March 20, 1928. 1,663,218

W. F. SCHULTZ ET AL

PRESSURE CARBURETOR CONTROL DEVICE

Filed Oct. 18. 1926 2 Sheets-Sheet 1

Fig. 1

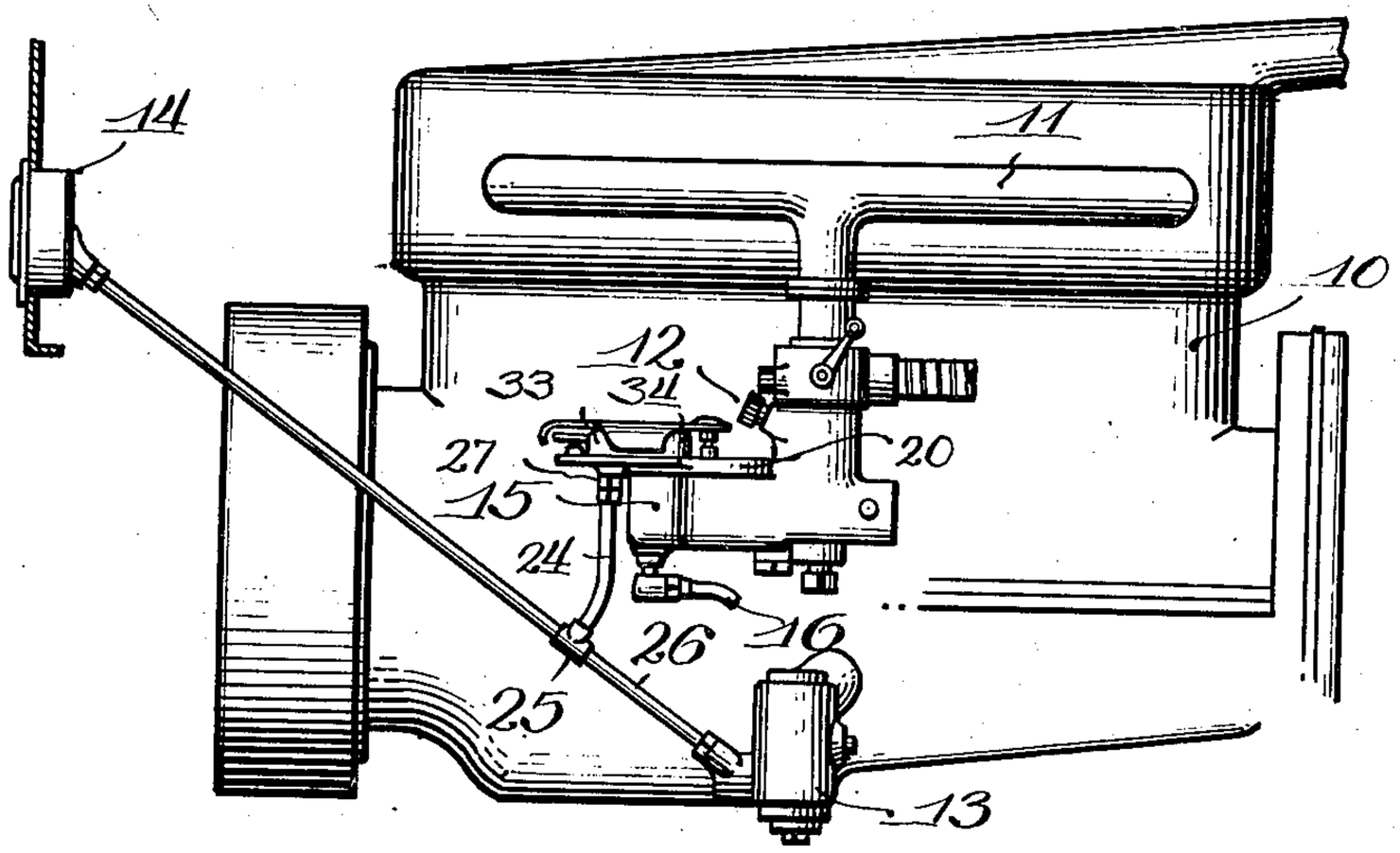


Fig. 2

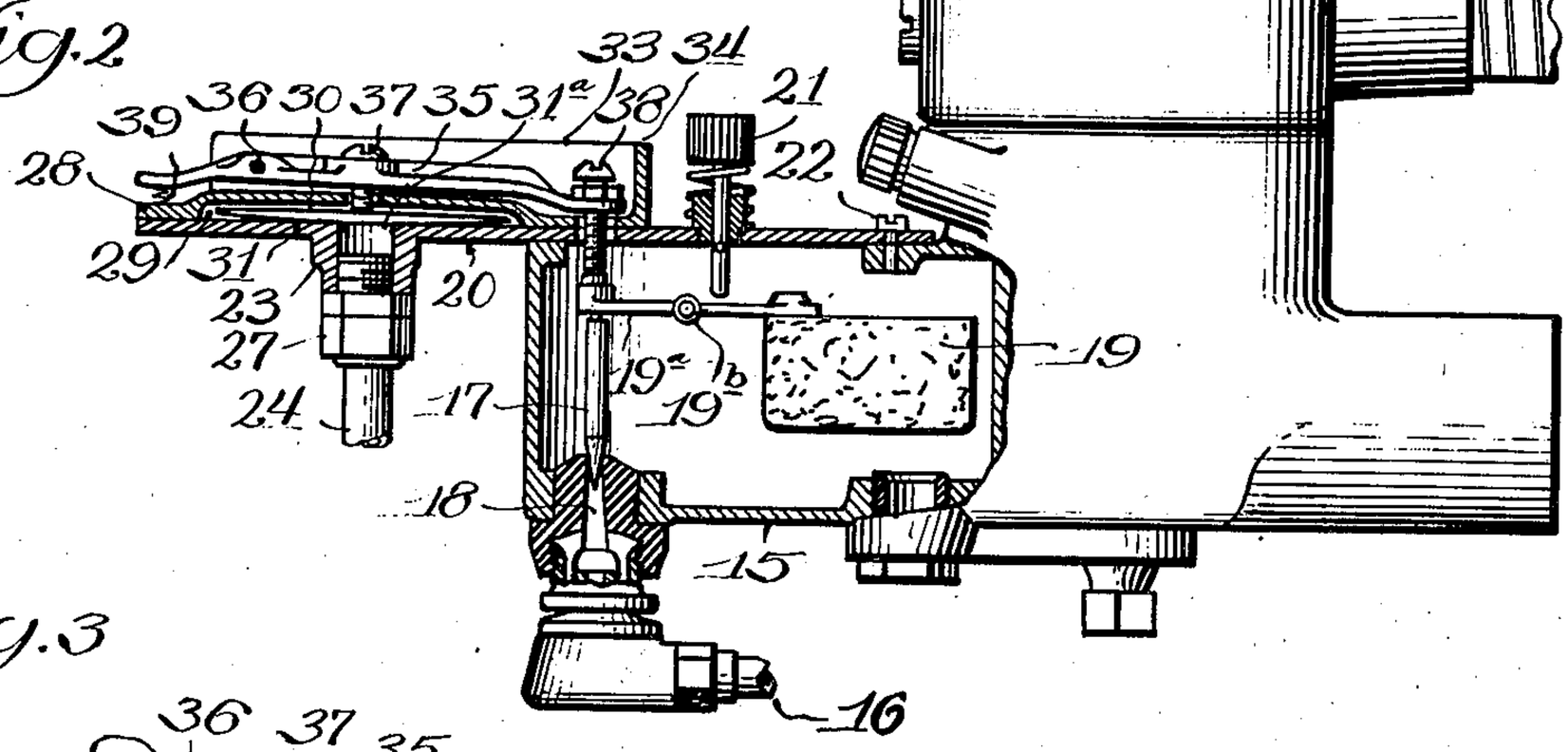
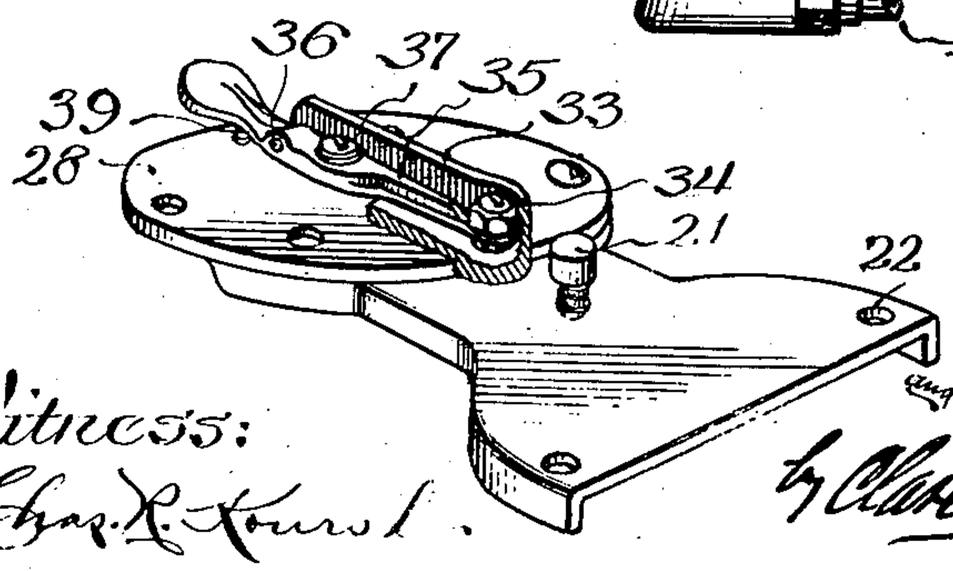


