C. C. FAY.

FLOAT FOR VACUUM CONTROLLED LIQUID FEEDING SYSTEMS.

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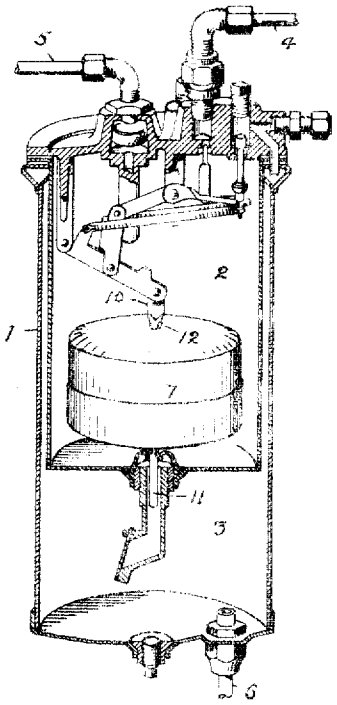


Fig. 1.

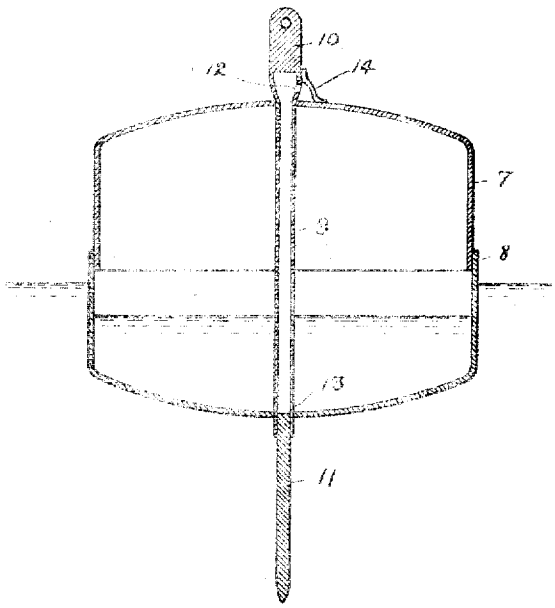


Fig. 2.

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FLOAT FOR VACUUM-CONTROLLED LIQUID-FEEDING SYSTEMS.

1,286,876. Specification of Letters Patent. Patented Dec. 3, 1918.

Application filed December 7, 1917. Serial No. 205,991.

To all whom it may concern:

Be it known that I, CLARENCE C. FAY, a citizen of the United States, residing at Tower, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Floats for Vacuum-Controlled Liquid-Feeding Systems, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to floats and has special reference to floats for controlling the operation of certain valves in vacuum controlled liquid fuel feeding systems for engines in automobiles.

The principal object is to produce a float which is not rendered inoperative by a leak occuring therein.

Other objects and advantages of the invention will appear in the further description thereof.

The vacuum system hereinafter referred to and to which the present invention is shown as being especially adapted is that known as the Stewart system and which may be said to be common in the art.

Referring to the accompanying drawings in which like reference characters indicate like parts:

Figure 1 is a central vertical section partly in perspective of a Stewart vacuum tank equipped with one of my improved floats, and

Fig. 2 is an enlarged central vertical sectional view of one of the improved floats.

As is known in the art the vacuum system referred to comprises a small round tank 1, installed adjacent the motor of the automobile. This tank is divided into two chambers, the upper chamber 2 and the lower chamber 3.

The upper chamber is connected to the intake manifold of the motor by a suitable pipe 4 and is also connected with the main gasolene supply tank by means of a suitable pipe 5. The lower chamber 3 is connected to the carbureter by the pipe 6 for supplying gasolene thereto.

When in operation, the intake strokes of the motor create a vacuum in the upper chamber of the tank and this vacuum draws gasolene from the supply tank through the pipe.

As the gasolene flows into the upper chamber, it raises the float 7 until it reaches a predetermined height when it automatically shuts off the vacuum valve and opens an atmospheric valve which allows the gasolene within the upper chamber to flow down into the lower chamber. The float 7 falls with the gasolene as it flows out of the upper chamber and when it reaches a certain point its supporting mechanism reopens the vacuum valve and the process of re-filling the upper chamber is repeated. These processes are automatically repeated so long as the device is in operation and are made to require as little attention as possible.

