

Aug. 13, 1968

HIROYUKI HATAKEYAMA ETAL

3,396,748

FUEL-DELIVERING DEVICE FOR A PORTABLE ENGINE

Filed June 8, 1965

2 Sheets-Sheet 1.

Fig. 1.

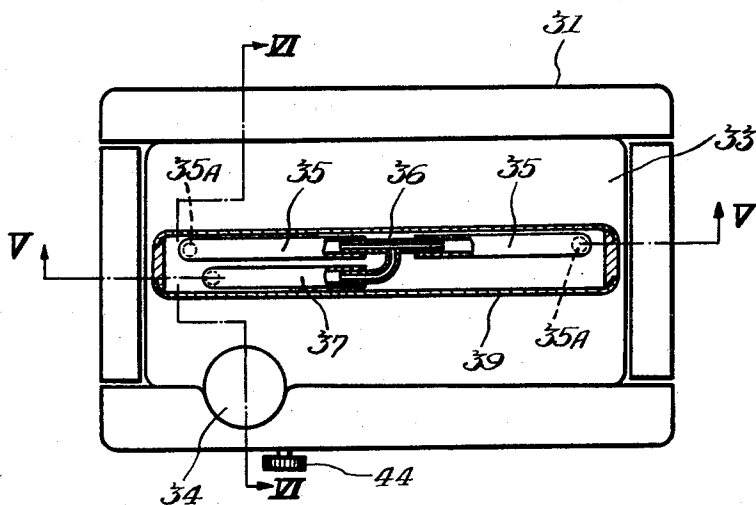
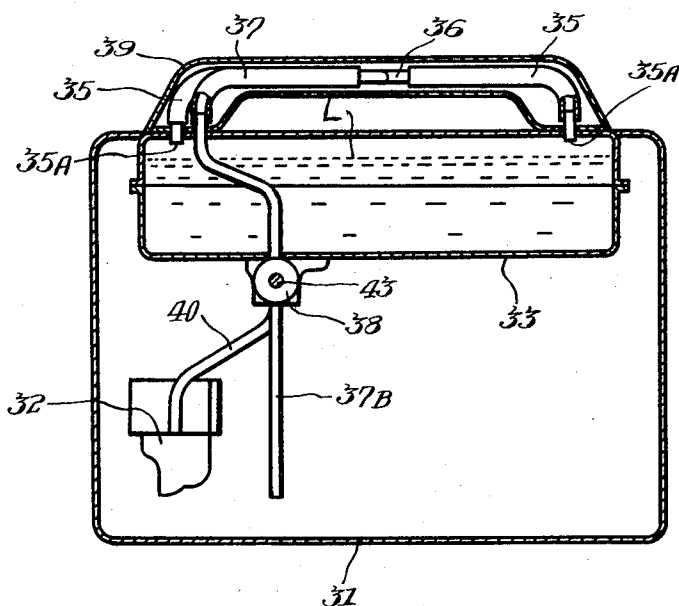


Fig. 2.



INVENTORS

Hiroyuki Hatakeyama
Yoshimi Sugimoto

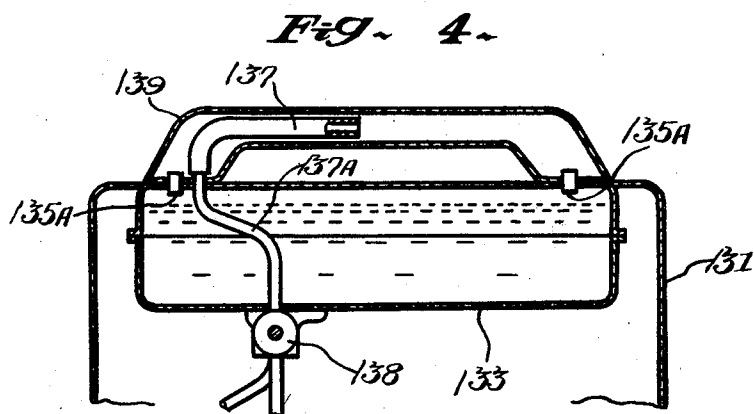
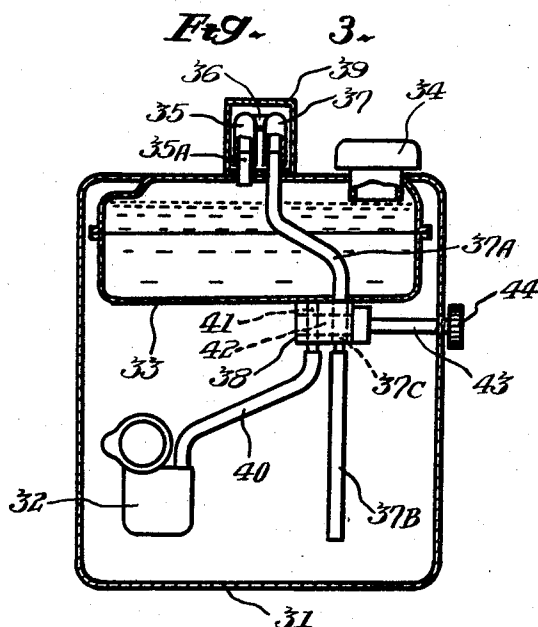
BY

