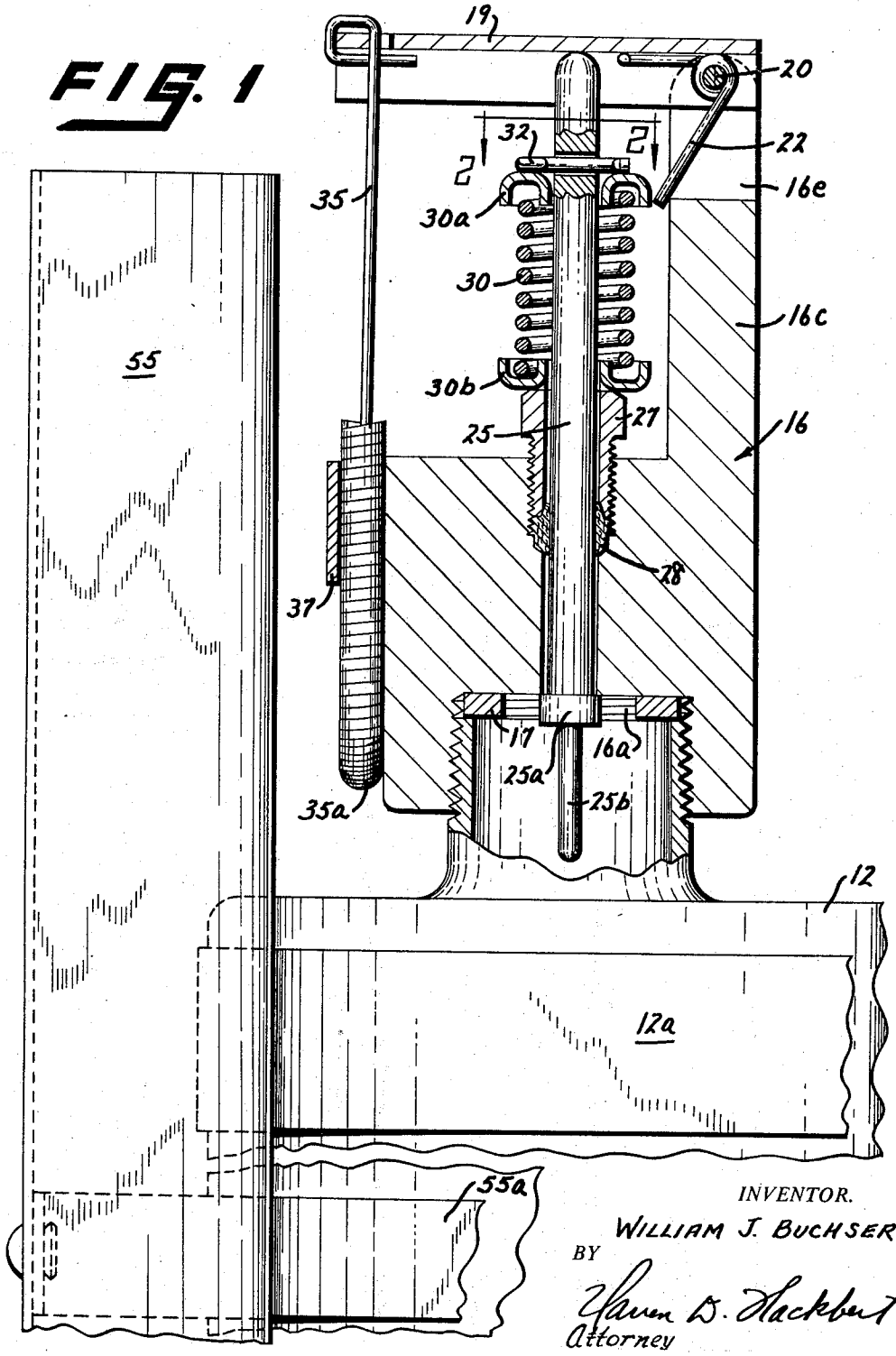
March 5, 1968 W. J. BUCHSER 3,371,657

ENGINE ACCESSORY

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