

Aug. 30, 1949.

R. V. CATLIN

2,480,550

AUTOMATIC RECOILING PULL STARTER

Filed Oct. 28, 1947

2 Sheets-Sheet 1

Fig. 1.

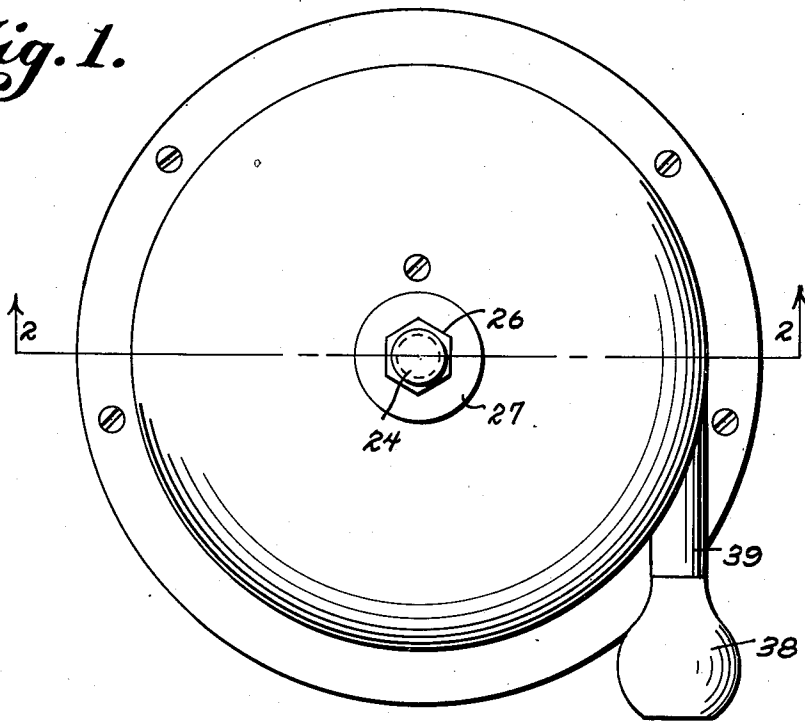


Fig. 2.

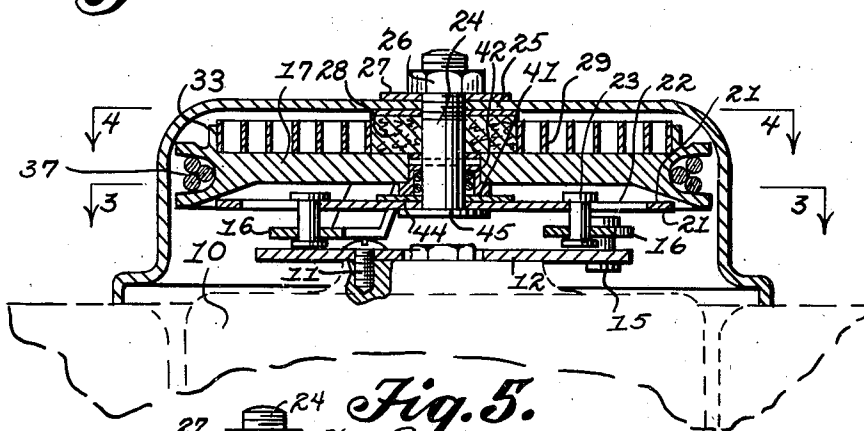
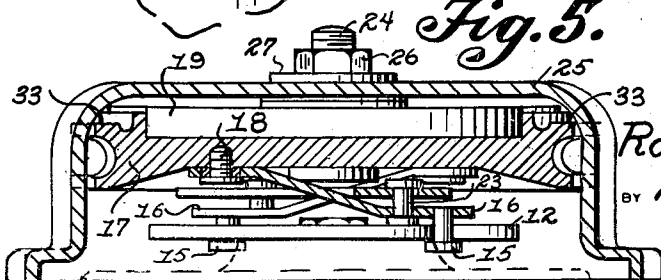


Fig. 5.



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Fig. 3.

