

1,250,465.

Fig. 1

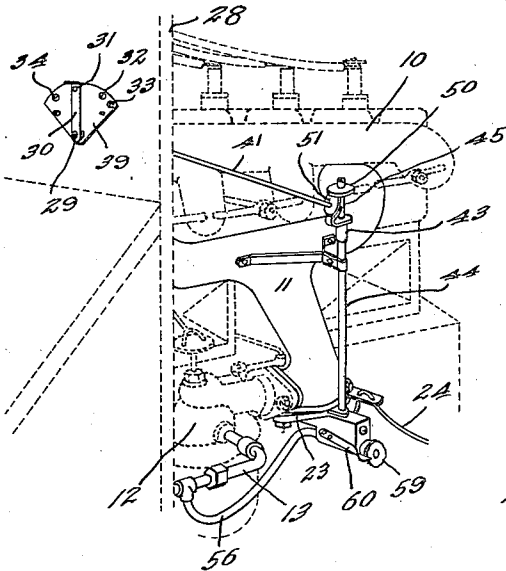


Fig. 2.

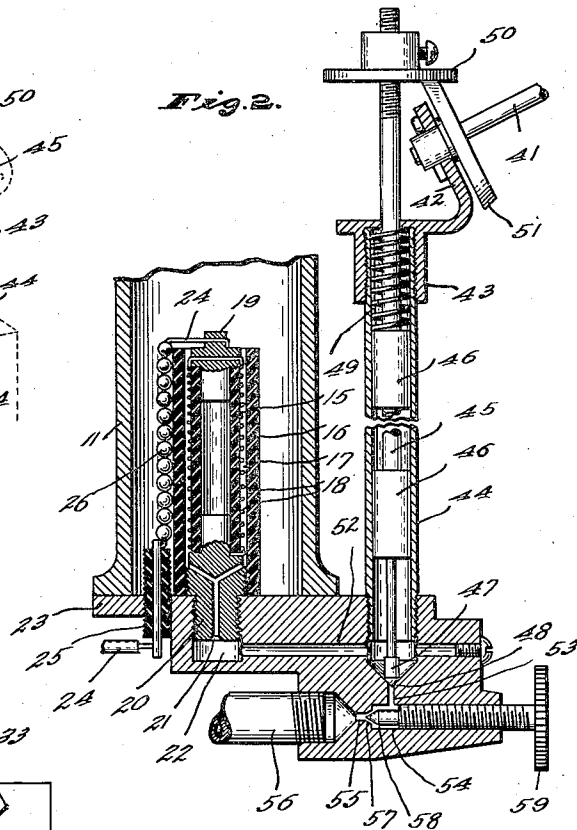


Fig. 3.

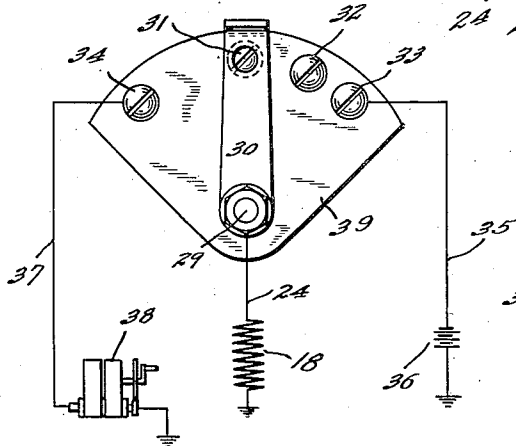


Fig. 4.

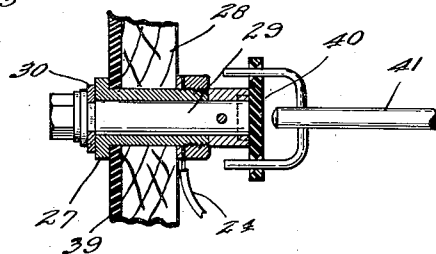
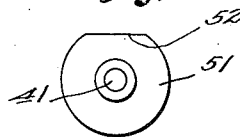


Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES D. JENNEY, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO THE NATIONAL AUTOMOBILE EQUIPMENT COMPANY, OF INDIANAPOLIS, INDIANA, A CORPORATION OF INDIANA.

ELECTRIC PRIMING DEVICE.

