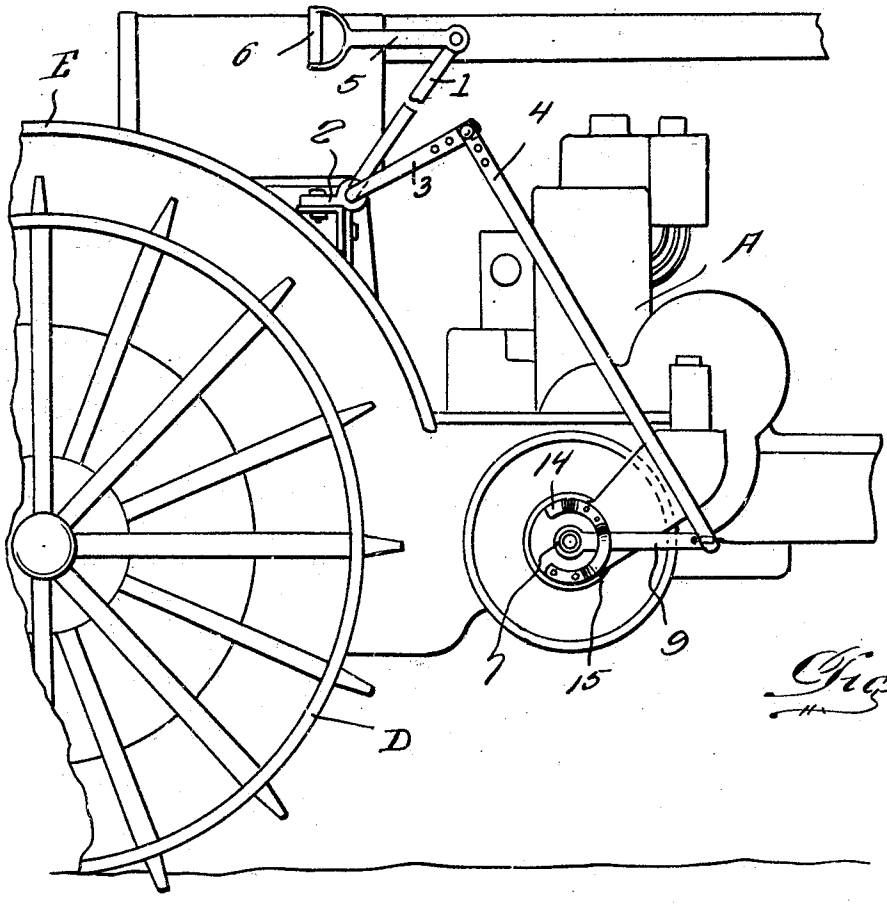


Fig. 1

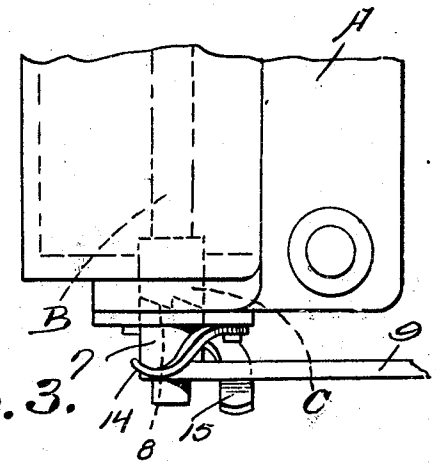


Fig. 3.

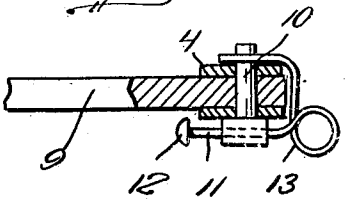


Fig. 4.

