

W. R. DUNKEL.
STARTING DEVICE.
APPLICATION FILED DEC. 12, 1910.

1,004,636.

Patented Oct. 3, 1911.

Fig. 1.

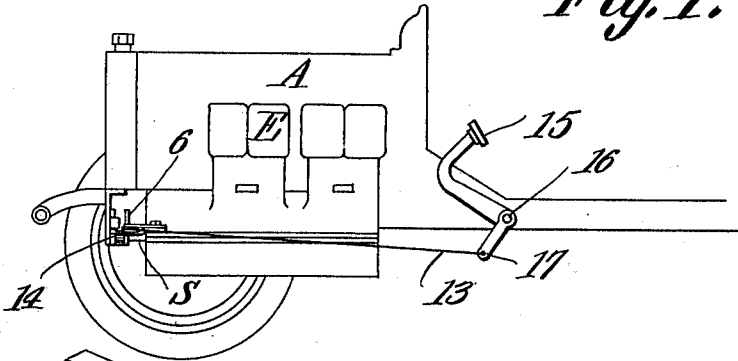


Fig. 2.

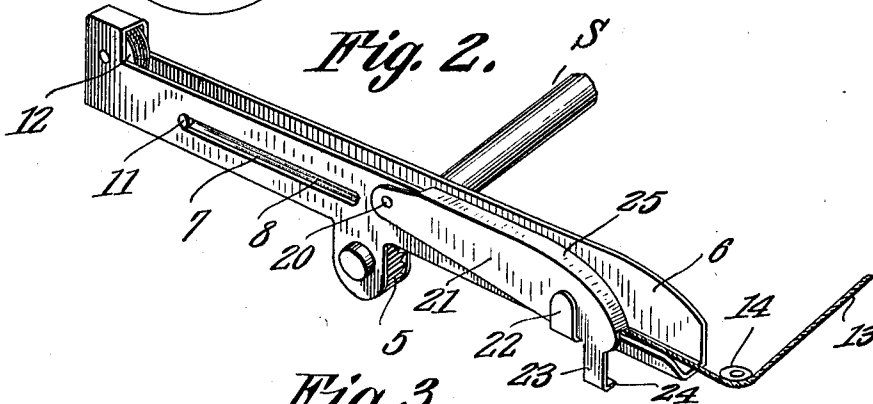


Fig. 3.

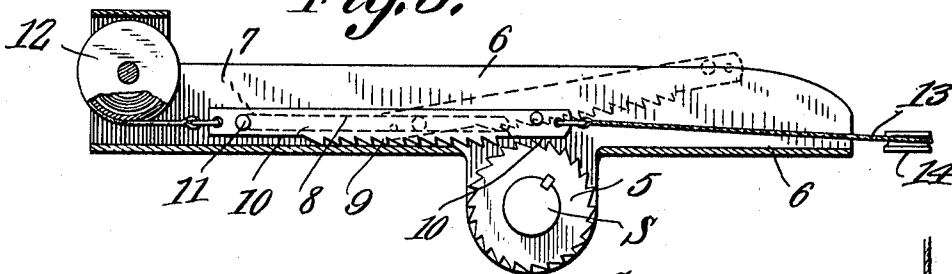


Fig. 4.

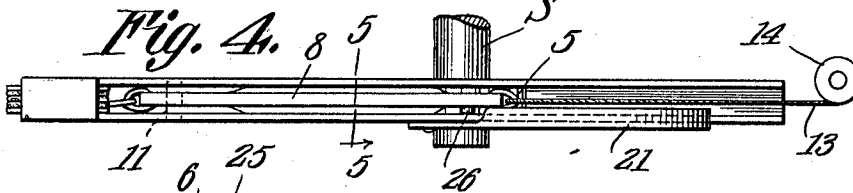


Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

WILBER R. DUNKEL, OF PANA, ILLINOIS, ASSIGNOR OF ONE-HALF TO CARTER R. SCROGGIN, OF HARRISTOWN, ILLINOIS.

STARTING DEVICE.

1,004,636.