FIG. 1



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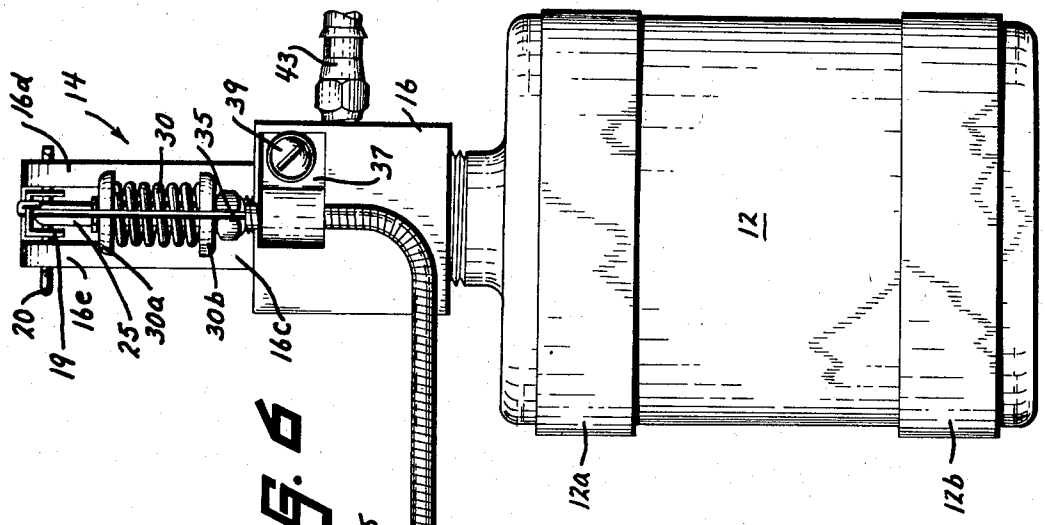