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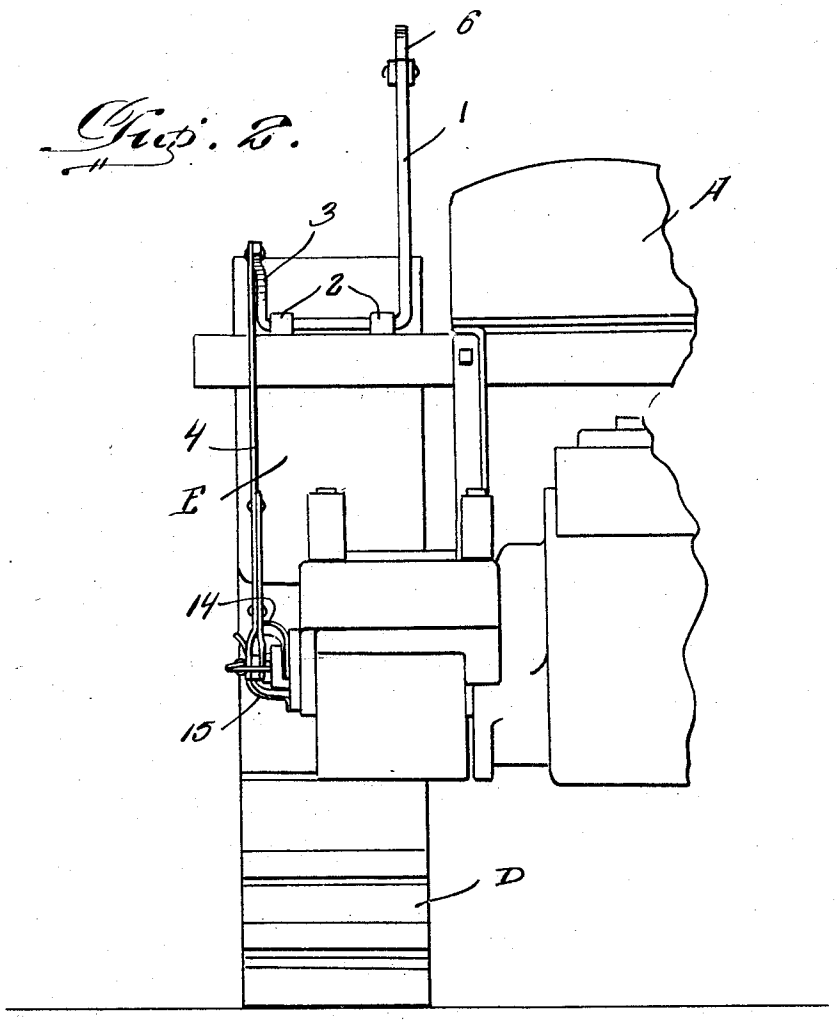
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Fig. 2.



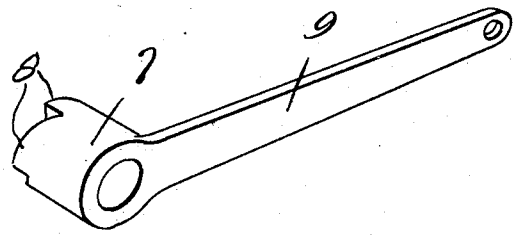


Fig. 5.

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UNITED STATES PATENT OFFICE

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STARTING DEVICE FOR TRACTOR ENGINES

Application filed August 18, 1928. Serial No. 300,529.

The present invention pertains to improvements in starting devices for internal combustion engines and the same relates more particularly to a starting device especially adaptable for starting the usual transversely arranged engine of certain makes of tractors. Engines generally employed on tractors are quite powerful and require considerable effort on the part of the operator in attempting to start the same by hand. Numerous starting devices have been devised with the end in view of providing some means tending to eliminate the usual back spin of the engine crank shaft, which frequently results in serious injury to the persons in the act of starting the engine. The prime object of this invention is to overcome the foregoing disadvantage by providing means whereby the engine crank shaft may be rotated by a corresponding slight movement of a hand bar, the rotation of the crank shaft being occasioned by a succession of levers between the hand bar and the clutch member engageable with the crank shaft.

Another object of importance resides in means whereby the clutch collar employed in this invention is caused to engage the usual ratchet means on the crank shaft, and wherein further means is provided for causing the disengagement of the clutch collar after a predetermined movement of the hand bar.

Still another object is to provide a detachable pivotal connection between the clutch collar and the member connected to the hand bar, whereby the clutch collar may be quickly detached to permit space for the disposition of a belt, when such is provided for actuating some external mechanism.

After considering the following specification, numerous other important objects and advantages of the invention will become apparent.

In the drawings:

Figure 1 represents a fragmentary elevation of the conventional tractor structure showing the improved engine starting device with the clutch collar in engaged position.

Figure 2 represents a fragmentary rear elevation of the device applied to a tractor structure.

Figure 3 is a fragmentary top plan view showing the improved device somewhat enlarged.

