

UNITED STATES PATENT OFFICE.

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SPARKING-IGNITER STARTING MECHANISM FOR GASOLENE-ENGINES.

No. 800,372.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ANDREW J. HASKELL, a citizen of the United States, residing at West Bethel, county of Oxford, and State of Maine; have invented certain new and useful Improvements in Sparking-Igniter Starting Mechanism for Gas and Gasolene Engines, of which the following is a specification.

My invention relates to sparking-igniter starting mechanism for gas and gasolene engines.

The object of the present invention is the provision of a simple and inexpensive attachment adapted to be applied to gas and gasolene engines employing the hammer-blow type of igniter whereby the igniting mechanism will be operated at the proper time to explode the charge on turning the fly-wheel backward to obtain a proper compression.

Having the foregoing object in view, the invention consists of an improved attachment adapted to cooperate with the igniting and other mechanisms of an ordinary gas-engine in a novel manner, as fully set forth herein-after. The novel features of the invention are recited in the appended claims.

In the accompanying drawings, wherein the invention is shown applied to a gas or gasolene engine, Figure 1 is a perspective view illustrating the invention when in position with the cooperating parts on the gas-engine, dotted lines representing the position of the igniter-rod after it has been disengaged from the attachment and the end of the cylinder of the engine being broken away to disclose the sparking electrodes; Fig. 2, an enlarged detail of the attachment, and Fig. 3 an enlarged detail view of the spring mechanism for striking the hammer-blow.

Referring more especially to the drawings, 1 represents the cylinder of the gas-engine, which is provided with the igniter-head, and secured therein is the usual stationary electrode 2. Journaled just below the stationary electrode is the movable electrode or sparking electrode 3, which is provided with the rocker-arm 4 at its outer end. Sliding within an aperture in the rocker-arm 4 is a stud 22 in the sleeve 21 on the igniter-rod 5, which stud is provided with spring 6, which will hereinafter be described, and at its opposite end with a head 7, having notches 10 adapted to be engaged by a cam 8 on the lay-shaft 9. This lay-shaft 9 is actuated as usual by gearing com-

municating with the fly-wheel shaft and is provided with a cam 11, adapted to coact with the valve-operating mechanism.

Pivotally secured through aperture 19 on a bolt 20 on the lay-shaft bearings is a bar 13, having a certain amount of inherent resiliency, the free end 14 of which is provided with a notched portion 15, adapted to engage the notches 10 on the head 7. At or near the center of the bar 13 there is secured an arm 16 and a curved leaf-spring 17, which is adapted to be adjusted by a set-screw 18, screw-threaded through the arm 16. The arm 13 during the normal operation of the engine depends at right angles to the position shown in Fig. 1.

Secured to one end of the igniter-rod 5 is a sleeve 21, closed at one end by the igniter-rod 5 and through which a stub-rod 22 is adapted to pass, thus closing the opposite end. This stub-rod 22 is provided with a head 23, which is engaged by the spring 6, surrounding said rod 22. The opposite end of the stub-rod 22 is provided with an adjusting-nut 24 and a spring 25, which engages said nut 24 and the rocker-arm 4. To that end of the sleeve 21 opposite to that to which the igniter-rod is secured is attached a hammer 26, adapted to contact with the rocker-arm 4.

The operation is as follows: When it is desired to start the engine, the spring-bar 13 is raised so that the notched portion 15 engages the notches 10 on the head 7. The engine is now reversed through the fly-wheel until the cam 11 comes in contact with the curved spring 17 on the arm 13, which contact will bend the arm outwardly and pull the hammer 26 away from the rocker-arm and cause the spring 25 to exert a pressure on the rocker. This eventually causes the movable electrode 3 to contact with the stationary electrode. The spring is now under great tension, and when the cam passes the middle of the curved leaf-spring 17 the bar 13 disengages itself from the head 7 and drops down and allows the igniter-rod to fly back and the hammer to strike the rocker-arm, which separates the electrodes sharply, thus exploding the charge and starting the engine. Thereafter the cam 8 engages the notches 10 on the igniter-rod at the proper period to repeatedly explode the charges, and the engine continues to act automatically.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an igniter starting attachment for gas
or gasolene engines, the combination of a ham-
mer-blow igniting mechanism, a lay-shaft ac-
5 tuated by the engine, a cam on said lay-shaft
adapted to operate the inlet-valve of said en-
gine, a latching member pivoted at one end
and adapted to be engaged by said cam and
to engage with the hammer-blow igniting
10 mechanism and hold it so that when released
it will act to create a spark, and means carried
by the latching member for varying the time
of action of said member.

2. In an igniter starting attachment for gas
or gasolene engines, the combination of a ham-
15 mer-blow igniting mechanism, a lay-shaft ac-
tuated by the engine, a cam on said lay-shaft
adapted to operate the inlet-valve of said en-
gine, a resilient latching-bar pivoted at one
end and adapted to be engaged by said cam and
20 to engage with the hammer-blow igniting
mechanism and hold it so that when released it
will act to create a spark, and means carried

by said latching-bar for varying the time of
action of said bar.

3. In a starting device for explosive-engines, 25
the combination with a hammer-blow igniting
mechanism, of a bar pivoted at one end and
adapted to engage the hammer-blow igniting
mechanism, an arm carried by said bar, a leaf-
30 spring carried by said bar, means engaging
the spring and said arm to adjust the spring,
a lay-shaft actuated by the engine, and a cam
on said lay-shaft adapted to engage said leaf-
spring to force the bar away from its engag- 35
ing position and carry therewith the hammer-
blow igniting mechanism and at a predeter-
mined time to release the bar and allow the
hammer-blow igniting mechanism to act.

In testimony whereof I hereunto affix my
signature in presence of two witnesses.

ANDREW J. HASKELL.

Witnesses:

E. P. PHILBROOK,
FRED E. MURPHY.