Fig. 3



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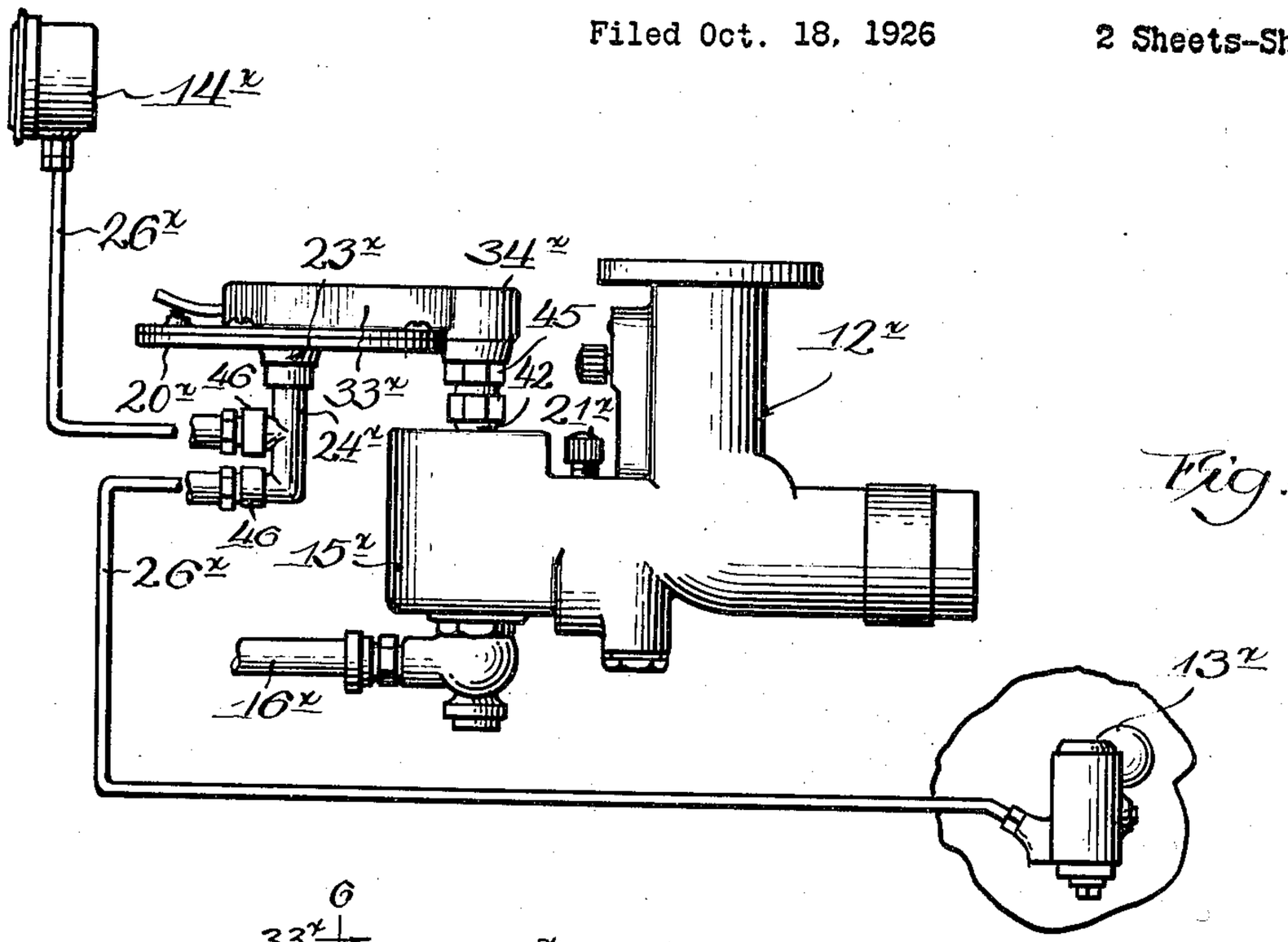


