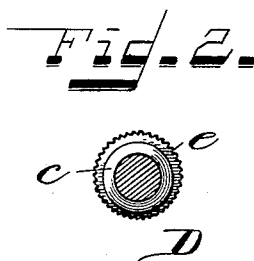
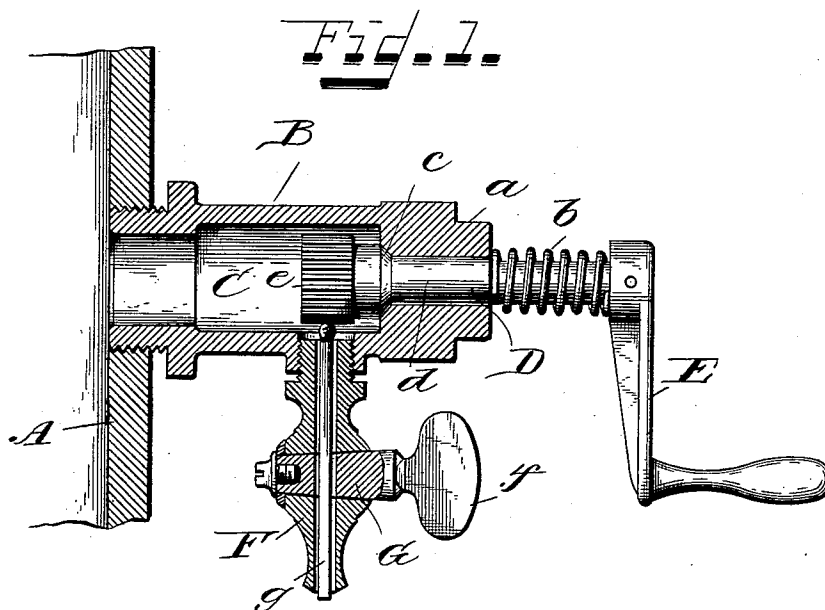


(No Model.)

C. J. WEINMAN & E. E. EUCHENHOFER.
GAS ENGINE STARTER.

No. 569,365.

Patented Oct. 13, 1896.



~~Witnesses.~~

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UNITED STATES PATENT OFFICE.

CHRISTIAN J. WEINMAN AND EDWARD E. EUCHENHOFER, OF DAYTON,
OHIO, ASSIGNORS TO THE DAYTON GAS ENGINE AND MANUFACTUR-
ING COMPANY, OF SAME PLACE.

GAS-ENGINE STARTER.

SPECIFICATION forming part of Letters Patent No. 569,365, dated October 13, 1896.

Application filed July 15, 1896. Serial No. 599,212. (No model.)

To all whom it may concern:

Be it known that we, CHRISTIAN J. WEINMAN and EDWARD E. EUCHENHOFER, citizens of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Gas-Engine Starters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to devices for furnishing the spark to obtain the initial explosion in starting gas or gasolene engines. It is usual to ignite the gases of such engines by electrical igniters, the current being generated by the gas-engine itself, and with such engines, in order to start the machine, inasmuch as there is no current when the machine is at rest, it is necessary to supply some method of igniting for the initial explosion. This has heretofore been accomplished by an ordinary friction-match, but there is usually left an opening where the match is inserted, allowing an outlet for the expanding gas, and moreover, inasmuch as the means employed for striking the match must be operated from the outside, the gas can also usually escape through the passage-way for the igniter. It is to remedy these defects and supply a device for igniting the match which shall be airtight to prevent the escape of gas and in which the match can be readily ignited and when burned easily removed that our invention is directed.

It consists of a certain novel construction and arrangement of parts to be hereinafter more particularly pointed out and claimed.

In the drawings, Figure 1 is a central longitudinal section of our improved starter. Fig. 2 is a cross-section of the igniter-rod, looking toward its milled head.

A is a portion of the cylinder-wall of the ignition-chamber of a gas-engine. Screwed into this wall at any suitable point is the cylinder B, forming a small chamber C, open into the explosion-chamber. Passing through a central opening in the head *a* of the cylinder is a valve rod or stem D, carrying at its outer end a crank-handle E, by means of

which the valve-rod can be rotated, while a spiral spring *b* keeps the valve *c* in its seat *d* in the cylinder-head. The valve-rod D carries at its inner end a milled or roughened head *e*, which is turned slightly eccentric of the rod, as shown in Fig. 2. Opposite the milled head *e* the stop-cock F is screwed into the cylinder B. This stop-cock F has the usual plug G, turned by thumb-screw *f*, with central opening through the plug, so that when the stop-cock is open there is a straight open passage-way for the insertion of a match *g*. Before the match is inserted the valve-rod is first turned so that the short side of the eccentric head *e* is presented to the opening in the stop-cock and the match is pushed in until the head of the match comes in contact with the milled head. Then the thumb-screw *f* is turned at right angles to its open position, thus breaking off the match and closing the match-opening. The crank-handle E is then turned, bringing the long side of the milled head against the match, which is struck, thus igniting the gas in the chamber C and in the explosion-chamber.

In order that the burned match may be readily removed, the device is preferably attached to the machine with the match passage-way extending vertically upward, so that when the stop-cock is again opened the burned match will drop out of its own weight.

It will be seen from the above construction that after the match is inserted and broken off all the openings into the chamber C are tightly closed, so that there can be no escape for the gas as it is exploded and the force of the explosion will be utilized in driving the piston to start the machine.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a gas-engine starter, the combination, with a rod provided with a striking-head, and means for rotating the rod, of a passage-way for the insertion of a match up to the striking-head, substantially as shown and described.

2. In a gas-engine starter, the combination, with a rod provided with a striking-head and means for rotating the rod, of a passage-way

for the insertion of a match up to the striking-head, and valve to close the passage-way when the match is inserted, substantially as shown and described.

5 3. In a gas-engine starter, the combination, with a rod, carrying a valve and a striking-head, and means for rotating the rod, of a passage-way for the insertion of a match up to the striking-head, and valve to close the
10 passage-way when the match is inserted, substantially as shown and described.

4. In a gas-engine starter, the combination, with a rod carrying a valve, with spring for holding the valve in its seat, and means for

rotating the rod, said rod having at its inner 15 end a striking-head mounted eccentrically of the rod, of a stop-cock opening opposite the striking-head, with valve therefor, through which the match is passed and whereby the match is broken off at the closing of the stop- 20 cock valve, substantially as shown and described.

CHRISTIAN J. WEINMAN.
EDWARD E. EUCHENHOFER.

In presence of—

P. J. WORTMAN,
E. J. FINKE.