W. L. MARR.

ENGINE STARTER.

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1,113,129.

Patented Oct. 6, 1914.

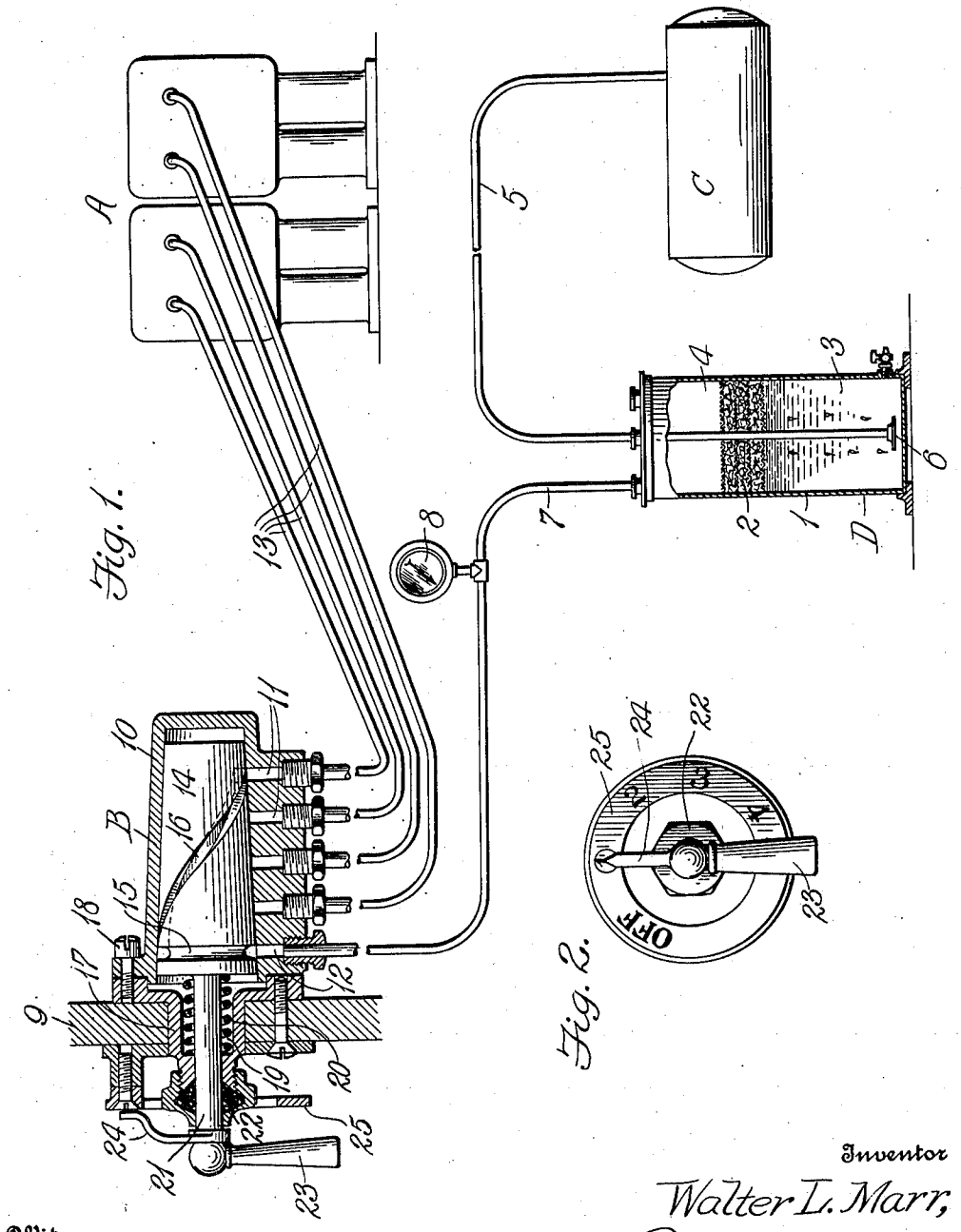


Fig. 1.

Fig. 2.

Witnesses

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ENGINE-STARTER.

1,113,129. Specification of Letters Patent. Patented Oct. 6, 1914.

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To all whom it may concern:

Be it known that I, WALTER L. MARR, a citizen of the United States of America, residing at Flint, in the county of Genesee and State of Michigan, have invented certain new and useful Improvements in Engine-Starters, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to means for introducing explosive charges into the cylinders of internal combustion engines for the purpose of supplying combustible fluid for the initial explosions in starting such engines.

The object of the invention is to provide simple and convenient means for forming explosive charges and introducing the same into the engine cylinders under pressure, and further to provide a suitable distributing valve for controlling the admission of the charges to the cylinders and to provide certain other new and useful features in the construction and arrangement of parts all as hereinafter more fully described, reference being had to the accompanying drawings, in which—

Figure 1 shows an arrangement of device in diagrammatic form to illustrate the operation of the invention, and also showing an enlarged sectional view of a distributing valve and a similar view of a vaporizer; and Fig. 2, is a front end elevation of the distributing valve.

While the invention is particularly adapted for use upon automobiles and other motor vehicles it may be also used upon stationary engines or in motor boats and therefore the diagrammatic arrangement shown in Fig. 1 of the drawing is not adapted for any particular use but is for the purpose of illustrating the invention and its operation.