FIG. 6

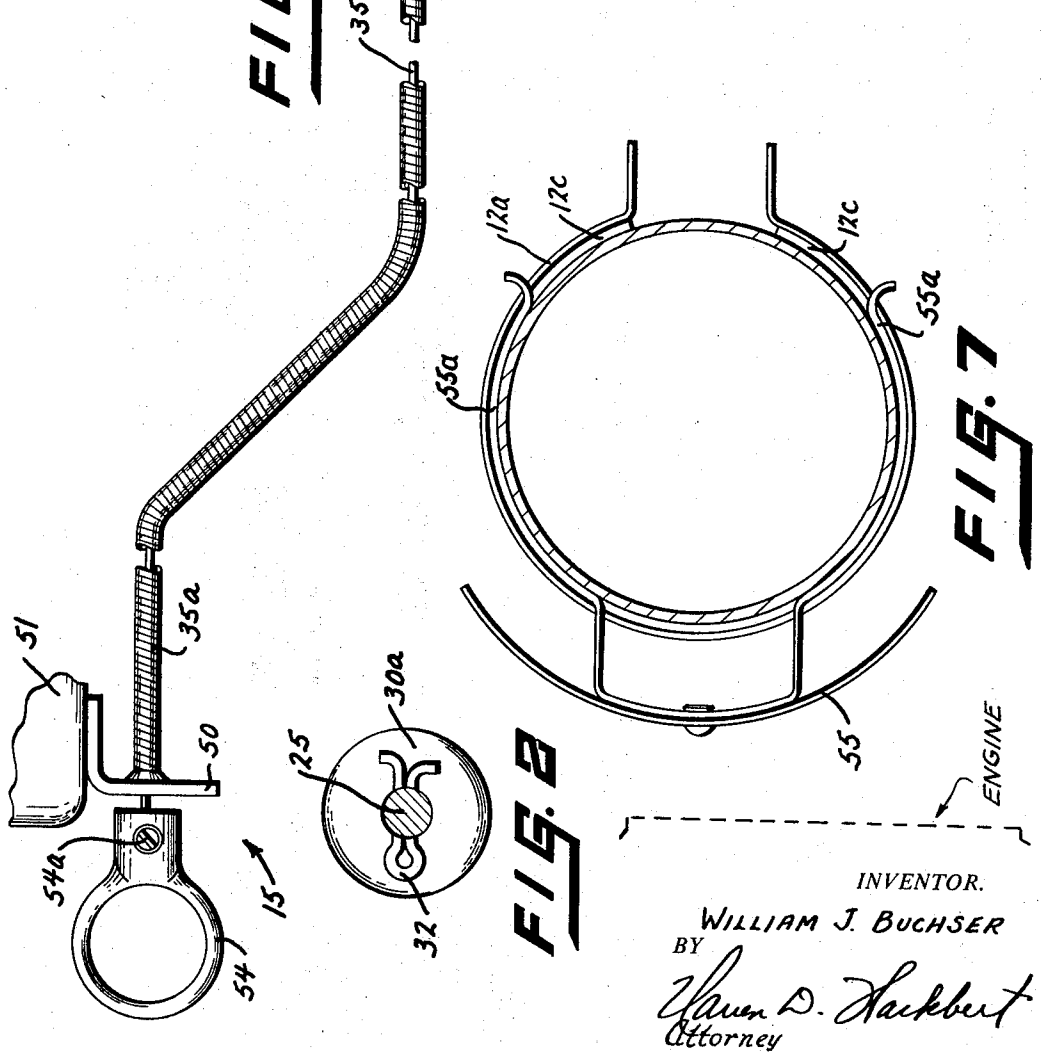


FIG. 2

FIG. 7

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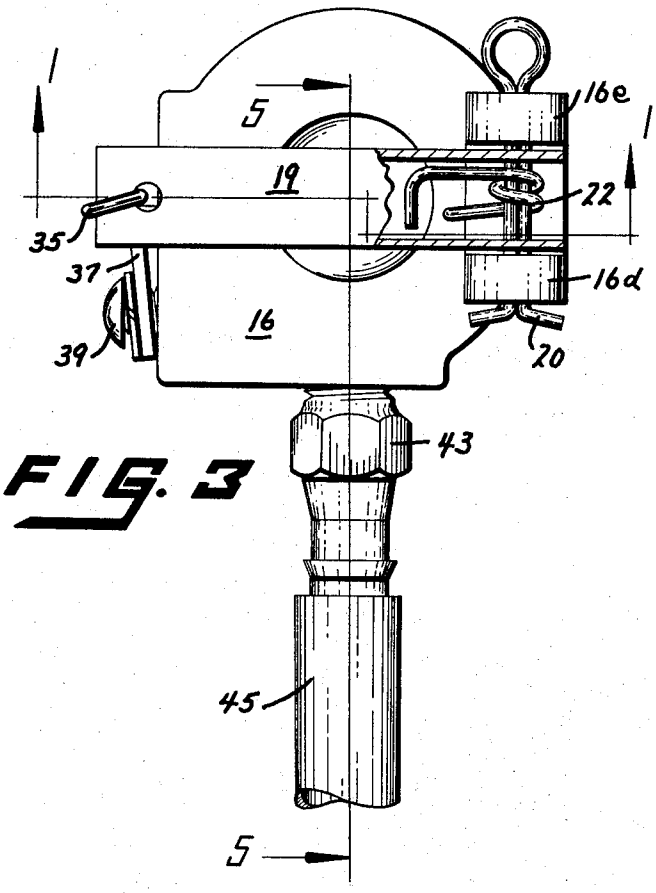


