

E. N. WARD.
STARTING DEVICE.
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1,004,508.

Patented Sept. 26, 1911.

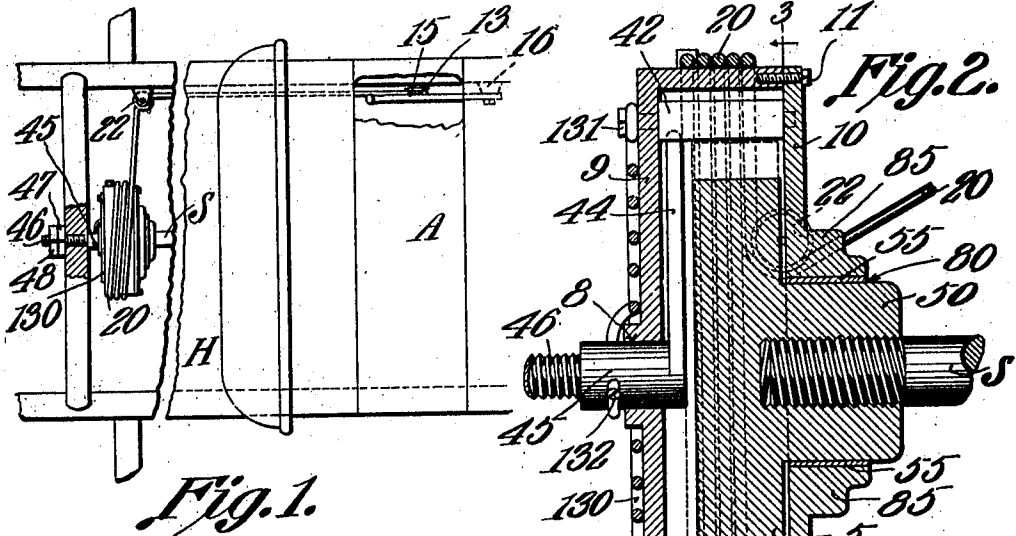


Fig. 1.

Fig. 2.

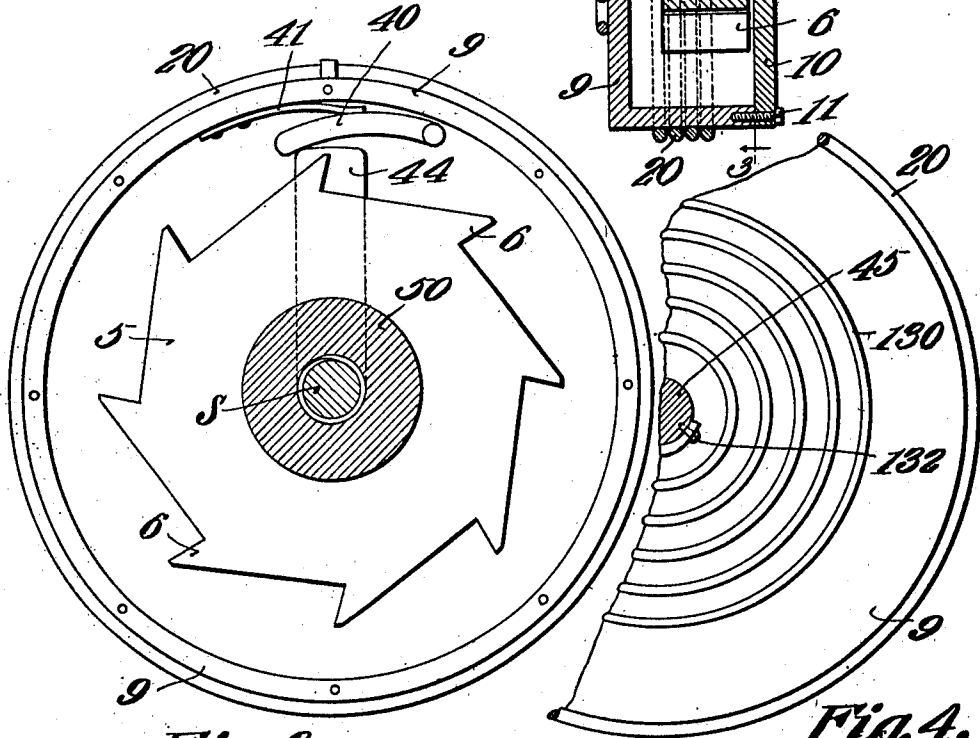


Fig. 3.

Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

ERNEST N. WARD, OF BAXTER SPRINGS, KANSAS, ASSIGNOR OF ONE-HALF TO JAY F. RIPLEY, OF JOPLIN, MISSOURI.

STARTING DEVICE.

1,004,508.

Specification of Letters Patent.

Patented Sept. 26, 1911.

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To all whom it may concern:

Be it known that I, ERNEST N. WARD, a citizen of the United States, residing at Baxter Springs, in the county of Cherokee and State of Kansas, have invented a new and useful Starting Device, of which the following is a specification.

