

Aug. 14, 1934.

C. C. SCHORREMAN

1,970,475

AUTOMATIC FUEL CUT-OFF

Filed Nov. 29, 1933

3 Sheets-Sheet 1

Fig. 1.

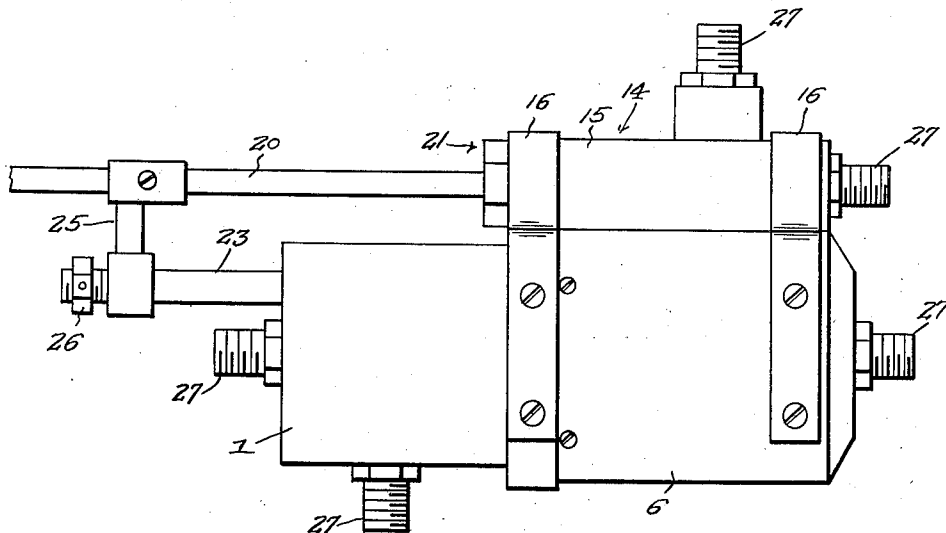


Fig. 8.

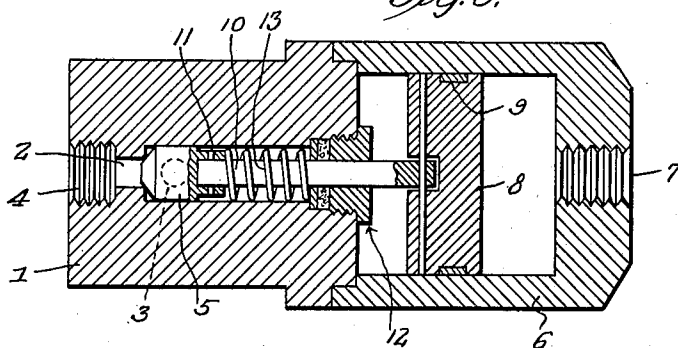
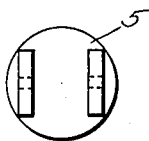


Fig. 9.



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Fig. 2.

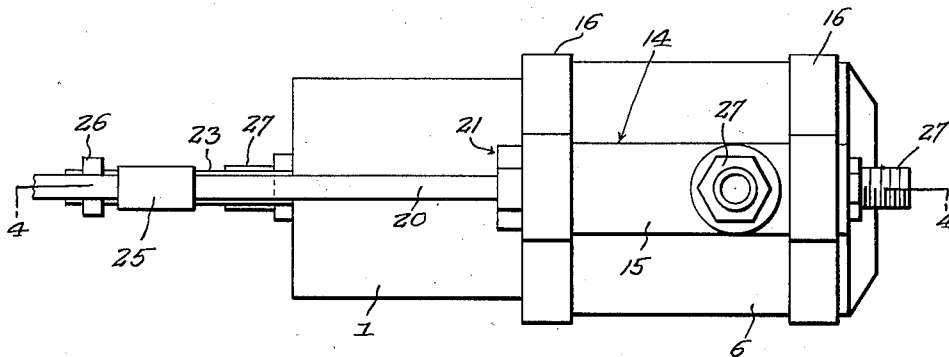


Fig. 3.

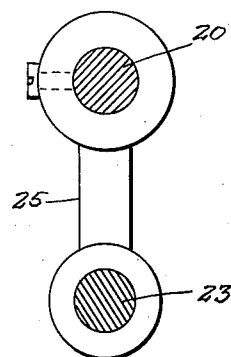
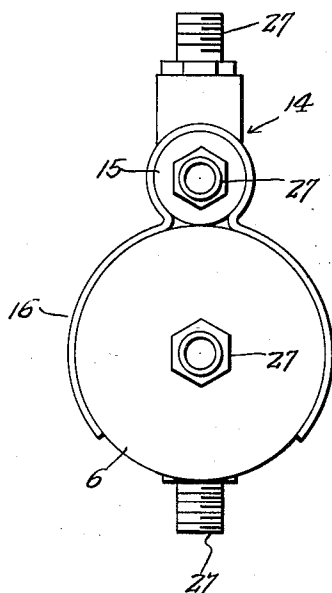


Fig. 7.

