B. S. WILLIAMS.

FLOAT CONTROLLED ENGINE SHUT-OFF.

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Fig. 1.

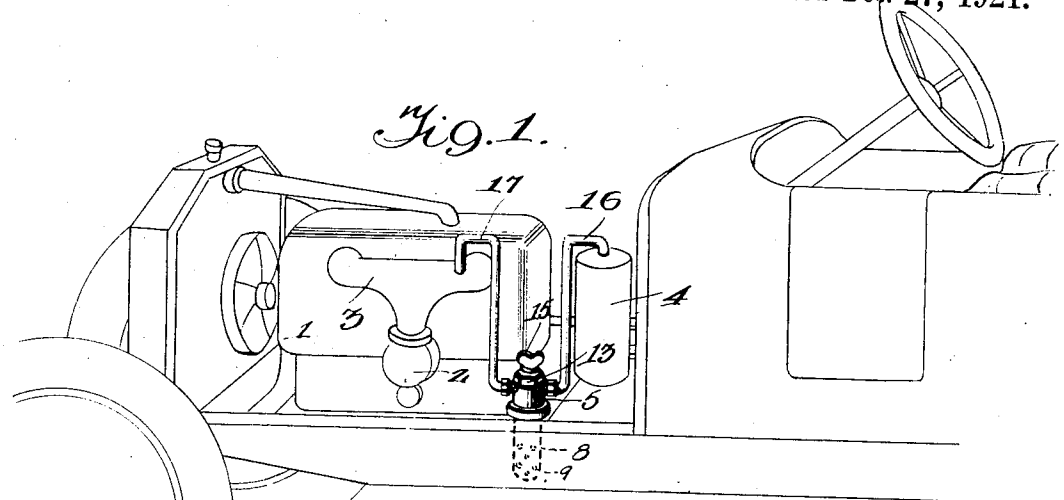


Fig. 2.

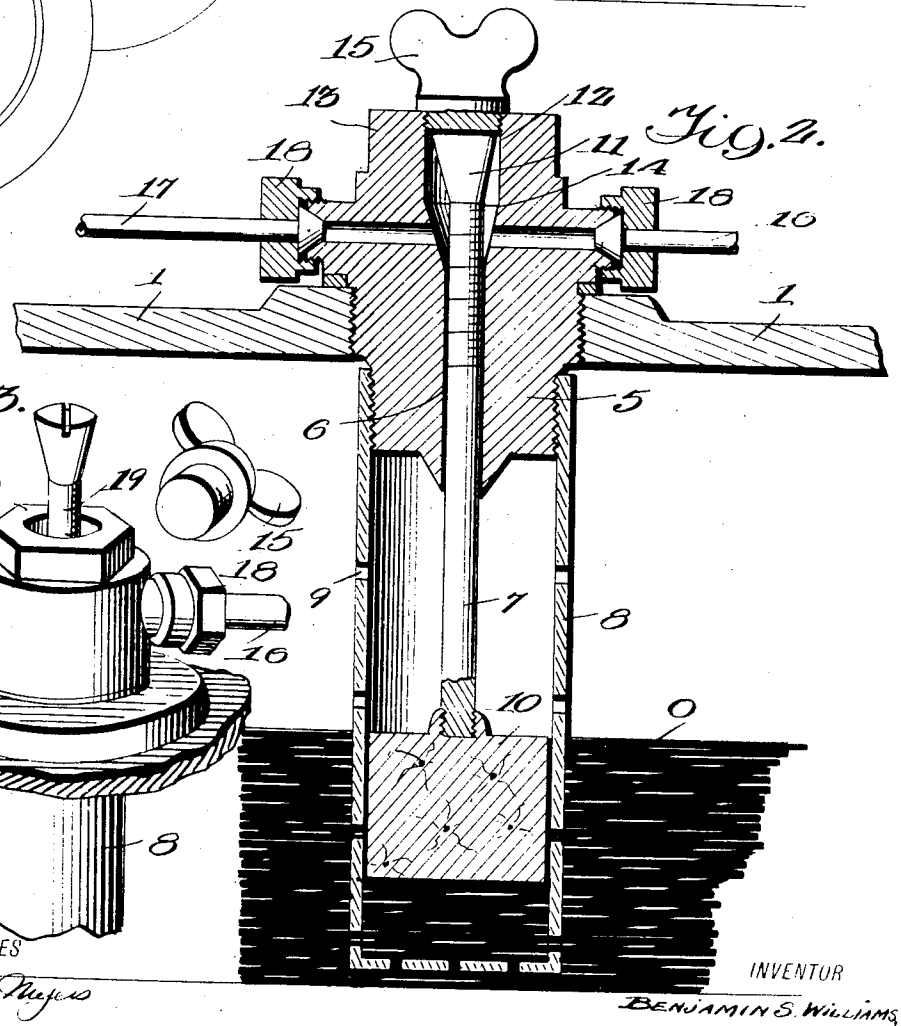


Fig. 3.