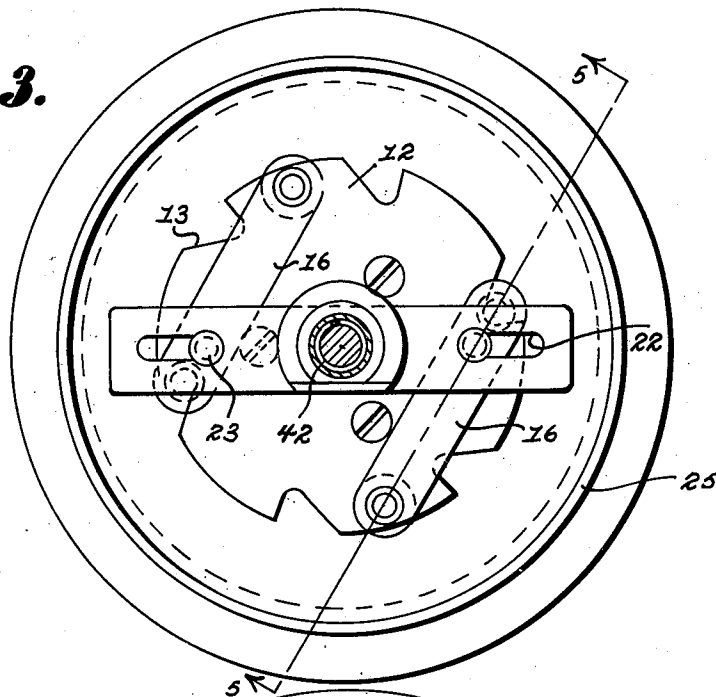
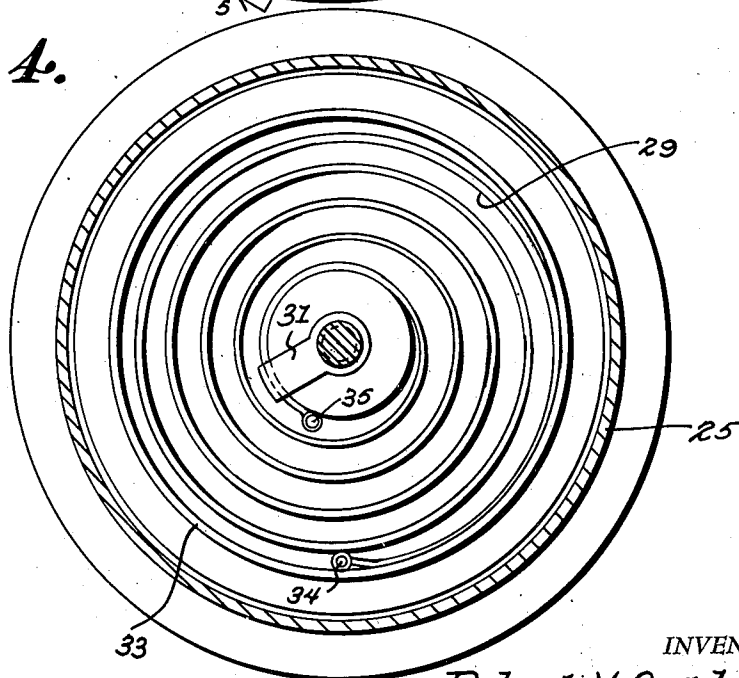


Fig. 4.



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AUTOMATIC RECOILING PULL STARTER

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3 Claims. (Cl. 123-179)

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This invention relates to an automatic recoiling pull starter for internal combustion engines.

It is an object of the present invention to provide a pull starter adapted for use with internal combustion engines wherein upon the pull of the rope a return spring will be wound and upon the release of the rope the spring will serve to return the starting rope automatically to the pulley, the driving arms having been automatically released from the driving sprocket.

Other objects of the present invention are to provide a recoiling pull starter for internal combustion engines which is of simple construction, inexpensive to manufacture, easy to install upon the engine and efficient in operation.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawing, in which

Fig. 1 is a front elevational view of the pull starter.

Fig. 2 is a sectional view taken on line 2-2 of Fig. 1.

Fig. 3 is a transverse sectional view of the starter taken on line 3-3 of Fig. 2, and showing the driving arms in engagement with the sprocket.

Fig. 4 is a transverse sectional view taken on line 4-4 of Fig. 2 and looking in plan upon the actuating spring.

Fig. 5 is a sectional view taken on line 5-5 of Fig. 3.

Referring now to the figures, 10 represents a fly wheel of an engine to which my pull starter is attached by fastening screws 11. These fastening screws extend through a disc 12 having notches 13 circumferentially spaced therearound. Adapted to enter the notches 13 are driving arm studs 15 extending from driving arms or links 16. The driving arms 16, of which there are two in number, are respectively pivotally connected to pulley 17 by fastening screws 18 as shown in Figure 5. The driving arms are guided in and out of the notches 13 by a guide 21 having slots 22 disposed respectively in the opposite ends thereof in which there is slidable driving arm guide pins 23. These pins extend through the slots and also through the driving arms and serve to limit the pivotal movement of the driving arms.