1,250,465.

Specification of Letters Patent.

Patented Dec. 18, 1917.

Application filed February 18, 1915. Serial No. 8,981.

To all whom it may concern:

Be it known that I, CHARLES D. JENNEY, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Electric Priming Device, of which the following is a specification.

It is the object of my invention to provide an auxiliary carbureting apparatus for automobiles, especially for use in starting under adverse conditions but also for use at any other time for enriching the explosive mixture supplied by the engine.

In carrying out my invention, I provide within the inlet manifold an electric primer having a narrow space in which an electric heating conductor is located, which space is connected through a suitable control valve to a source of fuel supply which valve is controlled by a unitary control member which at the same time controls the connection of the heating winding to one or more sources of current. In the fuel supply line of this primer there is preferably also another valve which can be used for controlling the amount of the fuel supplied.

The accompanying drawing illustrates my invention.

Figure 1 is a perspective view of an engine equipped with my improved priming and auxiliary carbureting device; Fig. 2 is a central longitudinal vertical section through this device and the lower end of the manifold in which it is mounted; Fig. 3 is a diagram of the electric connections; Fig. 4 is a detail showing the form of universal joint used in the operating mechanism connecting the switch shown in Fig. 3 to the fuel valve; and Fig. 5 is a detail showing the shape of the actuating cam for the fuel valve.

The engine 10 is provided with an inlet manifold 11 which is normally supplied with explosive mixture by the carbureter 12, the fuel to which carbureter is supplied through a pipe 13. In the form shown, the connection between the carbureter and inlet manifold is at the side of the manifold. Within the manifold 11, and conveniently in the bottom thereof in the form shown, is my electric priming device, which consists of two concentric spaced insulating tubes 15 and 16,

in the narrow space 17 between which is located a helical coil of wire 18, the upper and lower ends of which are respectively connected to metal blocks 19 and 20 which are mounted in the ends of the inner insulating tube 15. The lower end of the outer insulating tube 16 is also mounted on the lower plug 20, and the space 17 connects with a supply opening 21 in such plug 20. This plug 20 is screw-threaded into a recess 22 in the bottom plate 23 of the manifold, thus grounding the lower end of the coil 18, and the upper plug 19 has connected thereto a wire 24, which conveniently extends down along the outside of the tube 16 and through an insulating bushing 25 in the bottom plate 23, the wire 24 within the manifold 11 preferably having mounted thereon insulating beads 26, conveniently made of glass. The wire 24 leads to a metal bushing 27 mounted in the dash-board 28 of the automobile, if the device is used on an automobile, and furnishing a bearing for the pivot pin 29 of a switch arm 30, which is movable into engagement with a central button 31, with either of two buttons 32 or 33 on one side of the central button, or with a button 34 on the other side thereof. The button 33 is connected by a wire 35 to one side of a battery 36, the other side of which is grounded, and the button 34 is connected by a wire 37 to one side of the engine-driven magneto 38, the other side of which is grounded, as indicated in Fig. 3. The buttons 31, 32, 33, and 34, and the switch arm 30 are conveniently mounted on a switch plate 39, which is attached to the dash-board 28; though this is not necessary, and conveniently the buttons are furnished by ordinary round headed screws which extend both through the switch plate 39 and dash-board, and the heads of these screws fit into a circular depression on the rear face of the switch arm 30 to position the latter. The pivot pin 29 turns with the arm 30, and is connected by a universal joint 40 of the form shown in Fig. 4 to a diagonal shaft 41, which at its lower and forward end is mounted in a flange 42 of a cap 43 on the upper end of a tube 44, the lower end of which tube is screwed into the bottom plate 23 of the manifold outside of the inlet manifold, as is clear from Fig.