WITNESSES

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FLOAT-CONTROLLED ENGINE SHUT-OFF.

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To all whom it may concern:

Be it known that I, BENJAMIN S. WILLIAMS, a citizen of the United States, and a resident of Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Float-Controlled Engine Shut-Offs, of which the following is a specification.

My invention relates to improvements in automobile and other engine controlling apparatus, and it consists in the constructions, combinations and arrangements herein described and claimed.

One of the foremost objects of the invention is to provide means for stopping an engine, when a fluid vital to the operation of the engine becomes exhausted to a predetermined degree.

A further object of the invention is to provide means for automatically stopping an engine when the level of a fluid necessary to the operation of the engine, reaches a predetermined low point.

More specifically, a further object of the invention is to provide an automatic cut-off for an engine, controlled by a float in the oil reservoir.

Another object of the invention is to provide a float-controlled engine shut-off which may be employed as an indicator of the level of the oil in the engine crank case when desired.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawing, in which:

Figure 1 is a perspective view illustrating the application of the automatic shut-off to the crank case of an engine,

Fig. 2 is a vertical section of the apparatus, and

Fig. 3 is a detail perspective view illustrating its employment as an oil gage.

Attention is first directed to Fig. 1 of the drawing. Here is shown an automobile engine 1 of any type with its carbureter 2 and intake manifold 3, and vacuum tank 4, also of any type. As is well known in the art, the vacuum tank 4 utilizes but a small portion of the suction created by the pistons of the engine, in lifting gasolene from a lower to a higher level. This higher level is slightly above the carbureter 2, and by the instrumentalities of the vacuum tank, the supply of gasolene to the carbureter becomes uniform and even.

It is the fundamental purpose of the invention to stop the engine 1, not when the supply of gasolene gets low, but when the oil O in the crank case or oil reservoir reaches so low a level that there is danger of an insufficient supply for the various bearings of the engine with the resultant overheating thereof. Screwed into the top of the crank case at a convenient point, is the plug 5, well shown in Fig. 2, which is centrally bored at 6 to provide a substantial guide for the stem 7.

The reduced lower end of the screw plug 5 is externally threaded so that the guide tube 8 may be screwed thereon. This tube is closed at the lower end but has a sufficient number of perforations 9 to enable the oil O to enter. There is a float 10 on the lower end of the stem 7.

This float is guided by the tube 8, but the function of the tube is not alone to guide the float, but also to prevent injury thereto by the violent movement of the oil in the crank case when the vehicle to which the engine is attached, is running. The upper end of the stem 7 terminates in a valve 11, which occupies the valve chamber 12, in the hexagonal head 13 of the plug 5. This chamber merges with the bore 6 in a valve seat 14.

A suitable screw plug 15 closes the upper end of the chamber 12 and forms an abutment for the valve 11. The reader will understand at once that the tendency of the oil O is to sustain the float 10 as high up in the tube 8 as possible, therefore naturally pressing the valve 11 into firm contact with the plug 15. It is by this means that undue rattling, or in fact, movement of any kind, of the stem 7, valve 11, and float 10, is prevented.

Considering both Figs. 1 and 2, it is to be observed that a pipe 16 runs from the vacuum tank 4 into one side of the chamber 12, while a pipe 17 runs from the opposite side of the chamber to the intake manifold 3. These pipes are suitably affixed to the plug 5 by couplings 18.

Ordinarily, there is but a single pipe line running from the vacuum tank to the intake manifold of the engine. The present ar-

rangement departs from the customary construction in that the automatic cut-off is interposed in this line. Should the level of the oil O in the crank case reach a predetermined low and dangerous point, the valve 11 will seat itself in the conical seat 14 of the plug 5 and thus close the pipe 16, 17.

Communication between the vacuum tank 4 and manifold 3 is thus severed, and since the vacuum tank is thus prevented from drawing gasolene from the source of supply, the engine 1 must stop in a very short time. This stopping of the engine is an indication to the operator that the oil in the crank case requires replenishing.

