C. F. JENKINS.

GAS ENGINE STARTER.

APPLICATION FILED NOV. 11, 1910.

1,047,527. Patented Dec. 17, 1912.

Fig. 2.

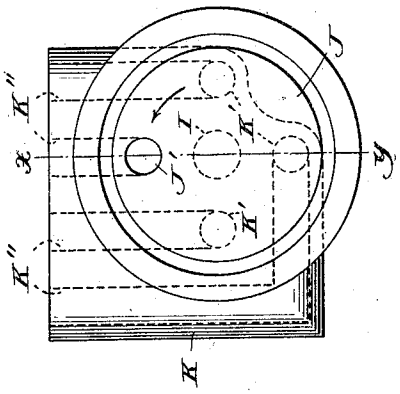


Fig. 3.

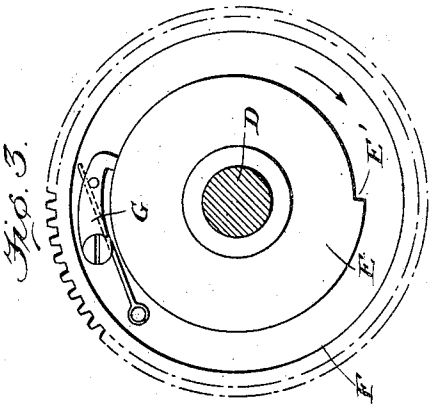


Fig. 4.

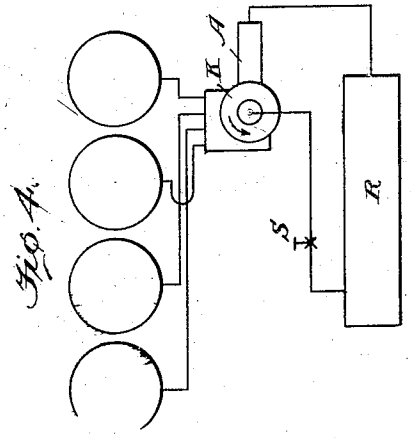
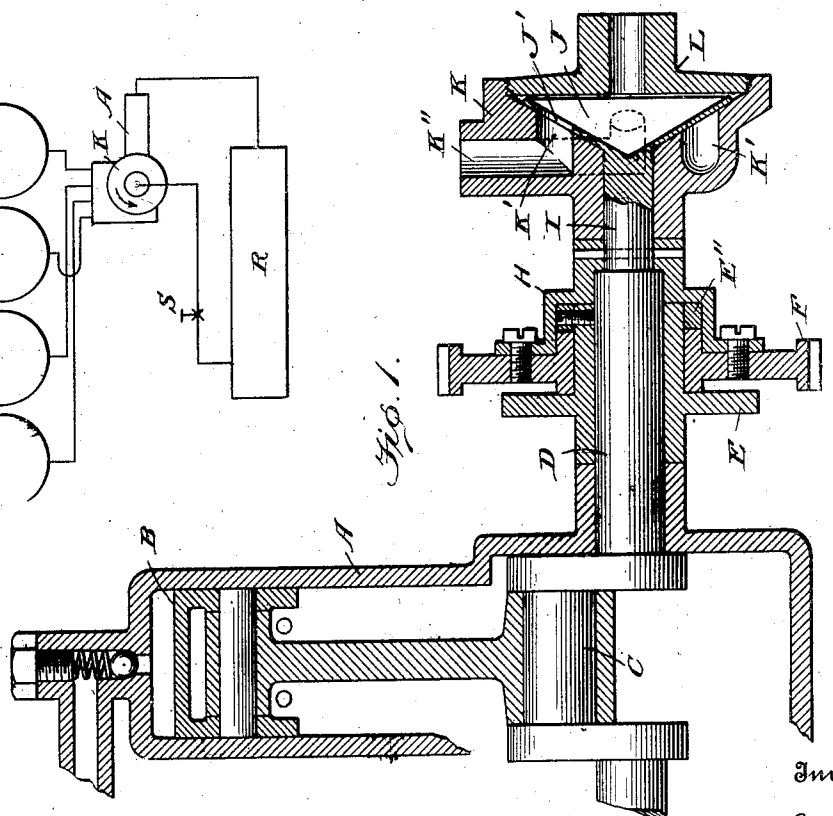


Fig. 1.