Fig. 4

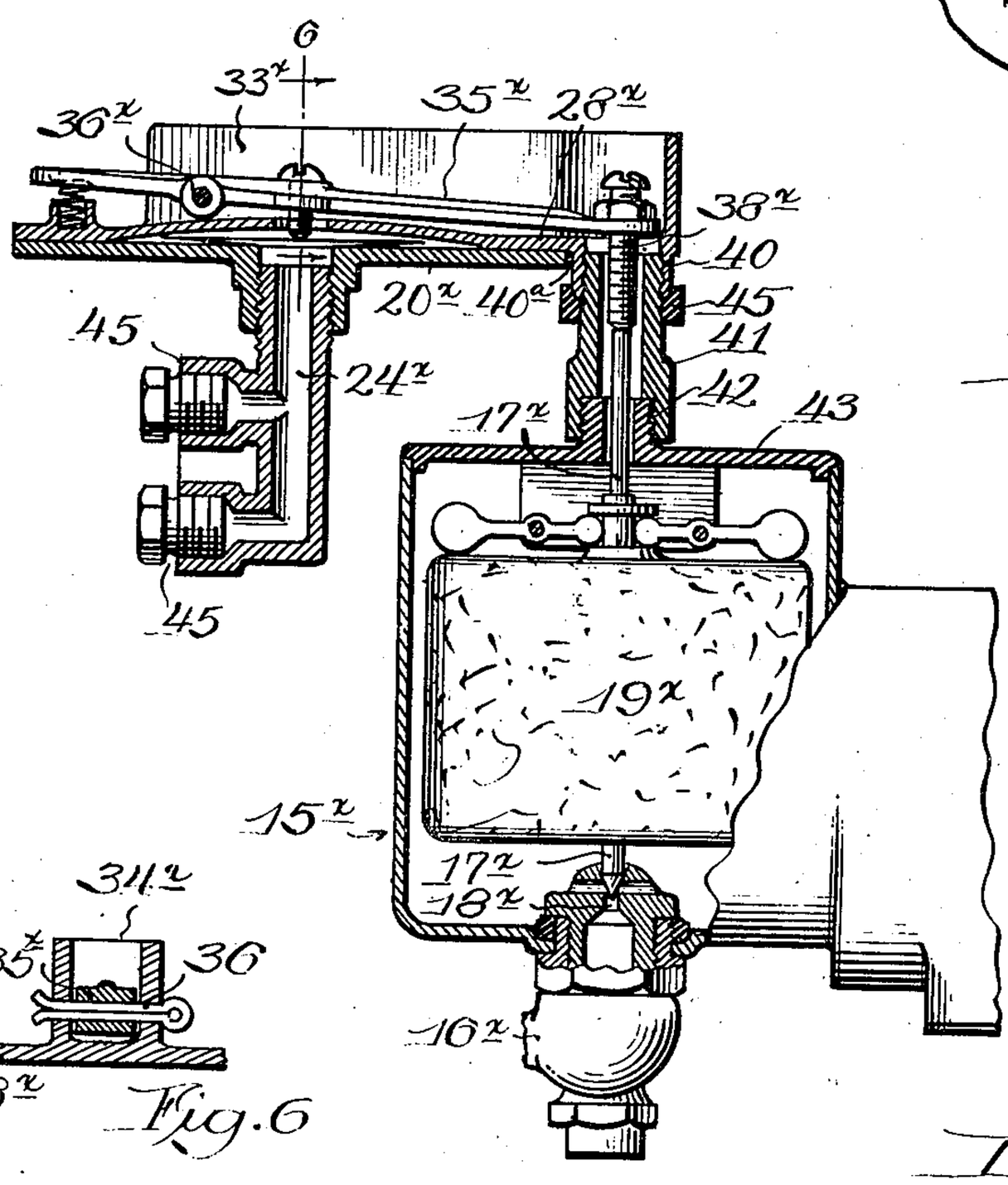


Fig. 5

Fig. 6

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Patented Mar. 20, 1928. 1,663,218

UNITED STATES PATENT OFFICE.

WILLIAM F. SCHULTZ AND LAWRENCE MASCHE, OF RIPON, WISCONSIN.

PRESSURE CARBURETOR-CONTROL DEVICE.

Application filed October 18, 1926. Serial No. 142,515.

This invention relates to a novel pressure carburetor control device and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The invention relates to a device applicable to an internal combustion motor employing an oil pressure or circulating system for lubricating purposes and adapted to cut off fuel supply when the pressure in the lubricating system falls below a predetermined required level for lubrication.

The object of the invention is to produce a device of the kind which is simple and cheap to manufacture, which may be readily and quickly applied to the several standard fuel-feed systems on the market, and which is positive and efficient in operation. The many advantages of the invention will appear more fully as I proceed in my specification.

In the drawings—

Figure 1 is a view in side elevation representing an internal combustion motor with its carburetor fuel-feed line and oil pump for supplying lubricating oil to the crank case.

Figure 2 is a vertical central section on an enlarged scale of the carburetor float chamber and of the improved pressure carburetor control applied thereto.

Figure 3 is a perspective view of the pressure carburetor control device as it appears when separate from the carburetor float chamber ready for application thereto, parts being broken away to show the operation of concealed members.

Figure 4 is a view of a carburetor, oil pressure line, gauge and the like, with my improved device applied, the carburetor being in this case of a different type than that shown in Figures 1, 2 and 3.

Figure 5 is a detail sectional view on an enlarged scale through the carburetor float chamber and the pressure carburetor control device.

Figure 6 is a part transverse section on an enlarged scale through Figure 5 in a plane indicated by the line 6—6 in Figure 5.

In the embodiment of our invention as illustrated herein we have shown a novel pressure carburetor control applied to the float chamber of the carburetor casing. In Figures 1 to 3 the carburetor is one of the offset control type as the Marvel and the like carburetors. In Figures 4 and 5 we have shown the device applied to a center control type as the Stromberg and like carburetors.