However, it is found in practice not to be an uncommon occurrence for the float 7 to become leaky and when such a leak does occur and gasolene enters the float the whole device soon becomes inoperative necessitating a great deal of trouble and expense in repairs and often considerable annoyance in locating the leak.

These leaks may be caused by defective construction, or normal wear, and the float, being suspended as it is, is subject to considerable motion caused by the vibration of the vehicle, and, as before stated, the object of the present invention is to overcome the trouble caused by a leaky float.

The float 7 is composed of two substantially similar cylindrically shaped halves, one slightly telescopic within the other as at 8, and at their union securely soldered or otherwise suitably united.

The upper end of the upper half of the float is made convex and in this respect is similar to the ordinary float now in common use, while the lower end of the lower half is also convex but which differs from the common float in that the latter is usually made concave. This depressed bottom is for the purpose of causing any liquid which might enter the float to naturally collect around the central stem 9 thereof, thus forming as it were, a well.

In the common float the stem is solid and projects upwardly above the float where it is pivotally attached to the mechanism from which it depends and the lower end of the stem extends below the float and through a suitable elevated guide over the discharge opening through the bottom of the upper chamber of the tank.

In the improved float the stem is preferably composed of two separate pieces comprising the hollow portion 9, the upper end

of which is closed and extends above the float as at 10 which is customary, and the solid portion 11 which is securely attached within the lower end of the hollow portion 9 and preferably at the junction of the hollow portion and the bottom of the float where a solid union is made between the stem and the bottom of the float. The upper end of the hollow portion of the stem is also securely fixed to the upper end of the float through which it passes, as for example, by soldering.

Outside of and in close proximity to the upper end of the wall of the float and communicating with the interior of the hollow portion of the stem is formed a small hole 12, and a similar hole 13 is formed through the wall of the hollow portion of the stem close to the bottom and inside of the float.

There is suggested at 14 a small shield or protecting plate in front of the hole 12, which may or may not be employed as desired, but it may be found to act advantageously in preventing the liquid from splashing directly into the hole, however, it is not considered essential to prevent the liquid thus entering, as the novel function resulting from the new combination is that of keeping the float at all times empty regardless of how the liquid may enter same.

From the foregoing it is evident that the interior of the float 7 thus communicating with the interior of the upper chamber in which it is housed will be influenced by the atmospheric conditions within the chamber. As a vacuum is being produced within the chamber 2, the air will be drawn out of the float through the hollow stem 9, and, if any liquid is in the float by reason either of an accident or a leak in the float, it will immediately be drawn up through the hollow stem and discharged into the chamber 2 and this draining process will act at all times simultaneously with the forming of a vacuum in the chamber 2, thus absolutely preventing the accumulation of any appreciable amount of liquid in the float even though the latter may develop a leak to some considerable extent, or happen to be faulty in construction in respect to its being air tight.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A float of the character described comprising a closed receptacle, a central supporting hollow spindle extending through and beyond both ends of the receptacle, a hole forming communication between the interior of the spindle and the interior of the receptacle and a vent hole forming communication between the interior of the spindle and the air outside of the float.

2. The combination with a vacuum liquid fuel feeding system having a vacuum chamber therein and a valve operating float in the chamber, of a hollow central supporting stem within the float, a hole within the upper end of the stem communicating with the interior thereof and the interior of the vacuum chamber, and a hole through the lower end of the hollow portion of the stem communicating with the interior thereof and the interior of the float.

3. The combination with a float of the character described, of a hollow central supporting spindle with the hollow portion extending above the upper end of the float, a solid extension within the lower end of the spindle depending below the float, a hole through one side of the hollow portion of the spindle adjacent the lower end of the float and internally thereof and a hole through the hollow portion of the spindle adjacent the upper end of the float and externally thereof.

4. The combination with a float of the character described, of a hollow central spindle extending above and below the float, the upper extension acting as supporting means and the lower extension acting as a guide for the float, a hole through one wall of the hollow portion of the spindle externally of the upper end of the float and a similar hole in the spindle adjacent the lower end and internally of the float substantially as and for the purpose described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

CLARENCE C. FAY.

Witnesses:
L. C. BRONSON,
S. GEO. STEVENS.