F. D. MALTBY.

PRIMING AND DECARBONIZING DEVICE FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED OCT. 10, 1917.

1,422,998. **Patented July 18, 1922.**

2 SHEETS—SHEET 1.

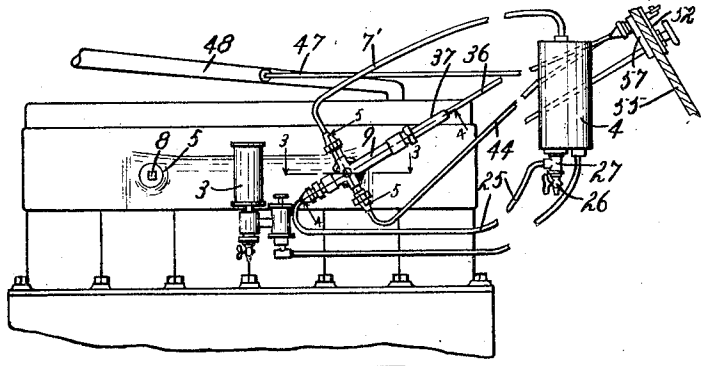


FIG. I

WITNESSES:

Harold Barnes

Luther Blake

INVENTOR.
FRANK D. MALTBY

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ATTORNEYS.

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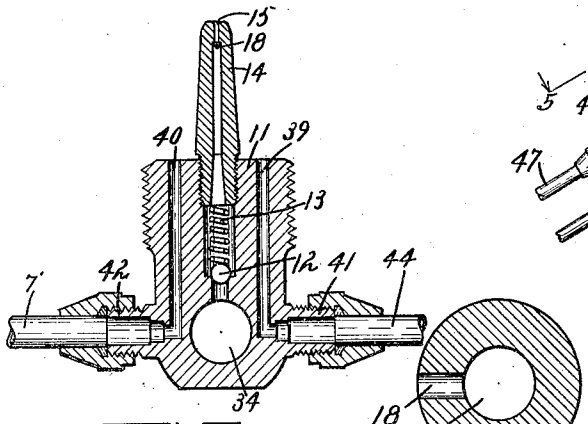


FIG. II

FIG. III

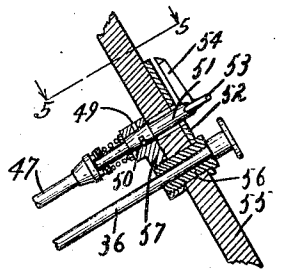


FIG. IV

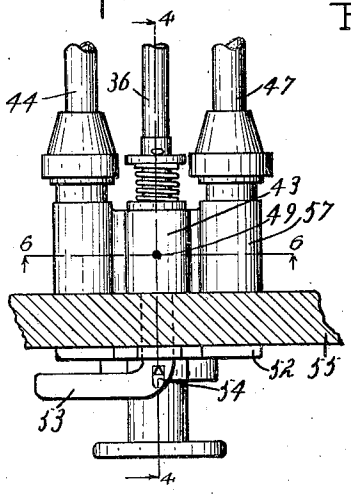


FIG. V

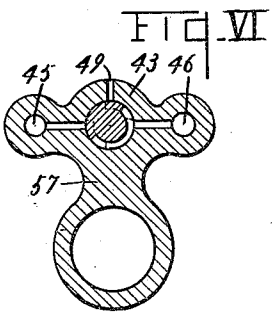


FIG. VI

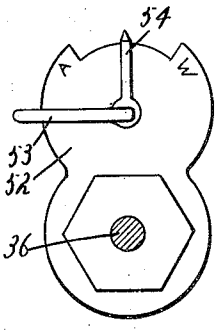


FIG. VII

WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANK D. MALTBY, OF BATTLE CREEK, MICHIGAN.

PRIMING AND DECARBONIZING DEVICE FOR INTERNAL-COMBUSTION ENGINES.

1,422,998. Specification of Letters Patent. Patented July 18, 1922.