Referring now to Figures 1 to 3, inclusive, 10 indicates the internal combustion engine of an ordinary automobile, 11 the inlet manifold therefor, 12 the carburetor; 13 indicates the oil pump adapted to supply lubricating oil under pressure to the movable parts, and 14 indicates the usual oil gauge on the dash of the automobile; 15 indicates the float chamber of the carburetor, and 16 indicates the fuel supply pipe leading thereto; 17 indicates the float valve controlling the flow of fuel through the valve opening 18, and 19 indicates a float which controls the opening of the float valve, the two being mounted at opposite ends of a lever 19^a pivoted at 19^b in a familiar manner.

Instead of the cover plate for the float chamber casing 15, said casing is closed by a plate 20 which constitutes the base for our improved pressure carburetor control device.

The right hand end of the base 20 is formed like the usual cover plate for the float chamber casing 15 and is provided with a tickler 21 and suitable screw openings for its attachment by means of screws 22 in the same way as said usual cover plate.

At the left hand end of the base plate 20, so as to be located at one side of the float chamber casing 15, the base plate 20 is provided with a depending threaded nipple 23, to which is attached a pipe 24 connected by a suitable coupling 25 to the pipe 26 which leads to the oil gauge 14. The connection to the nipple 23 is made by suitable coupling 27. Mounted on the top of the base 20 concentrically with the aperture of the nipple 23 is a circular plate 28 provided with a circular recess 29 in its face next the base 20, which recess is also concentric with the aperture of the nipple 23. Within the chamber provided by the said recess 29 there are mounted diaphragm members 30, 31 made of very thin metal, preferably .005 to .01 inch in thickness, different systems requiring somewhat varying thickness in the diaphragm members for proper operation. The top diaphragm member 30 is imperforate, while the bottom diaphragm member 31 has an aperture 31^a in line with the aperture of the nipple 23. Diaphragm member 31 is soldered or welded to base plate 20 around the aperture 31^a. The diaphragm members are preferably soldered together

at their peripheral edges to insure a tight joint in the diaphragm chamber provided by them.

