April 15, 1924. 1,490,581

F. W. BELL

AUXILIARY FUEL DEVICE FOR INTERNAL COMBUSTION ENGINES

Filed June 14, 1923 2 Sheets-Sheet 1

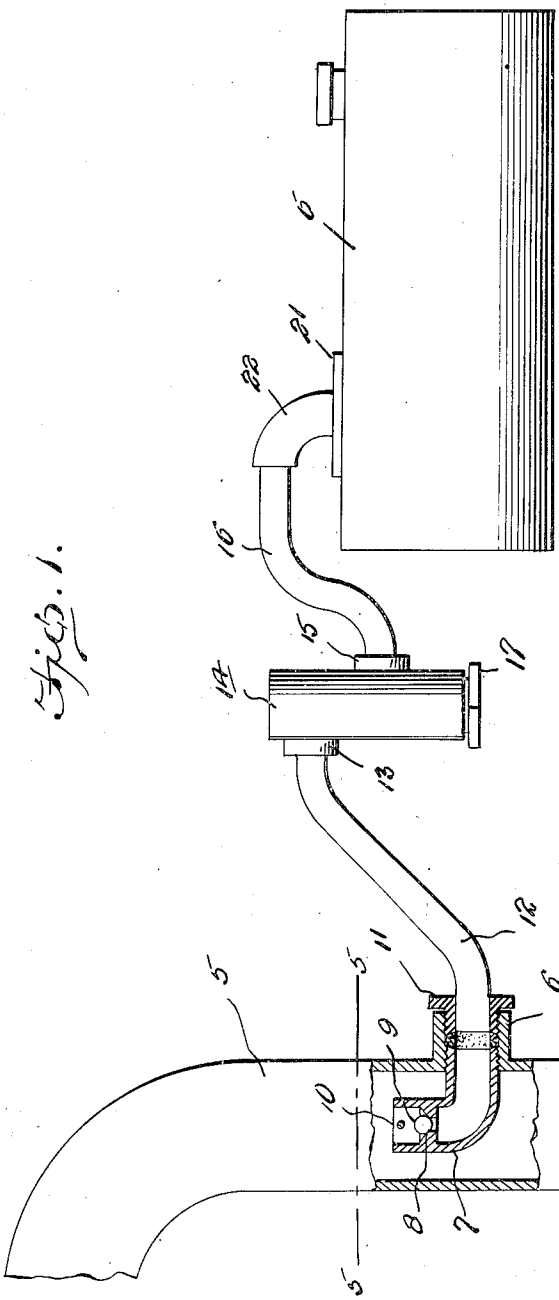


Fig. 1.

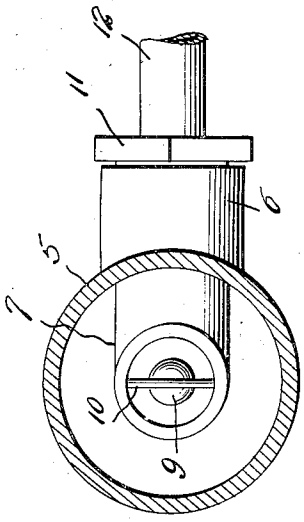


Fig. 5.

Witnesses:
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Fig. 2.

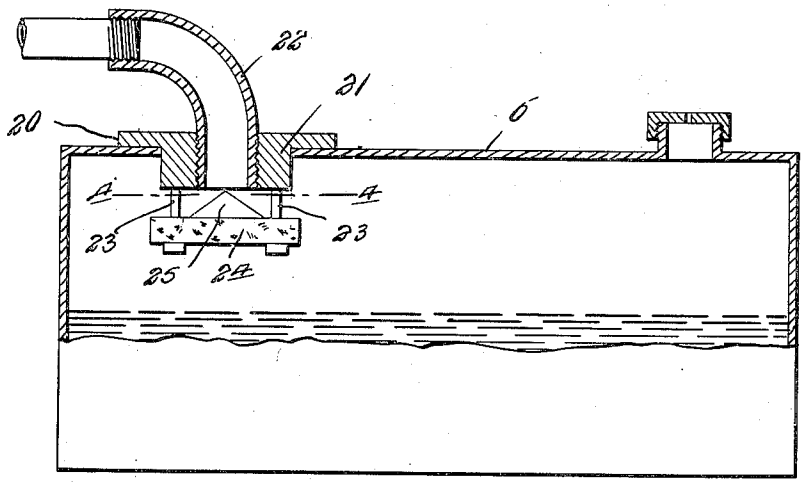


Fig. 3.

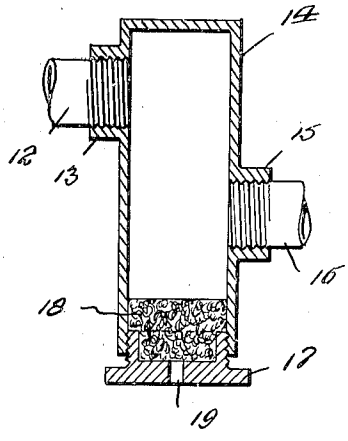
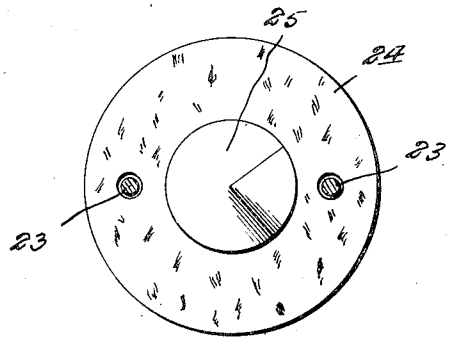


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANCIS W. BELL, OF EVANSTON, ILLINOIS.