The pulley 17 is rotatably mounted on a shaft 24 which is fixedly mounted in a housing 25 in which it is secured by a lock nut 26 with a washer 27 under the nut. The housing can be fixed to the engine block and will enclose the parts. On the inside of the housing is a fiber block 28 to which a spring 29 is anchored by a lug 31, Fig. 4. The

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pulley 17 has a flange 33 for confining the spring 29 on the outer face of the same. The ends of the spring are provided with spring lock pins 34 and 35 respectively.

About the pulley there is extended a cord 37 which is passed several times therearound and which has a handle 38 on the outer end of the same which is pulled to effect the rotation of the pulley and the winding up of the spring 29. A projection 39 may be provided on one side of the housing for guiding the cord 37 from the housing.

Within the bore of the pulley there is provided a guide spring retainer 41 through which the pulley is mounted on the shaft and this retainer provides a housing for retaining the spring 42 extending about the shaft 24.

The spring 42, being in compression in the retainer, urges the friction washer 44 against the guide 21 and thereby frictionally holds the guide against the flange or head 45 of the stud forming the shaft 24. The friction between these parts is sufficient upon rotation of the pulley 17 when the cord 37 is pulled outwardly to actuate the guide 21 so that the pins 23 move inwardly in the slot 22 and in this movement the studs 15 in the arms 16 engage with the notches 13 of the disk 12. With the studs 15 in the notches 13 the engine shaft will be rotated as the pulley is rotated by the cord as the pulley 17 is connected by the arm 16 through the studs 15 with the disk 12 as shown in Figure 5.

While the rope or cord 37 is being pulled, the unit is turned and the main spring is wound up. When the rope is released, the main spring 29 actuates the unit in the opposite direction thereby causing the driving arms to disengage from the notches of the disc as the unit revolves back to its normal position. The guide 21 will remain motionless until the driving arms 16 have engaged with the notches of the disc and will then slip to allow the guide to revolve with the unit. The spring 42 exerts a constant pressure upon the friction washer 44 which in turn binds the guide 21 between the friction washer and the flange 45.

This starter is designed primarily for use on outboard motors and for small gasoline engines not originally equipped with a pull starter.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

I claim:

1. An automatic recoiling pull starter for an engine having a fly wheel and an engine housing,

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comprising a disc with notches in the periphery and having means by which it may be attached to the fly wheel of the engine, a pulley having a pull cord groove in the periphery, a starter housing enclosing the pulley and disc and having means for mounting the said starter housing on the engine housing, a spring in the pulley with one end connected to the pulley and the other to the starter housing, a shaft carried by the starter housing on which the pulley is rotatably mounted, a guide having slots therein mounted on the shaft, and arms having pins extended through the slots of the guide with one of the ends of the arms pivotally mounted on the pulley and with studs carried by the opposite ends of the arms positioned to engage the notches in the periphery of the disc.

2. An automatic recoiling pull starter for an engine having a fly wheel and an engine housing, comprising a disc with notches in the periphery and having means by which it may be attached to the fly wheel of the engine, a pulley having a pull cord groove in the periphery, a starter housing enclosing the pulley and disc and having means for mounting the said starter housing on the engine housing, a spring in the pulley with one end connected to the pulley and the other to the starter housing, a shaft carried by the starter housing on which the pulley is rotatably mounted, a guide having slots therein mounted on the shaft, arms having pins extended through the slots of the guide with one of the ends of the arms pivotally mounted on the pulley and with studs carried by the opposite ends of the arms positioned to engage the notches in the periphery of the disc, said shaft carried by the starter housing having

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a head on the inner end thereof, and resilient means urging the said guide against the head of the shaft.

3. In an automatic recoiling pull starter for an engine having a fly wheel and an engine housing, a disc with notches in the periphery and having means by which it may be attached to the fly wheel of the engine, a pulley having a pull cord groove in the periphery, a starter housing enclosing the pulley and disc and having means for mounting the said starter housing on the engine housing, a spring in the pulley with one end connected to the pulley and the other to the starter housing, a shaft carried by the starter housing on which the pulley is rotatably mounted, a guide having slots therein mounted on the shaft, arms having pins extended through the slots of the guide with one of the ends of the arms pivotally mounted on the pulley and with studs carried by the opposite ends of the arms positioned to engage the notches in the periphery of the disc, and a pull cord mounted in the cord groove of the pulley with a knob on the outer end positioned on the exterior of the starter housing.

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REFERENCES CITED

The following references are of record in the file of this patent:

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