On the top of the plate 28 and extending diametrically thereof towards a point in vertical alignment above the valve stem 17 of the carburetor there is provided an integral duplex rib 33. The members of said rib are closed upon each other at their inner ends as indicated at 34. The members of this duplex rib provide a channel in which is mounted a lever 35 pivoted on a pin 36 extending transversely between the members of the duplex rib 33 near the left hand end thereof. Near said pivot pin 36, but on the side towards the carburetor casing, a screw or pin 37 is carried by the lever 35. Said pin projects through an aperture in the plate 28 and engages the top diaphragm member 30. Diaphragm member 30 is reinforced in center, at point of contact with screw or pin 37. At the right hand end of the lever 35, in vertical alignment with the float valve 17 is carried a second screw 38 which depends through apertures in the plate 28 and the base 20 to engage the end of the float valve operating lever 19^a at the top end of the float valve itself 17. A coiled spring 39 interposed between the left hand end of the lever 35 and the top of the plate 28, being seated in a suitable recess formed therein, acts normally to lift said left hand end in such manner as to depress the adjusting screw 38 to hold the float valve 17 closed on its seat. This is the normal position of the parts when the engine is idle, the oil pump is not operating and there is no pressure shown on the gauge 14 as existing in the system, including the pipe 26 and the pipe 24 connected to the diaphragm casing provided by the diaphragm members 30 and 31. Thus the supply of fuel to the carburetor is cut off.

When the engine is running and by reason of a proper oil supply and the efficient operating of the oil pump, the required pressure is shown on the gauge 14, this pressure will be exerted in the diaphragm casing so that the upper diaphragm member 30, acting against the bottom end of the screw 37, will hold the lever 35 in raised position and with it the screw 38 at the right hand end thereof, so that no pressure is brought to bear by the control on the float valve to interfere with its normal opening and closing movement under the action of the float 19.

When, however, for any reason, as by failure of the oil supply, failure of proper operation of the oil pump or other reason, the pressure fails in the oil system sufficiently so that the action of the spring 39 is sufficient to depress the right hand end of the lever 35 and cause the adjusting screw 38 to force the float valve down on its seat, the supply of fuel to the float casing will be blocked and the engine will cease to run. The operator is thus notified of the trouble and cannot run the engine further without using the tickler 21 or lever 35 to introduce a fresh supply of fuel into the float chamber to start the engine.

In Figures 4 and 5 we have shown the pressure carburetor control applied to a carburetor in which the float valve is placed at the center of the float. In said case the construction is in the main as before except for the form of the base plate, which, in this case, does not provide a cover for the float chamber. Corresponding parts are indicated by the same numerals as used before, but with the superscript "x".

The two plates in this case are of the same diameter and one of the two plates of the device, the top plate 28^x, as illustrated in the drawings, is provided with a depending threaded nipple 40, which depends through a notch or opening 40^a in the plate 20^x. In said nipple 40 is secured a tubular member 41 externally threaded at its upper end to engage within the threaded nipple 40 and internally threaded at its bottom end to be screwed upon the usual threaded nipple 42 on the top cover plate 43 of the float casing 15^x of the carburetor. The nipple 42 is the one through which the stem 17^x of the float valve projects in this type of carburetor, the same being closed by a cap (not shown) screwed upon the nipple 42. Our device is applied as shown by removing the said cap and attaching it to the nipple 42. The tube 41 is locked to the depending nipple 40 by a jamb nut 45.

The adjusting screw or pin 38^x carried at the right hand end of the lever 35^x extends down through the tube 41 to a position to engage the top end of the float valve stem 17^x.