Specification of Letters Patent.

Patented Oct. 3, 1911.

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To all whom it may concern:

Be it known that I, WILBER R. DUNKEL, a citizen of the United States, residing at Pana, in the county of Christian and State of Illinois, 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 that class of devices used in connection therewith, and which are known as mechanical starting devices; and the object of the same is to produce means by which a gas engine can be "cranked" by the operator while sitting on his seat.

To this end the invention consists in the details of construction hereinafter described and claimed, and as shown in the drawings, wherein—

Figure 1 is a diagrammatic elevation of the front end of an automobile, showing the position my attachment takes when in place; Fig. 2 is a perspective view of the cranking attachment detached from the machine; Fig. 3 is a central longitudinal section. Fig. 4 is a top plan view. Fig. 5 is a cross section on the line 5—5 of Fig. 3.

In the drawings, the letter A designates broadly an automobile having a gas engine E whose main shaft S must be spun or rotated partially by hand in the operation of "cranking" the engine in order to start it, as is well known; and in the machines as now manufactured, it is necessary for the operator to descend from his seat and go around in front of the engine so as to manipulate the starting crank.

The object of the present invention is to produce a starter by which the engine can be cranked while the operator remains in his seat, as will now be described in detail.

Keyed to or fast upon the main shaft S is a toothed wheel 5, here shown as a ratchet wheel, above which stands a cross housing 6 open at both ends and having a longitudinal slot 7. Within this housing is loosely mounted a rack bar 8 whose teeth 9 are omitted at its ends as at 10, and this rack bar at its inner end has a lateral pin 11 which slides within the slot 7. Said inner

end is connected with a winding device 12, here shown as a spring-actuated drum whose axle is journaled within the housing 6, although it will be understood that it might be a weight or any other mechanical equivalent, its purpose being to retract the rack bar 8 to the position best seen in Fig. 4 when the pin 11 stands at the inner end of the slot 7. Attached to the outer end of the rack bar 8 is a cable 13 which passes over a suitable pulley 14 or pulleys or other devices whose purpose is to direct this cable properly along to within reach of the operator as seen in Fig. 1; and 15 designates the manipulating means, here shown as a foot lever pivoted at 16 within the framework of the machine and connected at 17 with the cable 13. It is obvious that by moving this manipulating means a pull is imparted to the cable 13 and the rack bar is drawn over the toothed wheel 5 against the tension of the retracting device 12. By this means the engine can be cranked, and when power is removed from the manipulating means the retracting device returns the rack bar to the position shown in Fig. 4.

Pivoted at 20 to one side of the housing 6 is a track 21 whose free end rises and falls behind the guide 22 and itself has an ear 23 hooked at its extremity as at 24 so as to prevent the track from rising too high. Along the upper edge of this track is its rail 25 curved downward as best seen in Fig. 2. From this construction it will be understood that when the rack bar 8 is drawn forward by the manipulating means 15, a pin 26 which projects laterally from its front end is moved under the front end of the rail 25, and when the pull on the cable is released and the retracting device commences to work this pin travels upward over the rail 25 and lifts the rack bar to the position shown in dotted lines in Fig. 3, whereby on its return movement its teeth 9 do not engage the toothed wheel 5. In order to be perfectly certain that no such contingency shall arise, all teeth on both the rack bar 8 and the wheel 5 are preferably ratchet teeth as shown. Furthermore, by this construction, when the engine starts the ratchet

teeth on the wheel 5 will travel loosely beneath the ratchet teeth 9 on the rack bar 8 without forcibly carrying the latter forward within the housing 6.

5 All parts are by preference made of metal and of such weight and strength as may be required according to the force necessary to crank the engine upon which this device is used. It is to be understood that the housing
10 stands across the front end of the engine, under the hood of the automobile and out of sight, as well as out of the reach of rain and dirt, and its proportion as well as the precise and specific details of construction
15 may be altered at will without departing from the spirit of my invention.

