

W. J. PRESLEY.
STARTER FOR INTERNAL COMBUSTION ENGINES.
APPLICATION FILED OCT. 10, 1911.

1,044,081.

Patented Nov. 12, 1912.

2 SHEETS—SHEET 1.

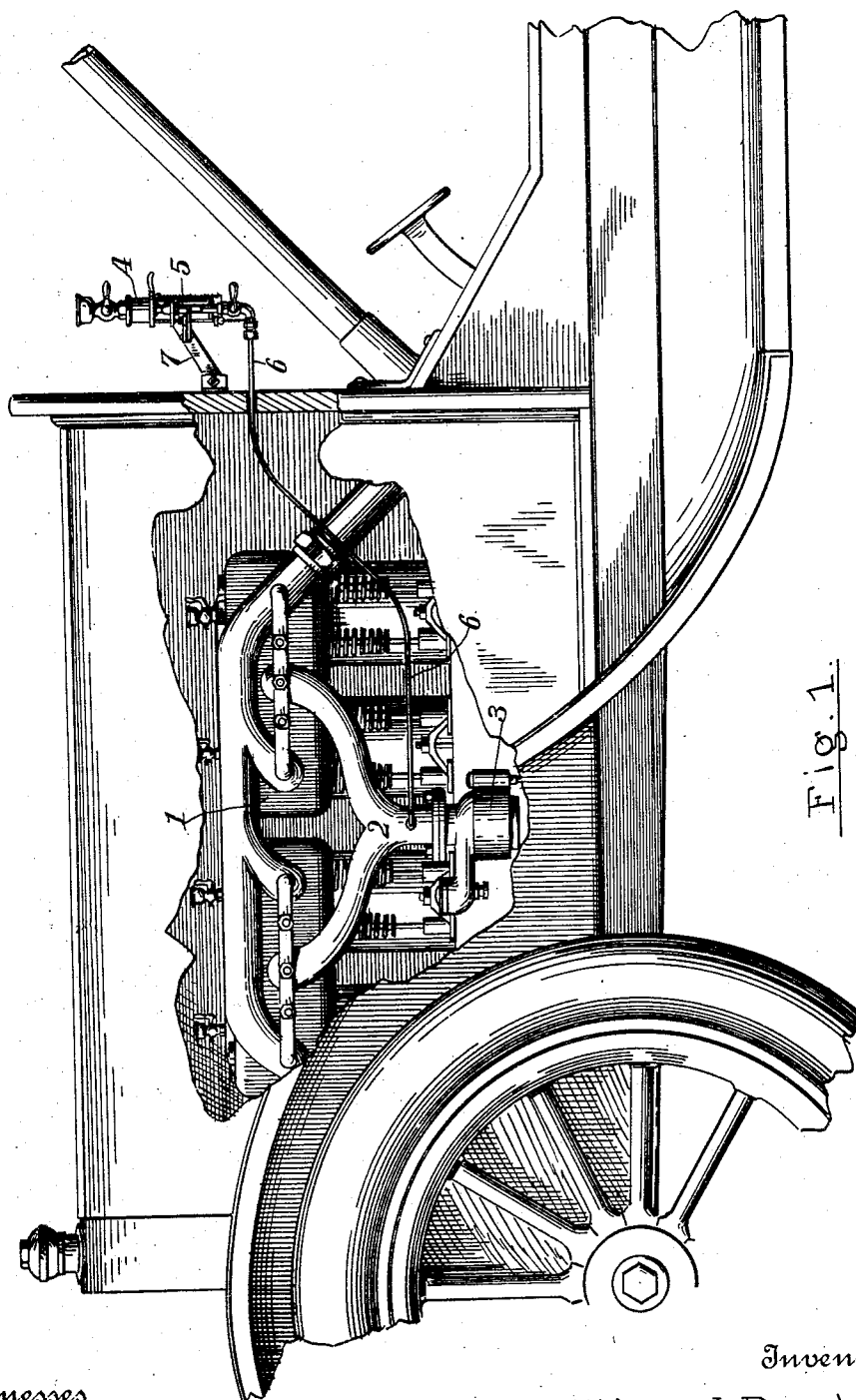


Fig. 1.

Witnesses
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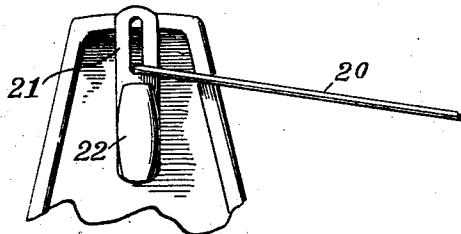


Fig. 3.

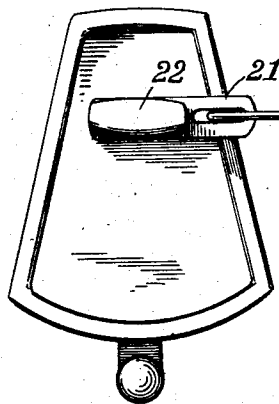


Fig. 2.