AUXILIARY FUEL DEVICE FOR INTERNAL-COMBUSTION ENGINES.

Application filed June 14, 1923. Serial No. 645,272.

To all whom it may concern:

Be it known that I, FRANCIS W. BELL, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Auxiliary Fuel Devices for Internal-Combustion Engines, of which the following is a specification.

In carrying out the present invention it is my purpose to provide a highly novel means whereby the gaseous vapors from engine fuel tanks may be utilized for lessening the amount of fuel necessary in the operation of an internal combustion engine.

The primary object of this invention is the provision of such a means that is extremely simple of construction and one that may be installed in a simple manner at a minimum expenditure, the device being relatively simple of construction and one that will operate efficiently under all conditions.

The nature and advantages of the invention will be better understood when the following detailed description is read in connection with the accompanying drawings, the invention residing in the construction, combination, and arrangement of parts as claimed.

In the drawings forming part of this application, like numerals of reference indicate similar parts in the several views, and wherein:—

Figure 1 is a somewhat diagrammatic view of my improved device in position between the intake manifold of the combustion engine and the usual gasoline supply tank therefor, a portion of said manifold being broken away and a portion of my device being shown in cross section.

Figure 2 is a detail cross section of the gasoline tank showing more clearly a portion of my device directly associated therewith.

Figure 3 is a detail cross section of what is hereinafter termed a fluid well, and an element that forms an essential part of the present invention.

Figure 4 is an enlarged detail cross section taken substantially upon the line 4—4, Figure 2, showing in top plan a particular form of float valve whereby the gasoline from the fuel tank is prevented from discharging therefrom, when the same splashes therein, and

Figure 5 is an enlarged detail cross section upon the line 5—5 of Figure 1.

Now having particular reference to the drawings, 5 indicates an intake manifold of a gasoline engine and 6 the fuel tank for this engine. In furtherance of my invention, the said manifold 5 is formed with an internally screw threaded inlet nipple 6 and in screw threaded engagement with the inner end of said nipple and within said manifold 5 is a pipe section 7 in the form of an elbow. This pipe section 7 is formed adjacent its upper end with a valve seat 8 upon which normally rests a ball check valve 9 that normally rests upon said seat. Above said seat 8 is a cross pin 10 for preventing disengagement of the valve with respect to said pipe section.

Within the other end of said nipple 6 is a packing gland 11 within which is one end of a pipe section 12. The other end of said pipe section 12 is screw threaded as shown in Figure 3 and has engagement with an outlet nipple 13 adjacent the upper end of a fluid well in the form of a cylinder 14. This cylindrical well is also formed with an inlet nipple 15 within which is screw threadedly engaged one end of a pipe section 16, the other end therefore being in communication with the fuel tank 6.

This cylindrical well 14 is open at its lower end and has positioned therein a plug 17 that carries a mass of absorbent material 18, this plug being formed with outlet orifice 19.

The fuel tank 6 is provided with a circular opening 20 within which is arranged a flanged plug 21 formed with a central screw threaded opening, within which is one end of an elbow 22, the other end of said elbow receiving said pipe section 16. Pendent from this plug 21 is a pair of headed guide rods 23 upon which freely slides a cork float 24 in the form of a disk as shown in Figure 4. Upon the top face of said disk float 24 is a valve plug 25, it being obvious from this construction that whenever the fuel within the tank splashes therein the float 24 will rise and consequently force the plug 25 into the lower end of the elbow 22 for thereby preventing the splashing of the fuel into the pipe 16 and consequently the cylindrical well 14.

In view of the above description it will

at once be apparent that the suction in the manifold 5 during the operation of the engine will draw into this manifold any vapors above the fluid level in the tank 6, for thereby utilizing these vapors in the operation of the engine which would otherwise be wasted.

Should any of the gas vapors become condensed before reaching the manifold 5, the same will be caught in the well 14 and absorbed by the material 18 and eventually pass outward of the orifice 19 for thereby overcoming any liability of the liquid passing into the manifold and impairing the runnng efficiency of the engine.

I have shown in the drawings and set forth in the specification the most practical embodiment of the invention with which I am at present familiar, however, in the future practice of my invention it is to be understood minor changes may be made therein without departing from the spirit and scope of the invention as set forth in the appended claims.

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

1. Means for enriching the fuel mixture of an internal combustion engine comprising a fuel tank, a pipe connected with the top of the tank, a float valve located within the tank and controlling the passageway through the pipe, a trap connected with the pipe and adapted to separate by gravity liquid from vapor, and a pipe connecting the vapor storing area of the trap with the intake manifold of the engine, and a valve located within the manifold and serving to check back pressure through the pipe.

2. In combination with an internal combustion engine, means for enriching the mixture comprising a tank adapted to retain volatile oil in liquid form, a pipe connected with the top of the tank, a float valve located in the tank and adapted to be elevated by the level of the oil to close the pipe when the tank is substantially full, a trap connected with said pipe and adapted to separate condensation from the vapor, a second pipe connected with the trap at a point above the point of admission of the vapor from the tank to the trap, said second mentioned pipe being connected with the intake manifold of the engine, and a nozzle disposed within the manifold and connected with the last mentioned pipe and having a discharge end disposed in the direction of the flow of the mixture through the manifold, and a gravity actuated valve located in said nozzle.

In testimony whereof I affix my signature.

FRANCIS W. BELL.