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Shaver

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[54] **PROTECTION DEVICE FOR ENGINE OPERATING ON GAS-OIL MIXTURE**

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[73] Assignee: **Raymond Lee Organization, Inc.**, a part interest

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[52] **U.S. Cl.**.... **123/198 DB**; 123/73 AD; 123/119 R

[51] **Int. Cl.**[2] **F02B 77/00**

[58] **Field of Search**..... 123/198 DB, 73 AD, 196 R, 123/119 R, 127; 137/111

[56] **References Cited**

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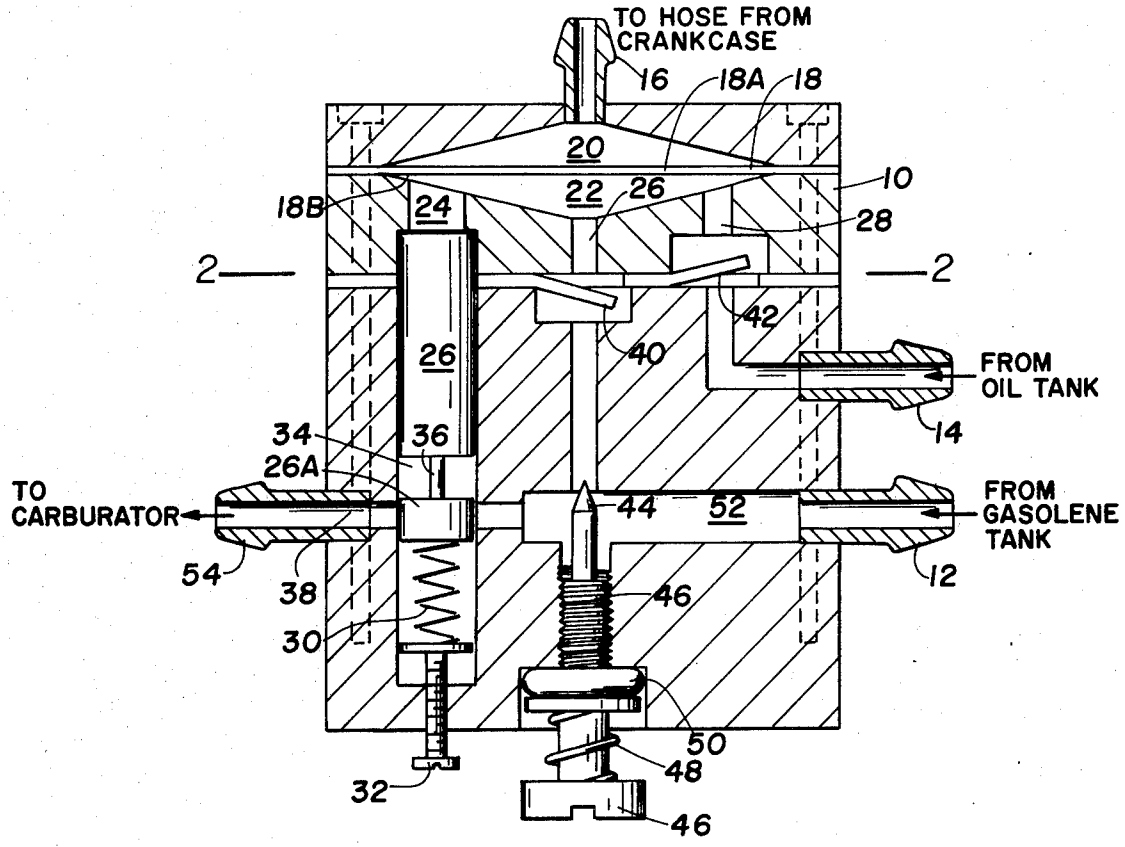
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[57] **ABSTRACT**

A device for protecting an internal combustion engine operating on a gasolene-oil mixture as fuel by cutting off supply of fuel to the engine when the mixture contains no oil, thus stopping the engine before any damage occurs. Oil is fed through a first channel to a mixing chamber. The gas is fed through a second channel to the chamber. The mixture is fed through a third channel from the chamber to the carburetor of the engine. When the flow of oil in the first channel fails, the reduced pressure actuates a piston to block the flow of the mixture through the third channel, thus stopping the engine. When the oil component disappears in the chamber, the pressure increases in the chamber and this increase actuates the same piston to again block mixture flow.