The connection of the diaphragm chamber to the oil line is also in this case somewhat different, the pipe member 24^x in this case being connected in series in the pipe line 26^x that leads to the gauge 14^x on the dash. The pipe 24^x is provided with laterally disposed vertically spaced threaded nipples 45, 45 which are connected in the pipe line 26^x, 26^x in any convenient manner. The operation here is the same as before.

The simplicity of construction and the ease and readiness of application of the improved pressure carburetor control device will be apparent to those familiar with the art from the foregoing description. When applied to a carburetor it will prevent flooding of the carburetor and combustion chamber of the motor with their objectionable results or dilution of the lubricant in the crank case and the difficulty in starting the motor. Since the float valve is closed on its seat when the motor is not running the device prevents leaking of the carburetor valves and flooding of the carburetor when the motor is

idle. Since the device stops the engine when the oil pressure fails so that the engine is not properly lubricated, the use of the device saves the bearings and also prevents scoring of cylinder walls and pistons, thus prolongs the life of the engine.

These and many other advantages and results following from the use of a device of the kind will be manifest to those familiar with the operation and care of internal combustion motors.

While in describing our invention we have referred to many details of construction and of arrangement of parts, it will be understood that the invention is to be in no way limited thereto except as may be pointed out in the appended claims.

We claim as our invention:

1. A pressure carburetor control device adapted to be applied to the float chamber of the carburetor of an internal combustion engine having a pressure feed or circulating oiling system, comprising means providing a diaphragm chamber, a diaphragm in said chamber, said diaphragm being subjected on one side to the pressure of said oiling system, a spring-controlled lever fulcrum above the other side of said diaphragm, and devices depending from said lever, one engaged with said diaphragm and one adapted to be engaged against the float valve head in said float chamber to make the opening movement of said float valve dependent upon the movement of said diaphragm.

2. A pressure carburetor control device adapted to be applied to the float chamber of the carburetor of an internal combustion engine having a pressure feed oiling system, comprising a structure formed to provide a diaphragm chamber, means for attaching said structure to the float chamber, a diaphragm in said diaphragm chamber, means connecting said diaphragm chamber to the oil pressure line, a lever fulcrumed to said structure and adapted normally to hold the float valve of the carburetor closed on its seat, and means interposed between said lever and said diaphragm adapted to raise said lever under the oil pressure against said diaphragm.

3. A pressure carburetor control device adapted to be applied to the float chamber of the carburetor of an internal combustion engine having a pressure feed oiling system, comprising two plates, one formed to provide a diaphragm chamber above the other, said other plate having an aperture concentric with said chamber, a pipe connected in said aperture, a diaphragm in said chamber, means for attaching the two plates to the float chamber, a lever fulcrumed to the plate structure above said diaphragm, devices taking through said plates, one engaged with said diaphragm and the other adapted for engagement against the float valve in said float chamber, and yielding means interposed between said plates and said lever acting against said lever in a direction opposed to the action of said diaphragm.

4. A device of the kind described comprising plates formed to define a diaphragm chamber between them, a diaphragm in said chamber, means for connecting said device in the oil pressure line to subject said diaphragm to the pressure thereof, said plates being provided with apertures beyond said diaphragm chamber and the one plate being provided with an aperture above said diaphragm, means for attaching said device as a whole to a carburetor float chamber with the first named apertures above the float valve therein, a spring-controlled lever fulcrumed to said device, and pins carried by said lever, one engaged through the one aperture against said diaphragm and the other adapted to engage through the other aperture against the float valve in said float chamber.

5. In combination with an internal combustion engine having a pressure feed oiling system therefor and a carburetor for supplying fuel thereto, said carburetor having a float chamber casing, a float valve and a float for controlling the operation of the same, a pressure carburetor control device comprising a base plate having an aperture located vertically above said float valve, a second plate secured to said base plate, said two plates providing a diaphragm chamber between them at one side of said aperture, said base plate having a depending nipple concentric with and opening into said diaphragm chamber, a fitting connected in said oil pipe line and attached to said nipple, a diaphragm member located in said diaphragm chamber above said nipple, and a spring-controlled lever pivoted above said base plate and carrying screws or pins, one screw near its fulcrum engaged with one of the diaphragm members, and one remote from its fulcrum engaged with said float valve.

In testimony that we claim the foregoing as our invention, we affix our signatures this 21 day of September, A. D. 1926.

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LAWRENCE MASCHE.