FIG. 3

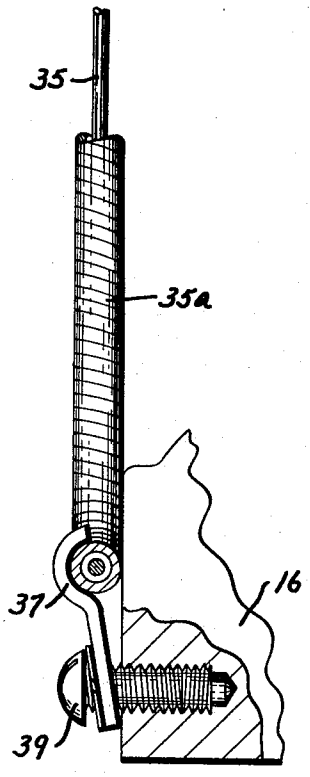


FIG. 4

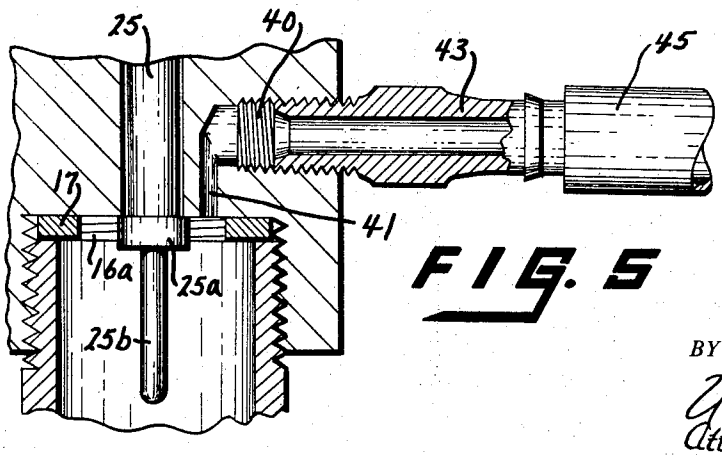


FIG. 5

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ENGINE ACCESSORY

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1 Claim. (Cl. 123—187.5)

ABSTRACT OF THE DISCLOSURE

An engine accessory for assisting the starting operation characterized by a replaceable pressurized fuel tank having valve means controlling the flow of fuel and, in combination therewith, an independent control mechanism removably secured to such tank to define a dispenser unit, where such unit is mounted proximate the engine and where control is achieved remote from such unit in the area of the operator.

The present invention relates to an engine accessory, and more particularly to a new and novel device for assisting the starting of an engine, such as the commonly known internal combustion and compression ignition engines.

As is known, with the advent of cold temperatures, and throughout the cold periods of a year, or in the instance of high altitudes, it is oftentimes difficult, if at all possible, to effectively start a typical vehicle engine. Such faulty starting usually results in a rundown battery or charging system, undue wear on engine components, and, as well, a loss of time and the expending of unnecessary energy on the part of the operator. Actually, the preceding trouble is occasioned by most all vehicles, sometimes even those the least old.

By virtue of the instant invention, the applicant herein has provided a new and novel accessory which assists in the starting of an engine, resulting in optimum engine starting performance, without any of the difficulties mentioned hereabove. Broadly, the instant invention comprises the use of a pressurized fluid fuel, such as propane, ether, or acetylene for example, or mixtures and combinations of such fuels in gaseous, liquid or vaporous state, which is selectively introduced into the intake system of the engine at the time of starting. In that such fuel is already vaporized, and as gasoline does not readily vaporize when cold or when at a high altitude, a fuel combination is present which permits ready ignition and, hence, effective engine starting.

The instant invention encompasses the use of a replaceable pressurized fuel tank in combination with a control to form a dispensing unit, where such unit may be mounted, as desired, with relation to the engine and, typically, manually operated from the passenger compartment in the instance of a vehicle engine. When in use, virtually any desired amount of pressurized fuel may be introduced into the engine, depending upon the duration of time the operator holds the dispensing unit in an open position, thereby assuring good engine starting under all conditions. As will become apparent from the following description, the applicant's new and novel engine accessory further represents ease in manufacture, as well as ready adaptability for installation.

Accordingly, the principal object of the present invention is to provide a new and novel engine accessory which positively and effectively assists the starting operation.

Another object of the present invention is to provide a new and novel engine accessory in the form of a unit which selectively introduces a pressurized fluid fuel into an engine in a direct but yet simple manner.

A further and more general object of the present invention is to provide a new and novel engine accessory which effectively assists starting under virtually all conditions, which is readily manufactured, which is easy to install, and which provides a convenience in engine starting not known heretofore.