3 Claims, 2 Drawing Figures



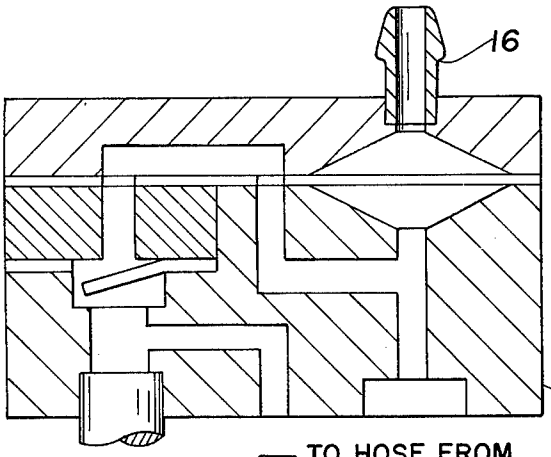

16
10

FIG. 2

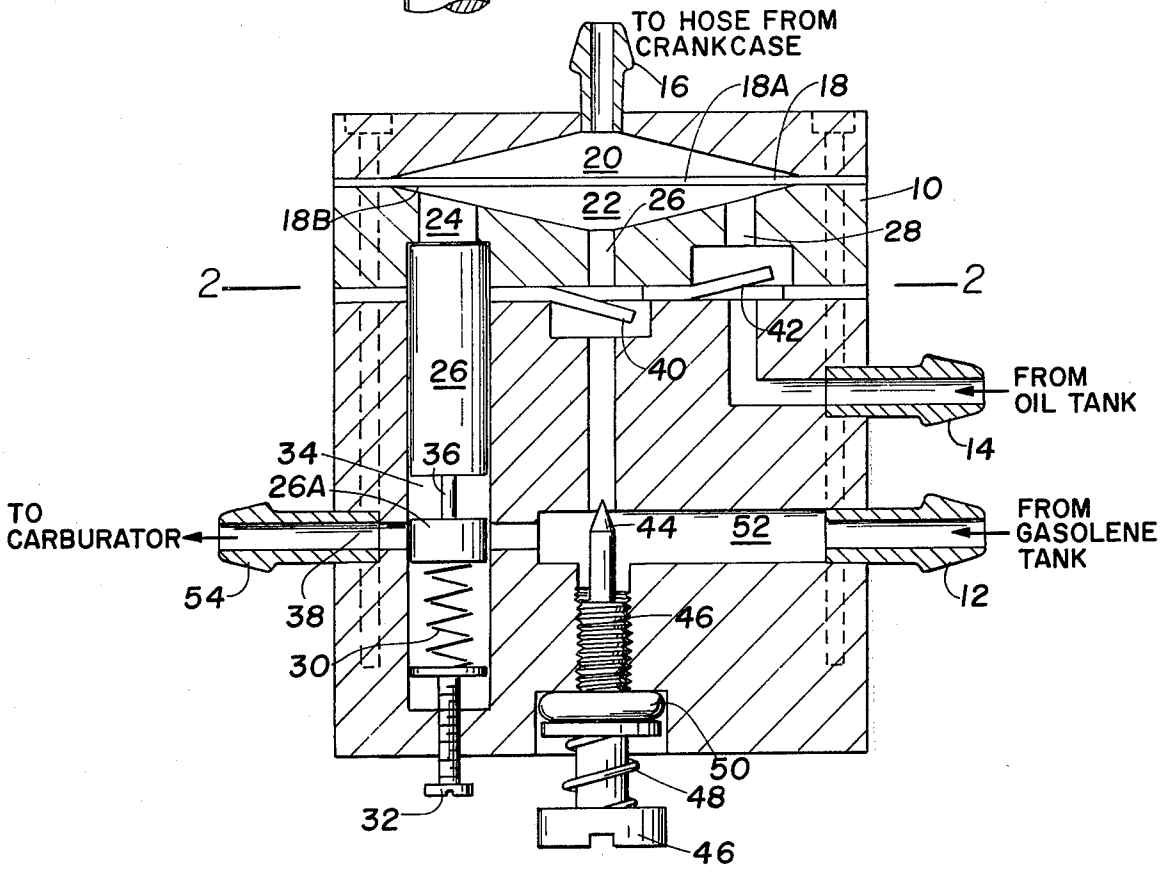

TO HOSE FROM CRANKCASE
16
18A
18
20
22
26
10
18B
24
28
2
2
42
40
26
FROM OIL TANK
14
34
36
26A
TO CARBURATOR
44
52
FROM GASOLENE TANK
12
54
38
46
30
50
48
32
46

FIG. 1

PROTECTION DEVICE FOR ENGINE OPERATING ON GAS-OIL MIXTURE

SUMMARY OF THE INVENTION

Snowmobiles use internal combustion engines using a gasoline-oil mixture as fuel. Should the oil component disappear from the mixture, the engine can be damaged or destroyed because of faulty lubrication.