William F. O'Neil
ATTORNEYS

HIROYUKI HATAKEYAMA ETAL

FUEL-DELIVERING DEVICE FOR A PORTABLE ENGINE

2 Sheets-Sheet 2



INVENTORS

Hiroyuki Hatakeyama
Yoshimi Sugimoto

BY

Oldham & Oldham

ATTORNEYS

1

3,396,748

FUEL-DELIVERING DEVICE FOR A PORTABLE ENGINE

Hiroyuki Hatakeyama, Tokyo, and Yoshimi Sugimoto, Saitama-ken, Japan, assignors to Kabushiki Kaisha Honda Gijutsu Kenkyusho, Saitama-ken, Japan

Filed June 8, 1965, Ser. No. 462,378

Claims priority, application Japan, June 8, 1964, 39/45,360

2 Claims. (Cl. 137—587)

ABSTRACT OF THE DISCLOSURE

A fuel delivery device including an air supply conduit extending into a hollow handle for an engine carrying case. An air passageway communicates with the air supply conduit and a single valve controls the fuel and air passageways simultaneously.

This invention relates to fuel-delivering devices for a portable engine.

In delivering fuel from an air-tight or hermetically sealed fuel tank mounted on a portable engine to the carburetor thereon, it is necessary to supply atmospheric air into the fuel tank in proportion to the rate of fuel delivery. To this end, an air supply pipe is usually arranged with its air orifice or outlet port opening in the fuel tank at a level above the fuel surface therein. This arrangement has involved a deficiency that, if the portable engine carrying the air-tight fuel tank is left in a heavily inclined position, the fuel may flow into the air supply pipe through its outlet port and thus leak to the exterior.

The present invention is principally designed to eliminate the above deficiency and its feature lies in the provision of a valve means in an air passageway which is connected with the air supply pipe conventionally employed with the air-tight fuel tank, said valve means being designed to close during non-use of the engine to prevent any leakage of fuel and constructed in a unit integral with the fuel valve for simultaneous operation therewith thereby to ensure that the air valve is closed without fail each time when the engine comes to a stop.

A further feature of the present invention is that the handle secured to the carrying case of a portable engine is made hollow to accommodate the air supply pipe provided with a valve means according to the first feature of the present invention thereby to simplify the external configuration of the engine case while practically eliminating any fuel leakage otherwise occurring when the fuel level in the tank is disturbed.

Other objects and features of the present invention will become apparent from the following detailed description, reference being had to the accompanying drawings showing a few embodiments, chosen by way of example, of the fuel-delivering device according to the present invention. In the drawings:

FIG. 1 is a top plan view of a portable engine carrying the device of the present invention, with the carrying handle shown in a horizontal cross section.

FIG. 2 is a cross-sectional elevation, taken along the line V—V in FIG. 1;

FIG. 3 is a cross-sectional elevation taken along the line VI—VI in FIG. 1; and

FIG. 4 is a modification of FIG. 2.

A practical example of applying the present invention to a portable engine will be described with reference to FIGS. 1 to 3.