I consider it advisable that the teeth 9 be omitted from both ends of the rack bar 8 as at 10, because when the parts stand in
20 the position shown in Fig. 4, it is not desirable that the teeth 9 engage the toothed wheel 5 and when the rack bar is drawn to its extreme forward position it is advisable that the teeth 9 again disengage the
25 wheel 5 so that the pin 26 can rise over the rail 25 without having to draw the teeth forcibly out of engagement with each other. Moreover, in case of back-fire before the pin has passed under the forward end of
30 the track, the reverse movement of the toothed wheel would carry the rack bar backward only until the clear space came over the teeth; whereas if the pin had passed the front end of the track before the back-
35 fire took place, the reverse movement of the toothed wheel would carry the rack bar backward and the pin would ride up the track and throw the teeth out of engagement.

40 What is claimed as new is:—

1. In a starting device for gas engines, the combination with a housing extending across the main shaft, a bar slidable within
45 said housing and having teeth on its lower edge at its central portion but omitted at its end portions, a toothed wheel on the main shaft of the engine with which said teeth on the bar are adapted to engage, a retracting device at the inner end of the
50 housing connected with the inner end of the bar, and manipulating means connected with the outer end of the bar and leading to within reach of the operator; of means for permitting the teeth on the rack bar to
55 engage those on the wheel when the former is drawn forward and for mechanically disconnecting them when said bar is retracted.

2. In a starting device for gas engines, the combination with a housing extending
60 across the main shaft and having a longitudinal slot in one side, a bar slidable within said housing and having teeth on its lower edge, a pin projecting laterally from the

inner end of said bar and loosely engaging
said slot, a toothed wheel on the main shaft 65 of the engine with which said teeth on the bar are adapted to engage, a retracting device at the inner end of the housing connected with the inner end of the bar, and manipulating means connected with the
70 outer end of the bar and leading to within reach of the operator; of means for permitting the teeth on the rack bar to engage those on the wheel when the former is drawn forward and for mechanically disconnecting
75 them when said bar is retracted.

3. In a starting device for gas engines, the combination with a housing extending across the main shaft, a bar slidable within
said housing and having teeth on its lower 80 edge, a toothed wheel on the main shaft of the engine with which said teeth on the bar are adapted to engage, a retracting device at the inner end of the housing connected with the inner end of the bar, and manipu-
85 lating means connected with the outer end of the bar and leading to within reach of the operator; of a pin projecting laterally from the inner end of said bar, a track movably supported by said housing and hav-
90 ing a rail beneath which said pin passes freely as the bar moves in one direction and upon which it rides as the bar is retracted.

4. In a starting device for gas engines, the combination with a housing extending
95 across the main shaft, a bar slidable within said housing and having teeth on its lower edge, a toothed wheel on the main shaft of the engine with which said teeth on the bar are adapted to engage, a retracting device
100 at the inner end of the housing connected with the inner end of the bar, and manipulating means connected with the outer end of the bar and leading to within reach of the operator; of a pin projecting laterally
105 from the inner end of said bar, a track pivotally supported by said housing and having a rail along its upper edge and bent downward at its inner end beneath which said pin passes freely as the bar moves in
110 one direction and upon which it rides as the bar is retracted, a guide for the free end of said track, and an ear on said end hooked loosely under the housing.

5. In a starting device for gas engines, 115 the combination with a housing extending across the main shaft, a ratchet wheel fast on the latter, a rack bar sliding in the housing and having ratchet teeth adapted to engage those on said wheel, and a winding
120 drum carried by the housing and connected with the inner end of said rack bar for moving its teeth out of engagement with those on said wheel; of a cable connected with the other end of said bar, manipulating means
125 standing within reach of the operator and

connected with said cable for drawing the
bar against the tension of said drum, a pin
in one side of the bar, and a track carried
by the casing and having a rail shaped to
engage said pin and elevate the bar on the
return movement of the latter.

In testimony that I claim the foregoing

as my own, I have hereto affixed my signature in the presence of two witnesses.

WILBER R. DUNKEL.

Witnesses:

F. B. OCHSENREITER,
N. L. COLLAMER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."