2. A valve stem 45 extends through this tube 44, being provided with guide collars 46 which have a sliding fit within the tube, and the valve stem 45 at its lower end is provided with a needle point 47 which fits against a valve seat 48 in the bottom plate 23 and is spring-pressed against such valve seat by a spring 49 acting between the cap 43 and the upper collar 46. The upper end of the valve stem 45 is provided with a collar 50, which bears against the edge of a mutilated disk 51 of the shape shown in Fig. 5, this mutilated disk having a flat place 52 which is normally uppermost and just clears the lower surface of the collar 50. The mutilated disk 51 is fastened to the shaft 41 so as to be turned therewith when the shaft is rotated by the switch arm 30, and raises the collar 50 and valve stem 45 when the switch arm 30 is turned in either direction from its central position. The space above the valve seat 48 communicates by a passage 52 with the recess 22, and the lower end of such valve seat communicates by a passage 53 with a chamber 54 which connects through a passage 55 with a supply pipe 56 leading from a source of fuel supply, the passage 55 being provided with a valve seat 57 with which a screw mounted needle valve 58 mounted in the bottom plate 23 coöperates. The screw needle valve 58 is provided with a knurled operating handle 59, with which a spring finger 60 mounted on the side of the projecting portion of the bottom plate 23 (see Fig. 1) coöperates to hold the needle valve 58 in any desired setting, the notches in the knurled handle 59 also serving to furnish a convenient counting device whereby such needle valve may be returned to any given position after having been closed.

In operation, the needle valve 58 is adjusted to give any desired flow of fuel from the supply pipe 56 to the passage 53. Normally the switch arm 30 is in its central position, so that no current is supplied to the heating coil 18, and the valve stem 45 is in its lowermost position so that the valve 47 rests on the valve seat 48. When it is desired to start the engine 10, especially when the weather is cold and the carbureter is not acting under the most advantageous conditions, the arm 30 is swung on to the button 33, thus connecting the heating coil 18 to the battery 36 so that such coil becomes hot and turning the mutilated disk 51 to raise the valve stem 45 and valve 47 to allow fuel to flow past the valve seat 48. This fuel flows through the passage 52, recess 22, and passageway 21 into the space 17, and as it passes through the space 17 is heated by contact with the coil 18. This heated fuel escapes at the upper end of the space 17, and is picked up in this heated and if desired vaporized condition by the air enter-

ing the manifold 11, thus creating or enriching an explosive mixture which enters the engine 10. After the engine is started, the arm 30 may be swung to the button 34, and in this position of the arm the coil 18 is supplied from the magneto 38 and fuel is fed to the primer as before. If conditions are such that heating of the fuel is not necessary or desirable, the arm 30 may be swung to the button 32 which makes no electrical connections for the coil 18, but raises the valve stem 45 to allow the passage of fuel through the space 17 and into the manifold to enrich the explosive mixture.

I claim as my invention:

1. An electric primer, comprising a fuel supply conduit, a valve in such conduit, an electric heating coil located to heat the fuel discharged from such conduit, and a unitary device for controlling both such valve and the supply of current to such heating conductor, said last-named device having three positions in one of which it closes said valve and disconnects said conductor, in the second of which it opens said valve and disconnects said conductor, and in the third of which it opens said valve and connects said conductor.

2. An electric primer, comprising a fuel supply conduit, a valve in such conduit, an electric heating coil located to heat the fuel discharged from such conduit, a unitary device for controlling both such valve and the supply of current to such heating conductor, and a plurality of sources of current supply, said unitary device having different positions in which it connects said heating coil to different ones of said sources of current and in all of which connecting positions it opens said valve.

3. An electric priming device, comprising a fuel supply conduit, a valve located in said conduit and having a sliding stem, a collar on said stem, a mutilated disk coöperating with said collar to move said valve stem to open said valve when the disk is turned in either direction from a mutilated position, an electric conductor located in position to heat the fuel discharged from said conduit, a switch controlling the connections of said electric conductor, and two sources of current which the switch by movements in opposite directions from a neutral position may connect to said electric conductor, said switch and said mutilated disk being interconnected so that the movements of the switch operate the disk.

4. An electric priming device, comprising a fuel supply conduit, a valve located in said conduit and having a sliding stem, a collar on said stem, a mutilated disk coöperating with said collar to move said valve stem to open said valve when the disk is turned, an electric conductor located in position to heat the fuel discharged from said

conduit and a switch controlling the connections of said electric conductor, said switch and said mutilated disk being interconnected so that the movements of the switch
5 operate the disk.

In witness whereof, I have hereunto set my hand at Indianapolis, Indiana, this six-

teenth day of February, A. D. one thousand nine hundred and fifteen.

CHARLES D. JENNEY.

Witnesses:

JOSEPHINE GASPER,
G. B. SCHLEY.