My invention is a device which, when installed in such a vehicle or indeed installed with any such engine, will cut off the supply of the mixture to the engine and stop the engine before any damage occurs in the event that the oil component disappears.

In this type of engine, oil is fed from a supply tank to a needle valve in a mixing chamber. Gasoline is fed to the same chamber. Mixing occurs and the mixture is fed through a channel to the carburetor. Should the valve clog and prevent oil flow, the pressure at the valve increases and this increase actuates a piston to block the channel. Should the oil tank run dry, a decrease in pressure actuates the piston to block the channel.

In either case, blockage of the channel cuts off the supply of the fuel mixture and stops the engine.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. **1** is a cross sectional side view of the invention; and

FIG. **2** is a view along **2—2** in FIG. **1.**

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to FIGS. **1–2,** a block **10** has spaced inlet ports **12** and **14** which receive gasolene and oil respectively under pressure as supplied from suitable gasolene and oil tanks via suitable pumps. A pressure port **16** is connectd via a hose to the crank case of a snowmobile engine. Thus the pressure of the oil in the crank case bears upon the upper surface **18A** of diaphram **18** via cavity **20.** The lower surface **18B** of the diaphram exerts pressure via cavity **22** to vertical channels **24, 26** and **28.**

When pressure in the crank case is normal for operation, the pressure developed by the diaphram is exerted through channel **24** against the top end of piston **26.** The piston is forced down against the tension of spring **30,** as adjusted by screw **32** until circular opening **34** surrounding port **36** is aligned with channel **38.**

At the same time, the same pressure exerted through channel **26** causes one way valve **40** to open. The pressure of the oil supplied at port **14** is greater than the diaphram pressure whereby one way valve **42** is opened. The oil then circulates through channels **26** and channel **28** onto needle valve **44** (as adjusted by screw **46** and spring **48** bearing against seal **50**). The gas under pressure flows through channel **52** to the needle valve when oil and gas mix. The mixture flows through channel **38** and opening **34** to outlet port **54** which in turn is connected to the carburetor. The desired mixture then is fed to the snowmobile engine in conventional manner.

If the needle valve is blocked in some manner, as for example by dirt, the pressure built up closes valve **40.** The increase of pressure in cavity **22** forces piston **26** further downward to seal channel **38** whereby no fuel is fed to the carburetor and the engine stops before any damage can occur thereto.

If the oil flow through port **14** ceases valve **42** closes, the decrease in pressure in cavity **22** allows the piston to move upward because of the tension of spring **30** and the bottom section **26A** of piston **26** seals channel **38** and the engine stops as before.

While I have described my invention with particular reference to the drawings, such is not to be considered as limiting its actual scope.

Having thus described this invention, what is asserted as new is:

1. In combination with an internal combustion engine having an oil filled crankcase and carburetor, a device for mixing oil and gasoline together, said device cutting off the flow of the mixture to the carburetor when the mixture contains no oil to protect the engines from damage, said device comprising:

an oil feed channel for receiving oil under pressure;

a gasoline feed channel for receiving gasoline under pressure;

a mixing chamber wherein oil and gas are mixed, said chamber communicating with the oil feed channel and the gasoline feed channel;

conduit means for feeding the mixture from the chamber to the carburetor;

a crankcase feed channel receiving oil that circulates in the crankcase; and

pressure sensitive means coupled both to the crankcase feed channel and the oil feed channel and connected to the conduit means, said pressure means permitting said mixture to flow to the carburetor whenever a preselected relationship is established between the pressure of oil in the crankcase and the pressure of oil in the oil feed channel, said pressure means blocking said mixture flow whenever these pressures lack said preselected relationship.

2. The device of claim **1** wherein the pressure sensitive means comprises.

a pressure chamber;

a flexible diaphram dividing the pressure chamber into a first portion communicating with the crankcase feed channel and a second portion communicating with the oil feed channel; and

a piston having an opening which when aligned with the conduit means permits the mixture to flow to the carburetor and when out of alignment with the conduit means blocks the flow, said piston being vertically movable, one end of the piston being spring biased, the other end of the piston being subjected to the pressure in the second portion of the diaphram.

3. The device of claim **2** further including a first one way check valve disposed between the oil feed channel and the second portion of the pressure chamber, and a second one way check valve disposed between the second portion and the mixing chamber.

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