This invention relates to internal combustion engines, and more especially to the mechanical starting devices therefor; and the object of the same is to produce a device of this character by which an automobile can be cranked by the operator while sitting in his seat.

To this end, the invention consists in the construction hereinafter more fully described and claimed, and is shown in the drawings wherein—

Figure 1 is a plan view of an automobile with part of its hood broken away, showing my improved starting device in position. Fig. 2 is an enlarged central vertical section through the starting device alone. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a partial front elevation of the starting device.

In the drawings, the letter A designates broadly an automobile equipped with a gas engine whose crank shaft S extends forward within its hood H, and as these engines are now constructed it is necessary to "crank" the engine in order to start it. This is accomplished by the operator who must descend from his seat and go around in front of the machine and turn a hand crank, and then resume his seat. The object of the present invention is to permit him to crank the engine without leaving his seat, and this is accomplished by the detailed construction which I will now describe.

Secured upon the main shaft S is a wheel 5 having ratchet teeth 6 around its periphery, the whole standing within a drum consisting of a cup-shaped body 9 having an opening 8 through the center of its bottom, and a plate 10 secured as by screws 11 over the mouth of said cup and having a larger hole 80 through its center and within which the hub 50 of the wheel 5 may rotate, there preferably being a dust-proof washer 55 between said hub 50 and a flange 85 formed around said hole 80. This drum by preference stands within the hood H of the automobile and forward of the front end of the

main shaft S upon which said wheel 5 is secured as by screws or otherwise.

The numeral 20 designates a cable wound around the drum, extending thence over a pulley 22, and leading backward to manipulating means broadly designated by the numeral 15 but herein shown as consisting of a lever pivoted at 16 within the framework of the automobile and connected at 17 with the cable 13.

The numeral 130 designates strong coiled or spiral spring preferably standing against the front end of the drum as shown and secured at one end by a screw or bolt 131 thereto, and the other end of this spring is secured to some fixed part so that the whole shall constitute what we may call the retracting device. Thus it will be seen that when the manipulating means is operated by the driver the drum is turned against the tension of the retracting means, and when the driver's pressure is removed the retracting means restores the drum to its original position.

On a suitable pivot within the wall of the drum (and it may be the screw or bolt 131 just referred to) is mounted a pawl 40 whose tip is adapted to engage the teeth 6 of the wheel 5, and 41 is a spring secured within the drum and bearing said tip normally into engagement therewith. This pawl is quite wide at its tip as best seen at 42 in Fig. 2, and this edge thereof which projects beyond or in front of the wheel 5 is adapted to make contact with the tip of a finger 44 which rises fixedly from the inner end of a fixed bracket 45 which is here shown as the enlarged and smooth part of a bolt that extends through the hole 8 in the bottom 9 of the cup-shaped body, and to which the inner end of said spring is attached as at the point 132. The forward end of this bolt is reduced and threaded as at 46 and passes through a cross bar in the frame work of the automobile to receive a nut 47 and a jam nut 48 whereby it is held rigidly in place and prevented from rotating. The tip of said finger 44 constitutes a cam standing under the free end of the pawl, and its obvious purpose is to disengage the pawl from the ratchet wheel at a proper moment. Thus when the operator moves the manipulating means he rotates the drum and gives a partial rotation to the main

shaft S, and on the return movement of the drum the pawl rides over the cam and lifts the tip of the pawl out of engagement with the teeth 6. The fact that the latter are
5 ratchet teeth instead of ordinary teeth permits the shaft to rotate faster than the drum in case the engine should start quickly. As soon as the operator removes his foot from the pedal or otherwise releases tension upon
10 the operating means, the retracting means restores the parts to their normal positions as will be understood. In case of back-fire, the reversely turning ratchet wheel would carry the pawl and drum with it only far
15 enough to cause the tip of the pawl to strike the cam and disengage it from the ratchet teeth, and hence the operator would not be injured. It is not necessary to go into a more detailed description of the manner in
20 which these starting devices are employed.

What is claimed as new is:—

In a starting device for automobile gas engines, the combination with a ratchet wheel having a hub fixed to the end of the

engine shaft; of a drum surrounding said 25 wheel and loosely embracing its hub and having a hole in line with said shaft, a wide pawl pivoted within said drum, a spring pressing it normally into engagement with said ratchet, manipulating means for direct- 30 ing the rotation of the drum in one direction, retracting means for normally rotating it in the other direction, a bracket secured to the automobile framework and projecting
35 fixedly and axially through said hole in the drum, and a finger rising rigidly from said bracket within the drum between the latter and said wheel and its tip constituting a cam upon which the pawl rides as the drum
40 returns to its retracted position.

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

ERNEST N. WARD.

Witnesses:

W. W. WYATT,
G. W. EARNshaw.