In Fig. 1, A represents the cylinders of a multiple cylinder engine which cylinders may be arranged in any desired manner and the engine may have any desired number of cylinders, the inlet or distributing valve B, being constructed accordingly. A tank C is provided for holding air under pressure, no means being shown for supplying the tank with compressed air, it being understood that any suitable means may be provided and operated by the engine when the same is running or any other source of power. A vaporizer D is provided and it will be understood that any well known form of vaporizer may be employed into which air under pressure may be introduced from the air supply tank to vaporize gasolene contained in the vaporizer and form explosive charges. The vaporizer shown comprises a suitable tank or receptacle 1 adapted to contain within its lower end a quantity of gasolene or similar fuel and having a transverse wall intermediate its ends forming a porous baffle 2 within the receptacle which divides the same into a lower fuel chamber 3 and an upper vapor chamber 4. Leading from the air tank C is a pipe 5 which is extended downward through the top of the receptacle 1, through the baffle 2 and into the lower chamber 3 to near the bottom thereof where it is provided with a head or spreader 6 so that the air under compression escaping from the pipe will be distributed in the lower end of the chamber and pass up through the fuel and wall 2 into the vapor chamber 4. In bubbling up through the fluid and passing through the saturated porous wall 2 it becomes thoroughly carbureted and then passes from the top of the receptacle through a pipe 7 leading therefrom to the distributing valve B. A pressure gage 8 is provided in the pipe 7 to show the amount of pressure put upon the vaporizer by the tank C.

Mounted upon any suitable support as for example, a dash board 9 of a motor vehicle, is the distributing valve B which comprises a suitable casing 10 formed with a tapering bore extending inward from one end thereof. Leading into one side of the bore is a series of outlet passages 11 and a like inlet passage 12 into the outer end of which is secured the pipe 7 leading from the vaporizer. Secured within the outer ends of the outlet passages 11 is a series of pipes 13 leading to the several cylinders of the motor, there being one pipe for each cylinder. Within the tapered bore of the casing 10 is vided at one end with a circumferential a plug valve 14 which is tapered to correspond to the taper of the bore and is progroove 15 adapted to register with the inlet passage 12, and leading from this groove longitudinally of the plug is a spiral groove 16 which is adapted to be brought into registry with the several outlet passages 11 by turning the plug. The explosive mixture entering the valve through the pipe 7 and inlet passage 12, fills the groove 15 and passes into the open end of the spiral groove 16 which by turning the valve is brought successively

into registry with the several outlet passages 11, and thus the explosive mixture is distributed to the several cylinders through the pipes 13 by the turning of the valve.

The open end of the bore of the valve casing 10 is closed by a cap 17 secured by screws 18 to the casing and this cap is formed with a chamber 19 for a coiled spring 20 which is sleeved upon the valve stem 21 between the valve and the end of the chamber to hold the valve firmly seated within the tapered seat or bore of the casing and prevent leakage. The valve stem 21 passes outward through a stuffing box 22 and is provided with an operating handle 23 on its outer end. An indicator hand 24 is secured to the outer end of the valve stem and an indicating dial 25 is supported in any suitable manner adjacent to the hand and is provided with suitable indicating marks to show the position of the valve and which one of the cylinders of the engine is connected with the vaporizer when the valve is turned to a particular position. The word "Off" on the dial also indicates that when the indicator hand is opposite that word, that the valve is so turned that all communication between the vaporizer and the cylinders is cut off.

A very simple and efficient starting primer for internal combustion engines is provided and by forcing the starting charges into the engine cylinders by connecting up the vaporizer with a source of air under pressure, charges are forced into the cylinders to insure a full and efficient charge. The device is economical in its operation as the explosive charges are formed from an accurate mixture of air and gasolene vapor, the arrangement being such that the air passing into the vaporizer under pressure is completely and thoroughly carbureted by passing up through the body of fluid and then through the porous wall 2 which is preferably formed of several layers of felt placed and held between walls of wire gauze. The fluid in the chamber 3 cannot pass through the wall 2 but will saturate this wall so that the vapor chamber 4 will always contain a mixture of vapor and air which will pass directly into the cylinders of the engine upon the opening of the distributing valve.

Obviously, changes may be made in the construction of the various parts and their arrangement and I therefore do not limit myself to the particular form or construction shown.

Having thus fully described my invention what I claim is:—

1. In a distributing valve, the combination with a support, of a cap having a chambered portion extending through said support, a tapering casing secured to said cap and having a tapering bore formed therein, a longitudinal enlargement on the bottom of said casing provided with outlet and inlet ports communicating with the tapering bore of said casing, a tapering plug in said casing and having the large end thereof provided with an annular groove in communication with the inlet port of said casing, said plug having a spiral groove formed in the periphery thereof in communication with the annular groove of said plug and adapted by rotative movement of said plug to successively communicate with the outlet ports of said casing, a stem carried by the large end of said plug and extending through the chambered portion of said cap, means in the chambered portion of said cap for holding said plug normally seated in the bore of said casing, and means to facilitate rotating said stem.

2. In a distributing valve, the combination with a support, of a cap having a chambered portion extending through said support, a tapering casing secured to said cap and having a tapering bore formed therein, a longitudinal enlargement on said casing and having outlet and inlet ports formed therein communicating with the tapering bore of said casing, a tapering plug in said casing and having the large end thereof provided with an annular groove in communication with the inlet port of said casing, and a spiral groove throughout the length of said plug in communication with the annular groove thereof and adapted by rotative movement of said valve to successively communicate with the outlet ports of said casing, a stem carried by the large end of said plug and extending through the chambered portion of said cap, a coiled compression spring within the chambered portion of said cap and engaging the large end of said plug for holding said plug normally seated in the bore of said casing, and means at the outer end of said stem to facilitate adjusting the plug within said casing.

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

WALTER L. MARR.

Witnesses:
W. L. NELSON,
MILTON POLLOCK.