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Fig. 4.

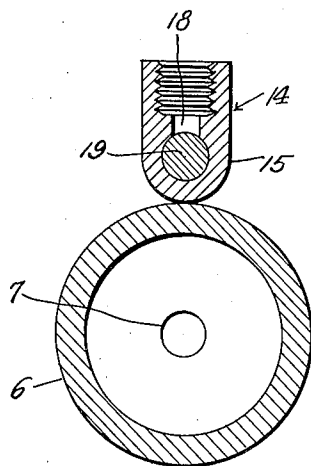
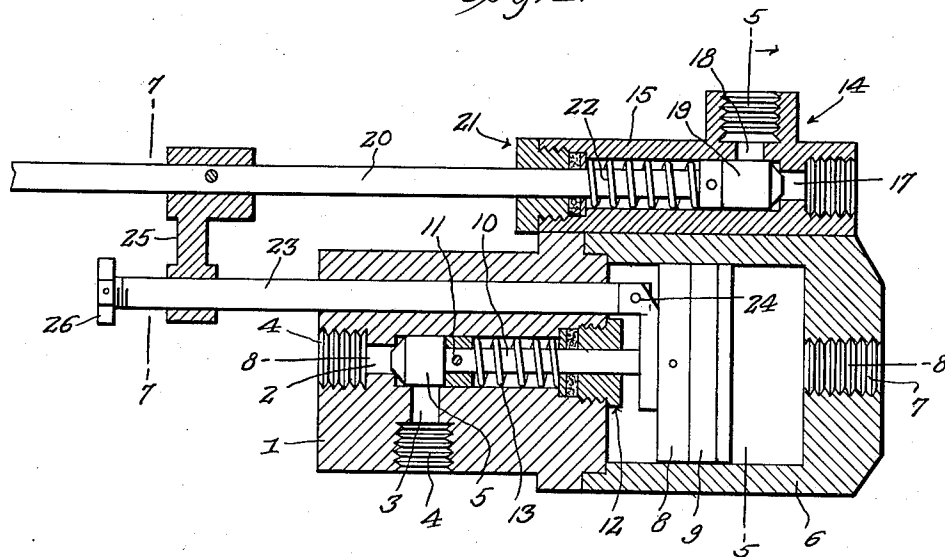


Fig. 5.

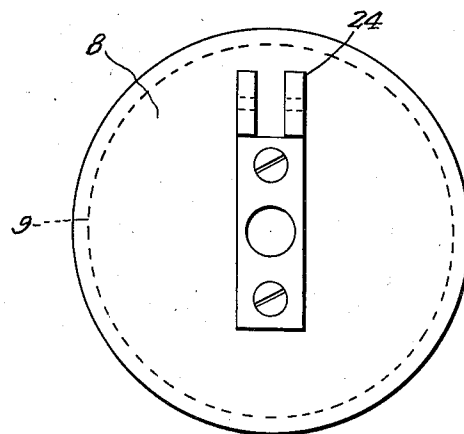


Fig. 6.

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UNITED STATES PATENT OFFICE

1,970,475

AUTOMATIC FUEL CUT-OFF

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Application November 29, 1933, Serial No. 760,304

2 Claims. (Cl. 277-3)

The present invention relates to new and useful improvements in automatic fuel cut-offs for use particularly on aeroplane engines, although it is to be understood that the device may also be used on other power plants, such as those in automobiles, boats, etc.

The primary object of the present invention is to provide, in a manner as hereinafter set forth, a safety device comprising a novel construction, combination and arrangement of parts through the medium of which the supply of fuel to the carburetor of the engine will be automatically shut off should said engine stop running for any reason, thereby materially reducing or substantially eliminating the hazard of fire in case of accident, such as a crash.

Other objects of the invention are to provide an automatic fuel cut-off for engines which will be comparatively simple in construction, strong, durable, highly efficient and reliable in operation, compact, and which may be manufactured and installed at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:—

Figure 1 is a view in side elevation of an automatic fuel cut-off constructed in accordance with the present invention.

Figure 2 is a view in top plan thereof.

Figure 3 is an end elevational view.

Figure 4 is a view in vertical longitudinal section through the cut-off, taken substantially on the line 4—4 of Figure 2.

Figure 5 is a view in vertical transverse section, taken substantially on the line 5—5 of Figure 4.

Figure 6 is a detail view in rear elevation of the suction actuated piston.