Other objects and a better understanding of the present invention will become more apparent from the following description, taken in conjunction with the accompanying drawings, wherein,

FIG. 1 is a view in side elevation, partly fragmentary, showing the applicant's new and novel device for assisting engine starting, taken at line 1—1 of FIG. 3 and looking in the direction of the arrows;

FIG. 2 is a view in horizontal section of a structural detail of the invention, taken at line 2—2 of FIG. 1 and looking in the direction of the arrows;

FIG. 3 is a top plan view of the instant engine accessory, with the pressurized fuel tank and the heat radiation shield removed;

FIG. 4 is an enlarged view looking down, partly in section and partly fragmentary, of a typical control cable mounting arrangement employed by the applicant;

FIG. 5 is a view in vertical section, taken at line 5—5 of FIG. 3 and looking in the direction of the arrows, showing further details of the instant engine accessory;

FIG. 6 is an elevational view of a typical overall system arrangement in accordance with the invention at hand, as positioned in a vehicle, for example; and,

FIG. 7 is a top plan view, partly in horizontal section, showing the heat radiation shield and the mounting bracket arrangement forming part of the applicant's new and novel engine accessory.

For the purpose of promoting an understanding of the principles of the invention, reference will now be made to the embodiment illustrated in the drawings and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alterations and further modifications in the illustrated device, and such further applications of the principles of the invention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates.

Referring now to the figures, the applicant's new and novel accessory for assisting in the starting of an engine, such as, for example, an internal combustion engine commonly found in vehicles, typically comprises a tank **12** for a pressurized fuel which removably engages a control **14** to define a dispensing unit, and a remote control **15** for selectively operating such dispensing unit. By way of illustration, the aforesaid tank **12** is conveniently positioned in the area adjacent the internal combustion engine, as through the use of mounting straps **12***a* and **12***b*, where each of the latter are secured to any desired mounting member (not shown) within the engine compartment in a relationship to hold the fuel tank **12** in alignment. Gripping elements **12***c*, as adhesive backed, rubber electrical tape, for example, may be employed on the inner surface of each mounting strap **12***a* and **12***b* for optimum gripping action.

In a preferred embodiment of the invention, acetylene, ether or propane is employed, where such fuels are readily purchasable in containers which are easily replaced when the supply of fuel is exhausted' As will be understood from the following discussion, the pressurized fuel is normally retained within the tank **12** through conventional valving means forming part of such tank, the valving means being operable through the control **14** of the applicant's new and novel invention.

The aforesaid control **14** typically comprises a body member **16** having an internally threaded portion **16***a* for receiving the threaded neck of the pressurized fuel

tank **12**, where a gasket **17** is provided for purposes of effective sealing. As will be particularly evident from FIGS. 3 and 6, the body member **16** has an upstanding portion **16***c* which divides into arms **16***d* and **16***e*. A lever **19** is freely mounted on an axle **20**, such as a cotter pin, for example, which extends between the arms **16***d* and **16***e*, where a spring member **22** is provided to normally urge the lever **19** in a non-operative direction.

The body member **16** has an opening therethrough for receiving a plunger element **25**, the latter having a collar-like portion **25***a* and a reduced-diameter portion **25***b*, as should be evident in FIG. 1. Although it will be discussed more fully herebelow, the reduced-diameter portion **25***b* of the plunger element **25** is adapted to selectively cooperate with the valving mechanism in the pressurized fuel tank **12**. In any event, a portion of the body member **16** around the plunger element **25** is threaded to receive a packing member **27**, where conventional packing **28**, such as long fiberglass, asbestos fibers, or absorbent cotton is provided for sealing purposes.

A spring **30**, confined between spring covers **30***a* and **30***b*, abutts the packing member **27**, continually bearing in the direction of a cotter pin **32** (see FIGS. 1 and 2) which extends laterally through the plunger element **25**, and serves to maintain the latter in a non-operative position. It should be noted that in such non-operative position, the collar-like portion **25***a* of the plunger element **25** bears against a portion of the body member **16**.

The movement of the plunger element **25** from its non-operative position of FIG. 1 to a position effecting fuel flow is typically controlled by a dispenser cable **35** which engages the lever **19**, where the sheath **35***a* of such dispenser cable **35** is typically secured to the body member **16** through a clamp **37** positioned by screw means **39** (see FIG. 4). As to be further mentioned herebelow, and in the instance of a vehicle, operation of the instant invention is from the passenger compartment.