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UNITED STATES PATENT OFFICE.

CHARLES FRANCIS JENKINS, OF WASHINGTON, DISTRICT OF COLUMBIA.

GAS-ENGINE STARTER.

Specification of Letters Patent. Patented Dec. 17, 1912.

1,047,527.

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To all whom it may concern:

Be it known that I, CHARLES FRANCIS JENKINS, citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Gas-Engine Starters, of which the following is a specification.

This invention relates to that class of apparatus known as gas engine starters, and consists primarily of a pump for an elastic fluid and a distributer therefor.

One of the objects of the invention is the design of such a combination as will permit of starting and stopping the pump without disturbing the "timing" of the distributer.

Another object is the selection of such a design of the rotor of the distributer that it will have practically no friction when not actually in use, and yet seat itself without leaking when the fluid is turned onto it.

After trying a great many different forms of distributer valves, the present one has been found so superior to other types as to be rather striking. The tapers with a more sharp angle tend to wedge themselves into the body of the distributer, while the flat ones tend to develop leaky "spots." The distributer of this application seats itself tightly without bringing undue strain on the rotating mechanism and continues tight in use.

In the drawings, Figure 1 is a sectional view of the apparatus, on the line *x—y* of Fig. 2; Fig. 2 is a front view of the distributer with the cap removed; Fig. 3 is a view of the clutch for connecting and disconnecting the pump; and Fig. 4 a diagram of the parts in use.

Like symbols refer to like parts, in which—

A is a pump cylinder; D a piston therein; C a crank for reciprocating the piston; D the crank-shaft, to which is fixedly attached the single-tooth ratchet E. Mounted loosely on the hub of the ratchet E, is a gear F having a pawl G mounted therein to engage with the single-tooth E′ (Fig. 3) of the ratchet E. The gear F is prevented from working off the end of the hub of E by a collar E″. To the gear F is attached a yoke H into which the stem I of the rotor J, of the distributer K, fits, being pinned thereto. Shaft D and shaft I are not integral. The body of the distributer K has four openings K′ therein, shown dotted in Fig. 2, communicating with the passages K″, which latter, by proper piping (not shown), lead to the 1st, 3rd, 4th and 2nd cylinders, respectively, as this type of engine is usually made. The distributer has a gas-tight cap fitted thereto, having an opening therein adapted to receive a pipe from a source of compressed fluid, as R, in Fig. 4. The rotor J has a single opening therein, so located as to pass over and coincide in succession with the four openings in the distributer body.

It will be observed that, as the shaft D is not rotated by the gear F except as the pawl G engages with the tooth E′, the gear F may rotate freely without imparting motion to the pump. However, as the gear F is fixedly attached to the rotor J, through the yoke H, rotary motion is imparted to the rotor at all times. And if the gear is twice the size of the gear on the engine shaft (not shown), with which it is in engagement through intermediate gears, as in rotating electric timers, it (J) will rotate in time with the power strokes of the engine. That is, the distributer is always in time with the engine, while the pump may be thrown into and out of action as the pressure in the tank may require it, automatically or by hand.

The operation of the device, obvious to those skilled in the art, is as follows: The reservoir R having been charged with carbureted gas in any preferred manner, as by hand or by means of the pump shown herein, and it is desired to start the engine, the valve S is opened permitting the compressed gas to flow through the distributer to the second cylinder of the engine (as the distributer stands in Fig. 2). This will push the piston down, and, if the spark is set late, explode the charge as the spark is made, suddenly accelerating the movement of the piston causing it to take up its regular cycle with the least amount of the compressed gas in the reservoir.

No novelty is claimed in the clutch, as any suitable form of device for engaging and disengaging the separate parts thereof, would answer as well as that form shown. Nor is it essential whether the pump be single or multiple cylinder; any convenient form which will pump up the pressure is acceptable.

What I claim, therefore, is—

In apparatus of the class described, the combination with a pump casing, plunger, and actuating crank shaft having an end projecting from the casing, of a rotary distributer supported upon said end with its shaft telescoping the same and revoluble thereon, power devices acting between the pump casing and the terminal face of said end to rotate the distributer shaft, and means for at will causing the distributer shaft to rotate the crank shaft.

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

CHARLES FRANCIS JENKINS.

Witnesses:

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JAMES L. CRAWFORD.

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