Reference numeral 31 indicates the outer case accommodating the portable engine not shown; 32 indicates the

2

carburetor for the engine; 33 indicates an air-tight fuel tank fixedly arranged in the upper portion of the outer case 31; 34 indicates a cap covering the fuel-filling aperture formed in the top of the fuel tank; and 39 indicates a carrying handle secured to the outer case. The handle 39 is hollow to accommodate two air conduits 35, 35. Two small tube sections 35A, 35A extend through the top wall of the air-tight fuel tank 33 at the opposite ends of the hollow handle 39. The air conduits 35, 35 are connected at their one ends with the respective small tube sections 35A, 35A to communicate with the interior of the fuel tank 33 and connected at their other ends with two respective end portions of a three-way tube 36. Connected with the remaining end portion of the three-way tube 36 is an air supply pipe 37, which is connected to the valve casing 38 by way of an air supply conduit 37A. Also connected to the valve casing 38 is an air inlet pipe 37B communicating with the air supply pipe 37A through the medium of an air passageway 37C formed in the valve casing 38. A fuel-delivering conduit 40 communicates at one end with the interior of the air-tight fuel tank 33 by way of a fuel passageway 41 formed in the valve casing 38 and at the other end with the carburetor 32. A rotary valve body 42 is fitted in the valve casing 38. Reference numeral 43 indicates the shaft of the valve body 42; and 44 indicates a hand grip for operating the valve body to simultaneously interrupt the fuel and air passageways 41 and 37C.

With this arrangement, including the hollow formation of the handle 39 for accommodation of air supply pipe 37 and other components, it will be appreciated that the need for providing any special protruding formation to accommodate such components is eliminated to making it possible to use an outer case 31 limited in size and having a simplified configuration. Additionally, with this arrangement, the fuel in the tank is practically prevented from leaking out through the air inlet conduit 37B even when the outer case 31 is shaken to violently disturb the fuel level L in the tank since the fuel can hardly reach the three-way tube 36 due to the limited diameter of tube sections 35A, which precludes fuel passage therethrough. The provision of air conduits 35, 35 eliminates at all times the danger of the fuel coming in contact with the inner surface of the handle 39 and there is no need of making the handle liquid-tight.

Modifications of the structure herein disclosed may suggest themselves to those skilled in the art. For example, as illustrated in FIG. 4, it may be simplified by using an air conduit 137 opening at its top end to the hollow space in the handle 139 instead of using the air conduits 35 and three-way tube 36. Only in this case, the hollow handle 139 should be made liquid-tight. 135A, 135A show restricted apertures communicating the hollow space in the handle with the top interior of the fuel tank 133. The other means in this embodiment of the invention, such as the air supply conduit 137A, outer case 131, and the valve casing 138, etc. are as in the previous embodiments of the invention. Further, the rotary valve 42 in the above-described embodiments may be substituted for by an appropriate slide valve.

What is claimed is:

1. A fuel-delivering device for a portable engine, comprising a fuel supply passage extending downwardly from an air-tight fuel tank accommodated in an engine carrying case, an air supply pipe extending into a hollow handle arranged on top of the engine carrying case above the fuel tank, an air passageway communicating with the air supply pipe, and a single valve assembly operable either to open and close said fuel and air passageways simultaneously, and which device further comprises two air conduits connected at one end with the top end of said air supply pipe and communicating at the other end with

the top interior of the air-tight fuel tank adjacent the opposite ends of the hollow handle.

2. A fuel-delivering device for a portable engine, comprising a fuel supply passage extending downwardly from an air-tight fuel tank accommodated in an engine carrying case, an air supply pipe extending into a hollow handle arranged on top of the engine carrying case above the fuel tank, an air passageway communicating with the air supply pipe, and a single valve assembly operable either to open and close said fuel and air passageways simultaneously, said air supply pipe opening at the top to the hollow space in said handle, and which device further comprises means including restricted apertures formed adjacent the opposite ends of the handle for com-

municating the hollow space in the handle with the top interior of the air-tight fuel tank.

References Cited

UNITED STATES PATENTS

620,262	2/1899	Tong	137—588
2,404,765	7/1946	Valentyne	280—5

FOREIGN PATENTS

883,406	6/1953	Germany.
---------	--------	----------

M. CARY NELSON, *Primary Examiner*.

W. R. CLINE, *Assistant Examiner*.