In thus replenishing the oil, the screw cap or plug 15 may be removed and the rise of the level of oil observed by means of the graduations 19 on the stem 7, as clearly shown in Fig. 3. It is not only on this occasion that the float may be employed as an oil gage, but the operator may remove the screw cap 15 at any time to see, by means of the graduations 19, what the position of the float 10 on the oil O is. Obviously, if the oil level is low, he should pour more oil in to prevent the automatic setting off of the engine in the manner described above.

While the construction and arrangement of the improved automatic engine shut-off as herein described and claimed, is that of a generally preferred form, obviously modification and changes can be made without departing from the spirit of the invention or the scope of the claims.

I claim:—

1. The combination of a crank case and vacuum line leading to the intake manifold of an engine, and means associated with the crank case, through which the vacuum line has continuity, controlled by the level of oil in the crank case to close the vacuum line when said level reaches a predetermined low point and prevent destruction of the vacuum therein.

2. The combination of a crank case and vacuum line leading from the intake manifold of an engine, means carried by the crank case through which the vacuum line extends, and means actuated by the oil in the crank case, normally maintaining the continuity of the vacuum line through said means but closing said line when the oil level reaches a predetermined low point.

3. The combination of a crank case and vacuum line leading from the intake manifold of an engine, means carried by the crank case through which the vacuum line extends, means actuated by the oil in the crank case, normally maintaining the continuity of the vacuum line through said means but closing said line when the oil level reaches a predetermined low point, and means included in said crank case carried means preventing disturbance of said controlling means by violent moving of the oil.

4. The combination of a crank case and vacuum line between the intake manifold and vacuum tank of an engine, a plug, suitably mounted, including a chamber through which the vacuum line has normal continuity, and a float on the oil in the crank case, with a stem reaching to the plug and having a valve in said chamber to sever the continuity of the vacuum line when the float recedes to a predetermined low point with the oil.

5. The combination of a crank case and vacuum line between the intake manifold and vacuum tank of an engine, a plug, suitably mounted, including a chamber through which the vacuum line has normal continuity, a float on the oil in the crank case, with a stem reaching to the plug and having a valve in said chamber to sever the continuity of the vacuum line when the float recedes to a predetermined low point with the oil, and means associated with said plug for preventing disturbance of the float by violent movements of the oil, including a pendent closed-ended but perforated tube.

6. The combination of a crank case and vacuum line between the intake manifold and vacuum tank of an engine, a plug, suitably mounted, including a chamber through which the vacuum line has normal continuity, a float on the oil in the crank case, with a stem reaching to the plug and having a valve in said chamber to sever the continuity of the vacuum line when the float recedes to a predetermined low point with the oil, and means normally fixed in the plug but removable when desired, for limiting the movement of the valve in one direction due to the buoyancy of the float.

7. Means for automatically stopping an engine, comprising in combination a crank case, with a mounting having a valve chamber, an intake manifold and a vacuum tank, with a vacuum line leading from the manifold to the chamber and from the chamber to the vacuum tank; and a stem guided in said mounting, with a float at one end on the oil in the crank case normally supporting a valve on the other end in the valve chamber from closing the vacuum line, but causing such closure when the float recedes with the oil to a predetermined low point to thus stop the engine.

8. An engine shut-off, comprising a plug with a bore widening to form a valve seat and chamber opening at the top, coupling means for securing oppositely entering pipes of a vacuum line in communication with the valve chamber at the seat, a stem guided in the bore, with a float at the bottom and a valve in said chamber at the top, normally sustained from the seat to main-

tain tight communication, but engaging the seat when the float lowers with the oil on which it rests; and a screw plug in the open chamber end limiting the upward movement of said valve.

9. An engine shut-off, comprising a plug with a bore widening to form a valve seat and chamber opening at the top, coupling means for securing oppositely entering pipes of a vacuum line in communication with the valve chamber at the seat, a stem guided in the bore, with a float at the bottom and a valve in said chamber at the top, normally sustained from the seat to maintain tight communication, but engaging the seat when the float lowers with the oil on which it rests; a screw plug in the open chamber end limiting the upward movement of said valve, and a closed-ended but perforated tube pendent from the plug, containing the float for guidance and protection from violent movement of the oil.

10. A combined engine shut-off and oil gage, comprising a plug to be screwed into an engine crank case, with a bore enlarging into a valve seat and valve chamber opening at the top, a stem guided in the bore, with a float at the bottom and valve at the top in said chamber, and a screw plug in the end of said chamber limiting the upward movement of the valve and stem due to the buoyancy of the float, but being removable to permit the projection of the valve and stem out of the chamber, said stem being graduated to enable reading the level of the oil on which the float rests.

BENJAMIN S. WILLIAMS.