Figure 7 is a view in vertical transverse section, taken substantially on the line 7—7 of Figure 4.

Figure 8 is a view in horizontal section, taken substantially on the line 8—8 of Figure 4.

Figure 9 is a detail view in rear end elevation of one of the piston type valves.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a valve casing 1 which is interposed in a fuel line to the carburetor of the engine (not shown). The casing 1 is provided with inlet and outlet ports 2 and 3, respectively, which are counterbored and

threaded, as at 4, to facilitate connecting the sections of the fuel line thereto. Communication between the ports 2 and 3 is controlled by a valve or piston 5 which is slidable in the casing 1.

Mounted on one end of the casing 1 is a cylinder 6 having a threaded opening 7 in its free end which receives a suction line from the engine. Operable in the cylinder 6 is a suction actuated piston 8 which is equipped with a ring 9. A rod 10 connects the valve 5 to the piston 8, said valve 5 being pivotally mounted on said rod, as at 11. The rod 10 is slidable in a packing 12 in the inner end portion of the casing 1. A coil spring 13 encircles the rod 10 in the casing 1 and has one end engaged with the packing 12 and its other end engaged with the valve 5 for yieldingly urging said valve 5 toward closed position.

Mounted longitudinally on the cylinder 6 is a starting valve which is designated generally by the reference numeral 14. The starting valve 14 comprises a casing 15 which is secured in position on the cylinder 6 by clamps 16. The casing 15 is provided with inlet and outlet ports 17 and 18, respectively, for the fuel. It may be well to here mention that the starting valve 14 is interposed in another fuel line to the carburetor of the engine.

Communication between the ports 17 and 18 is controlled by a valve or piston 19 which is slidably mounted in the casing 15 on one end of a manually operable rod 20. A packing 21 is provided in one end portion of the casing 15 for the rod 20. A coil spring 22 assists in moving the valve 19 toward closed position.

Mounted for longitudinal sliding movement in the casing 1 is a rod 23 which is pivotally connected, at one end, to the piston 8, as at 24. The rod 23 extends slidably through an arm 25 which is mounted on the manually operable rod 20 and has threaded on its outer or free end portion a stop nut 26 for engagement with said arm 25. The couplings for connecting the fuel line sections and the suction line to the device are shown in Figure 1 of the drawings and designated by the reference numeral 27.

Briefly, the operation of the device is as follows:—

To start the engine, the valve 14 is opened by pulling rearwardly on the rod 20 to permit fuel to flow through the ports 17 and 18 to the carburetor. When the rod 20 is thus actuated, the arm 25 slides on the rod 23. When the engine starts, a suction is created in the cylinder 6 which draws the piston 8 forwardly against the tension of the coil spring 13, thereby shifting the

valve 5 to open position and permitting fuel to flow to the carbureter through the ports 2 and 3. As the piston 8 moves forwardly, the stop 26 on the rod 23 engages the arm 25 for positively closing the valve 19. Should the engine stop for any reason, thereby eliminating the suction in the cylinder 6, the valve 5 is closed by the coil spring 13 and it will thus be seen that the supply of fuel to the carbureter is shut off. If desired, a suitable signal may be provided for indicating when the suction opened valve 5 starts to close.

It is believed that the many advantages of an automatic fuel cut-off constructed in accordance with the present invention will be readily understood, and although a preferred embodiment of the invention is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:—

1. A fuel line cut-off comprising a valve interposed in a fuel line and including a casing, a valve operable in the casing, and a slidable rod connected to said valve for opening same, a second valve interposed in another fuel line to the engine and comprising resilient means for yieldingly urging said second valve toward closed position, a cylinder, a suction operated piston slidable in the cylinder, means operatively con-

necting the second named valve to the piston for actuation thereby to open position, an arm mounted on the rod of the first named valve, a rod connected to the piston and slidably engaged with the arm, and a stop on the second named rod engageable with the arm for positively closing the first named valve substantially when the second named valve is opened.

2. A fuel line cut-off comprising a valve interposed in a fuel line, resilient means yieldingly urging the valve toward closed position, a cylinder mounted on the valve, a suction actuated piston slidable in the cylinder and operatively connected to the valve for controlling said valve, another valve mounted on the cylinder and interposed in a second fuel line, means operatively connecting the second named valve to the piston in a manner to be positively closed thereby when said piston moves in a direction to open the first named valve, a slidable rod operatively connected to the second named valve for opening same, the last named means including an arm fixed on the rod, another rod slidably mounted in the first named valve and connected to the piston for actuation thereby, the second named rod being slidably engaged with the arm, and a stop on said second named rod engageable with the arm for moving the first named rod toward valve closing position after the first named valve is opened.

CHARELS C. SCHORREMAN.

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