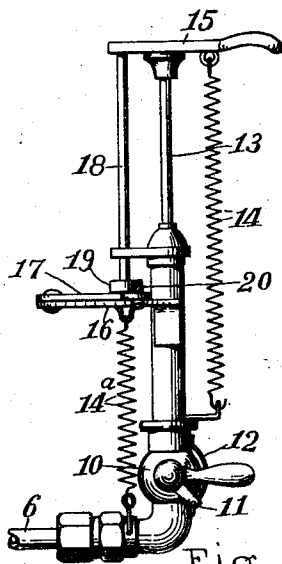
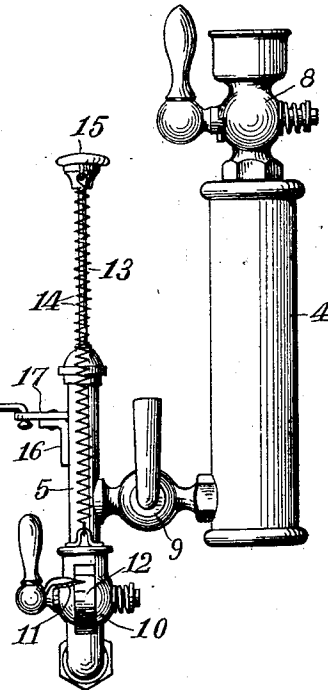


Fig. 4.

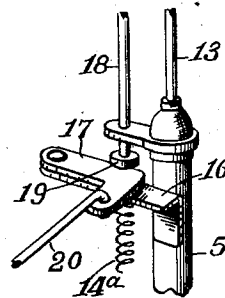


Fig. 5.

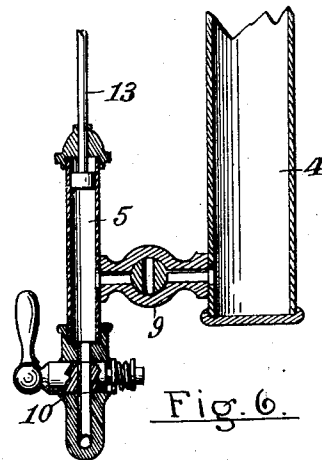


Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM J. PRESLEY, OF GRAND HAVEN, MICHIGAN.

STARTER FOR INTERNAL-COMBUSTION ENGINES.

1,044,081.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed October 10, 1911. Serial No. 653,819.

To all whom it may concern:

Be it known that I, WILLIAM J. PRESLEY, a citizen of the United States of America, residing at Grand Haven, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Starters for Internal-Combustion Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in starters for internal combustion engines and more particularly to such devices adapted to supply the engine with a starting charge of combustible mixture adapted to remain in the engine for a considerable period of time in condition for ignition by the usual ignition device and its object is to provide a simple and effective means for injecting into the last few charges taken into the engine a suitable quantity of highly volatile fluid which will at ordinary temperatures remain in a vaporized condition and adapted to be fired by the usual ignition device to start the engine and to provide the device with various new and useful features hereinafter more fully described and particularly pointed out in the claims reference being had to the accompanying drawings, in which:—

Figure 1 is a side elevation of a device embodying my invention applied to a four-cylinder automobile engine; Fig. 2 a front elevation of my device; Fig. 3 a detail in elevation showing the position of the switch key and connecting rod after the apparatus has been operated to charge and stop the engine; Fig. 4 a detail of the charging pump shown at right angles to Fig. 2; Fig. 5 a perspective detail of the latch mechanism for controlling the pump; and Fig. 6 a detail in vertical section of the pump and a portion of the reservoir.

Like numbers refer to like parts in all of the figures.

1 represents an ordinary four cylinder automobile engine. 2 the intake manifold of the same through which the combustible mixture is supplied to the various cylinders. 3 the carbureter for the same, all as usually constructed.

4 represents a reservoir to contain any suitable fluid such as sulfuric ether or some other fluid which vaporizes at ordinary temperatures and forms with air a highly combustible mixture. I do not limit myself to the use of any particular fluid for this purpose, however.

5 is a small pump adapted to contain a sufficient quantity of such fluid to properly charge the engine when the same stops as hereafter described.

6 is a pipe connected to the pump and communicating with the apparatus which supplies the ordinary running charges of combustible mixture, (usually gasoline, vapor and air), preferably being inserted in the manifold 2 near the carbureter. I do not limit myself, however, to this particular location it merely being necessary to inject this fluid into the apparatus supplying the usual running charges of the engine in any manner which will result in vaporizing the fluid and carrying the vapor into the engine along with the ordinary running charges whereby the same is enriched and provided with a vapor that will remain in the cylinders in condition for ignition during the interval that the engine is not running. This pump and reservoir are preferably mounted on an adjustable bracket 7 whereby it may be variously adjusted relative to the switch key found on an automobile, to conveniently connect it to the same as hereafter explained. This device is preferably mounted on the dash board of the car conveniently located for manipulation.

8 is a suitable filling cock to supply the reservoir 4 with the preferred fluid.

9 is a stop cock connecting the reservoir with the pump which is opened to charge the pump and then closed.