The control **14** assembly further includes a threaded opening **40** in the body member **16** which communicates, through a passageway **41**, with the space within the cap of the pressurized fuel tank **12**, as should be apparent from FIG. 5. A coupling member **43** engages the threaded opening **40**, where a hose or conduit **45** is secured thereto. In this latter connection, it should be understood that the hose or conduit **45** typically extends to the intake system of the engine.

With reference now to FIG. 6, a typical over-all installation is disclosed wherein the dispenser cable **35** extends from the engine compartment of the vehicle through a mounting bracket **50** disposed on the dashboard **51** in the passenger compartment. In a typical form of the invention, the cable sheath **35***a* is brazed to the aforesaid mounting bracket **50**, while a ring **54** is secured to the dispenser cable **35** by means of a set-screw **54***a*, for example.

The installation is typically completed through the use of a heat radiation shield assembly **55** which, in one mounting arrangement, conveniently snaps onto the pressurized fuel tank **12** through the arms **55***a* forming a part thereof. It should be apparent that the aforesaid heat radiation shield **55** serves to separate the heat of the engine from the accessory defining the instant invention.

When in use, the tank **12** of the desired fuel is secured in position by the clamps **12***a* and **12***b* after being threaded into the control **14**. Thereafter, the heat radiation shield **55** is readily positioned on the tank **12**. At the time of starting the engine, the operator pulls the ring **54**, causing the dispenser cable **35** to move, and, hence, the pivoting of the lever **19** on the axle **20**.

With the preceding, one end of the plunger element **25** is engaged by the undersurface of the lever **19**, causing movement of the plunger element **25** towards the pressurized fluid fuel tank **12** and the ultimate flow of fuel through the valving mechanism thereof. As should be understood, the aforesaid action takes place against the force of the spring **30**, which is continually urging the plunger element **25** away from the tank **12**, and against the action of the spring **22**, which is urging the lever **19** from the plunger element **25**.

In any event, the fuel flows through the passageway **41**, the coupling member **40**, and the hose or conduit **45** to the intake system of the engine, for example, providing a ready source of vaporized fuel, and, hence, a convenience during the engine starting operation. It will be understood that the release of the pressurized fuel continues as long as the operator maintains his grasp on the ring **54**, meaning that, depending upon temperature and altitude conditions, the operator can effectively govern the amount of pressurized fuel to assure optimum starting performance.

From the preceding, it should be apparent that the applicant herein has provided a new and novel engine accessory for starting an internal combustion engine and/or a compression ignition engine, both, as typically found in a vehicle. The accessory installation is readily made, where desired, with the over-all unit being designed for minimum maintenance, combining with the aforestated highly effective end results.

The engine start assisting device described herein, is, of course, susceptible to various changes within the spirit of the invention. In this regard, an air pressure source may be necessary for dispensing the fuel in the instance of the use of ether, for example. Moreover, a signaling or measuring device, perhaps of an audible type, might be employed to indicate an empty fuel cylinder. Further, although manual control is described hereabove, other types of control might be devised for achieving the same end results. Additionally, the mounting arrangement for the fuel cylinder may be varied, as well as over-all control proportioning. Thus, the preceding description should be considered illustrative, and not as limiting the scope of the following claims:

I claim:

1. An arrangement for assisting the starting of an engine comprising a replaceable tank of presurized fluid fuel having valve means controlling the flow of said fuel, and an independent control mechanism removably secured to said tank to define a dispenser unit, said dispenser unit comprising a body member having a passageway communicating with said tank forming part of a flow path for said fuel from said tank to the air-fuel intake of said engine, a plunger element slidably mounted on said body member selectively operating said valve means of said tank for permitting said fuel flow, an operating member pivotally mounted on said body member, spring means urging said plunger element away from any selective operation of said valve means and towards said operating member, means remote from said dispenser unit pivoting said operating member into movable engagement with said plunger element for selectively operating said valve means through a range of time duration, and a heat radiation deflection shield disposed between said tank and said engine.

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