Figure 4 is a fragmentary enlarged and partial sectional view of the detachable pivotal connection between the connecting rod and the clutch collar shank, and

Figure 5 is an enlarged perspective view of the clutch collar and shank structure.

Now referring to the drawings, wherein like numerals designate like parts, a conventional tractor includes in construction the engine A mounted on the usual chassis. The engine A is provided with the usual crank shaft B, on which the ratchet member C is keyed in a suitable manner.

The usual tractor wheel D has a fender E arranged thereover.

In carrying out the present invention, an L-shaped member 1 has its lower leg portion journaled through a bracket 2, secured to the fender E. The free end of the journaled leg portion is disposed upwardly as at 3, and to which one end of a connecting rod 4 is pivotally attached. A bar 5 is pivotally connected to the upper end of the member 1 and is provided at its rear end with a handle 6. A clutch collar 7 is provided at one end with ratchet teeth 8, for engagement with the ratchet member C, when the collar 7 is disposed on the crank shaft B. The collar 7 is provided with a laterally disposed shank 9, which is connected by the novel means shown in Figure 4, to the opposite end of the connecting rod 4. The novel means shown in Figure 4, consists of a pin 10 for connecting the shank 9 and the rod 4 together, the head of the pin 10 being formed with a bore therethrough, through which an elongated spring element 11 is arranged. This element is provided with a head 12 at one end, while an intermediate portion thereof is looped, as at 13. The opposite end of the spring element is disposed at the opposite side of the joint, for the purpose of maintaining the pin 10 tensionally retained in the position shown.

By moving the headed portion of the spring element 11 laterally the pin 10 may be withdrawn for the disconnection of the rod 4 from the shank 9.

A pair of arcuate shaped spring arms 14 and 15 respectively are secured at diametrically opposite sides of the crank shaft B, on the outer side of the crank case. These arms are secured by one of their ends to the case, while their opposite end portions are disposed outwardly of the case, in the manner shown in the drawings. These arms are arranged in a circular manner with the outwardly disposed free end portions to project in the same direction.

Normally the shank 9 extends upwardly from the collar 7.

When it is desired to put the engine in operation, the operator takes hold of the handle 6, and through the medium of the connection illustrated moves the shank 9 to the position shown in Figure 1, the said movement of the handle 6 being forward, and the said position of the shank 9 being the crank engaging position. Incident to the said movement of the shank 9 said shank 9 is engaged and moved by the arm 15, Figure 3, which brings about engagement of the ratchet on the collar 7 with the ratchet on the shaft B. Thereupon the operator pulls the handle 6 rearwardly to start the engine, and on starting of the engine the arm 14 will co-act with the shank 9 and thereby disengage the collar 7 from the shaft B.

The rod 4 is disconnected from the shank 9, as before described, in order that a drive belt may be put on or removed from the drive pulley on the shaft B for the transmission of motion to some apparatus to be actuated by the engine.

It is to be understood that certain changes in the specific shape, size and materials may be resorted to, without departing from the spirit of the invention or the scope of the appended claims.

Having described this invention, what is claimed as new is:

1. Starting means for a tractor having a rear wheel fender and also having an internal combustion engine with a shaft on which is a ratchet, comprising a bearing on said fender, a transverse rock shaft in said bearing and equipped with arms, a bar pivotally connected to and extending rearwardly from one of said arms and disposed above said fender, a rod pivotally connected to and extending downwardly from the other of said arms, a collar loose on said engine shaft and having a ratchet opposed to that of the shaft and also having a shank pivotally connected to said rod, and arms mounted adjacent to the engine shaft for making and breaking connection between the collar and the engine shaft; one of said arms being adapted to engage and move the shank laterally inward on downward and forward movement of the shank, and the other arm being adapted to engage and move the shank laterally outward on upward and rearward movement of the shank.

2. Starting means for a tractor comprising an internal combustion engine having a shaft on which is a ratchet, including in combination a collar loose on said engine shaft and having a ratchet opposed to that of the shaft and also having a shank, and arms mounted adjacent to the engine shaft for making and breaking connection between the collar and the engine shaft; one of said arms being adapted to engage and move the shank laterally inward on downward and forward movement of the shank, and the other arm being adapted to engage and move the shank laterally outward on upward and rearward movement of the shank.

In testimony whereof I affix my signature.

LEO NEAS.