Application filed October 10, 1917. Serial No. 195,713.

To all whom it may concern:

Be it known that I, FRANK D. MALTBY, a citizen of the United States, residing at Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Priming and Decarbonizing Devices for Internal-Combustion Engines, of which the following is a specification.

This invention relates to improvements in priming and decarbonizing devices for internal combustion engines.

The main objects of this invention are:

First, to provide an improved priming and decarbonizing device for internal combustion engines which may be quickly and easily operated to prime the engine or to adjust the device to conduct water to the engine for decarbonizing purposes or to supply the desired humidity.

Second, to provide an improved device of the class described which may be applied to motor vehicle engines so as to be operated from the dash of the vehicle.

Third, to provide a device of the class described which may also be adjusted to admit an auxiliary supply of air.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Fig. I is a detail side view of an engine equipped with my improvements, the engine, carbureter and certain other parts being shown mainly in conventional form.

Fig. II is a detail transverse section on a line corresponding to line 2—2 of Fig. I.

Fig. III is an enlarged transverse section of the pump nozzle.

Fig. IV is a detail of the valve and plunger actuating rod partially in section, on a line corresponding to line 4—4 of Fig. V.

Fig. V is a detail plan view of the control means taken on a line corresponding to line 5—5 of Fig. IV.

Fig. VI is a transverse section through the water and air valve on line corresponding to line 6—6 of Fig. V.

Fig. VII is a front view of the dash plate, the plunger operating rod being shown in section.

In the drawing, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, 1 represents an engine having a manifold or intake passage 2 formed in the body thereof as is the practice in certain types of engine. 3 represents the carbureter and 4 the vacuum feed tank. The outer manifold wall is provided with openings 5 either of which is adapted to receive connecting plug 6 for the vacuum tank connection 7. The second opening 5 is ordinarily closed by a plug 8. A plurality of these connections are ordinarily provided so that the vacuum tank connection may be made as most convenient.

My improved priming and decarbonizing device is adapted to be connected with the manifold through one of these openings 5 although it will be understood that a special opening could be tapped into the manifold wall. These parts are shown mainly in conventional form in order to more clearly show the adaptation of my improvements.

I provide a priming pump, designated generally by the numeral 9, having a laterally projecting delivery arm 11 threaded so that it may be engaged in the threaded opening 5 of the manifold after the vacuum tank 6 has been removed.

The passage arm 11 is provided with a pair of passages 39 and 40 opening into the manifold and terminating at their outer ends in laterally directed portions through the nipples 41 and 42 respectively. The passage 40 is connected to the vacuum feed tank 4 by means of the pipe 7′, the connection for this pipe being made to the nipple 42 instead of the coupling 6 as shown in Fig. II.

The passage 39 is connected to a valve casing 43 by means of the pipe 44. The valve casing having a discharge port 45 therein with which this pipe 44 communicates. The valve casing is also provided with a port 46 connected by the pipe 47 to the water circulation pipe 48. The pipe 47 might be connected to any other suitable source of water supply. The valve casing 43 has an air inlet port 49. The valve 50 is so designed that it may be adjusted to connect the ports 45 and 46 of the valve casing and thus connect

the water supply with the passage 39 through the connections described so that water may be delivered to the manifold for decarbonizing purposes, or to furnish desired humidity, or the valve 50 may be adjusted to connect the passage 45 with the air inlet 49 of the valve casing and thus admit an auxiliary supply of air through the passage 39.

The stem 51 of the valve 50 is disposed through a face plate 52 and has a finger piece 53 and an index 54, the face plate being provided with suitable indicia indicating the air and water positions of the valve. The valve casing and face plate are arranged on opposite sides of the dash or instrument board 55 and are secured by the clamping member 56 which is arranged through the face plate and threaded into an opening in the bracket 57 of the valve casing. The plunger actuating rod 36 is arranged through the clamping member and is slidably supported thereby.