10 is a stop cock between the pump and the pipe 6 to open and close communication with the same. 11 is an index on the plug of this cock and 12 a gage traversed by the index whereby the cock may be adjusted to open or closed position or to slightly open the same.

13 is the piston rod of the pump which pump I prefer to operate automatically by some convenient means, for which purpose I prefer to provide a cross head 15 mounted on

the piston rod and at one side a contractile spring 14 is attached thereto and at the other side opposite the same a rod 18 is attached to said cross head and an auxiliary spring 18^a attached to this rod. These springs force the piston downward and discharge the contents of the pump through the pipe 6 as hereafter described. To hold the piston of the pump in raised position and allow the pump to be filled with fluid, the rod 18 is provided with a head 19 and a bracket 16 secured to the pump carries a pivoted latch 17 which engages the head and holds the pump piston in raised position as illustrated in the drawings. To automatically release this latch I prefer to connect the same to the switch key of the ignition apparatus by means of a rod 20 connected to the latch at one end and at the other end engaging a slotted plate 21 attached to a switch key 22 whereby when the switch key is turned the earlier part of the movement of the same will cut off the current of the ignition devices, and the latter part of the movement of the key will release the pump. The impetus of the fly wheel of the engine will continue to rotate the same a few strokes and thus take into the cylinders the vapor formed from the fluid discharged by the pump. There is clearance enough in the slot of the plate so that the latch can be engaged and disengaged with the head 19 without moving the key, as shown in Fig. 2.

In operation while the engine is running and the key in the position shown in Fig. 2 the valve 9 is opened and the pump piston manually raised and secured in raised position by the latch. This fills the pump with fluid from the reservoir 4 and the valve 9 is then closed. Before the engine stops the valve 10 is opened and the key first turned to cut off the current. This stops the ignition and as the engine runs down before the last few strokes of the same the key is moved to its final position as in Fig. 3 which removes the latch from beneath the head 19 and releases the pump as heretofore described.

While the engine is running, the charges may be enriched by fluid from the reservoir 4 and the power of the engine increased. It is well known that there is a limit to the vaporizing capacity of a carburetor running on ordinary gasoline and any attempt to increase the power of an engine beyond certain limits will often result in flooding the engine with unvaporized gasoline. The fluid from the reservoir being highly volatile will not produce such a result and can thus be used to temporarily increase the power of the engine by opening the valve 9 and slightly opening the valve 10 as indicated by the index 11 and scale 12. The fluid from the reservoir 4 will then be continuously discharged into the intake mecha-

nism of the engine in small quantities and its vapor will enrich the charges and increase the power of the engine without flooding the same.

What I claim is:—

1. An engine starter, comprising a reservoir to contain fluid, a pump communicating with the reservoir and with the mechanism for supplying the running charges of the engine, a spring to operate the pump, a latch to hold the spring under tension and a rod connecting the latch with a switch key for discontinuing the ignition in the engine whereby when said ignition is discontinued the spring is released and the pump operated thereby.

2. In combination with an internal combustion engine, a reservoir to contain a volatile fluid such as sulfuric ether, a pump having a piston rod projecting therefrom, a spring attached to the piston rod, a latch adapted to hold the rod in outward position with the spring under tension, a switch key to cut out the ignition in the engine, a slotted plate attached to the key and a rod connected to the latch at one end and movably engaging the slot in the plate at the other end whereby the ignition is first discontinued and later on the pump rod released.

3. In combination with an internal combustion engine, a reservoir to contain a volatile fluid, a pump connected to the reservoir and to the intake manifold of the engine, a cross head attached to the end of the piston rod, a contractile spring attached to one side of the cross head, a rod attached to the other side of the cross head at one end and having a head at the other end, a bracket on the pump, a latch pivoted on the bracket and engaging the head on the rod, a slotted plate attached to a switch key on the engine and a rod connected to the latch at one end and slidably engaging the slot in the plate at the other end.

4. In combination with an internal combustion engine having a manifold to distribute charges of combustible mixture to the cylinders of the engine and a switch key to control the ignition of the charges, a reservoir to contain a volatile fluid, a pump, a stop cock connecting the reservoir and pump, a pipe connecting the pump and manifold, a stop cock provided with an index and scale between the pump and pipe, a spring attached to the piston rod of the pump, a latch to hold the piston rod with the spring under tension and a rod connecting the latch and the key whereby when the key is turned to cut out the ignition the pump piston is released.

5. An engine starter, comprising a pump to inject fluid into the mechanism for supplying the combustible charges, a cross head

attached to the piston rod of the pump, a
spring attached to one end of the cross head,
a rod attached at one end to the other end
of the cross head, a head on the other end
5 of the rod, a second spring attached to the
said rod, a bracket attached to the pump, a
latch pivoted on the bracket and engaging
the head to hold the spring under tension,
and means for automatically releasing the

latch when the ignition in the engine is dis- 10
continued.

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

WILLIAM J. PRESLEY.

Witnesses:

HAROLD O. VAN ANTWERP,
L. V. MOULTON.

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