With the parts thus arranged, it is only necessary in attaching my improvements to remove the connecting plug 6, where the manifold is provided with such a connection, and if not so provided it is only necessary to tap the manifold to receive the delivery and supporting arm 11. The arm 11 is threaded into the hole and secured by means of the lock nut 20. The pump is thus supported by this single member. By arranging the parts, as I have indicated, upon the dash or instrument board, it is only necessary to bore a couple of holes in the same to receive the valve and the clamping member. This clamping member serves as an effective securing means for both the face plate and the valve and a support for the plunger actuating rod. It will thus be seen that the parts are very easily and quickly assembled on structures not especially designed therefor. In practice my improvements are operated as follows: in priming the engine, the plunger is actuated to draw a quantity of fuel into the pump cylinder through the pipe 25, which is connected for convenience to the lower end of the fuel reservoir, or any other fuel supply. The return of the plunger to its initial position forces the fuel through the nozzle into the manifold, it being atomized and broken up so that an explosive mixture is at once drawn into the cylinder on the first intake stroke of the piston. When it is desired to admit an auxiliary supply of air, the valve 50 is turned to admit air through the port 49 whence it passes through the conduit 44 to the manifold. If it is desired to admit water, the valve is turned to open the port 46, which is connected by the pipe 47 to the circulation pipe 48 or other suitable water supply.

I have illustrated and described my improvements in one form in which I have embodied the same for the market. I have not attempted to describe certain improvements or adaptations which might be desirable for other forms of engines as I believe the disclosure made will enable those skilled in the art to which my invention relates to adapt or embody the same as may be required to meet various structural conditions and practice.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a structure of the class described, the combination with a support member of a valve casing provided with a delivery port and air and water inlet ports, a valve in said casing adapted to connect either said air or water inlet port with said delivery port or to close said delivery port, said valve casing being arranged on one side of said support member and having a bracket extension with a threaded opening therein, a face plate arranged on the other side of said support member, said valve having a stem arranged through said support and face plate and provided with an index member, said face plate having indicia with which said index is associated, and a clamping member arranged through said face plate and support and threaded into said opening in said valve casing whereby said face plate and valve casing are secured upon said support.

2. In a structure of the class described, the combination with a support member of a valve casing provided with a delivery port, a valve, said valve casing being arranged on one side of said support member and having a bracket extension with a threaded opening therein, a face plate arranged on the other side of said support member, said valve having a stem arranged through said support and face plate and provided with an index member, said face plate having indicia with which said index is associated, and a clamping member arranged through said face plate and support and threaded into said opening in said valve casing whereby said face plate and valve casing are secured upon said support, all coacting for the purpose specified.

3. In a structure of the class described, the combination with a support of a valve casing provided with a laterally projecting arm and with a delivery port and air and water inlet ports, a valve in said casing adapted to connect either said air or water inlet port with said delivery port or to close said delivery port, a face plate, said valve casing and face plate being arranged on opposite sides of said support member, said valve having a stem arranged through said support and face plate, and a securing member arranged through said face plate and support and engaging said arm on said

valve casing whereby the face plate and casing are clamped to the support.

4. In a structure of the class described, the combination with a support of a valve casing provided with a laterally projecting arm a valve, a face plate, said valve casing and face plate being arranged on opposite sides of said support member, said valve having a stem arranged through said support and face plate, and a securing member arranged through said face plate and support and engaging said arm on said valve casing whereby the face plate and casing are clamped to the support.

5. In a structure of the class described, the combination with a support member of a valve casing, a valve, said valve casing being arranged on one side of said support member and having a bracket extension with a threaded opening therein, a face plate arranged on the other side of said support member, a valve having a stem arranged through said support and face plate and provided with an index member, said face plate having indicia with which said index is associated, and a clamping member arranged through said face plate and support and threaded into said opening in said valve casing whereby said face plate and valve casing are secured upon said support.

In witness whereof, I have hereunto set my hand in the presence of two witnesses.

FRANK D. MALTBY.

Witnesses:
I. W. SCHRAM,
M. E. IIRSH.