O. ZERKOWITZ.

AUTOMATIC LIQUID SEPARATOR.

APPLICATION FILED AUG. 28, 1908.

924,524. Patented June 8, 1909.

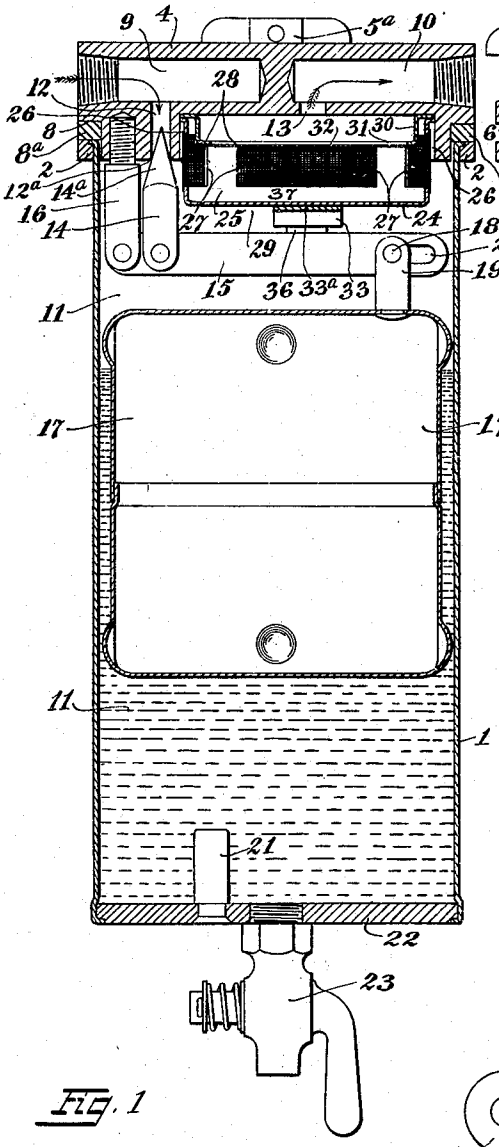


Fig. 1

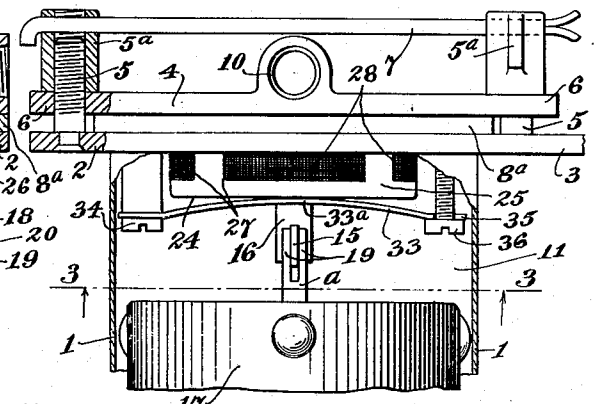


Fig. 2

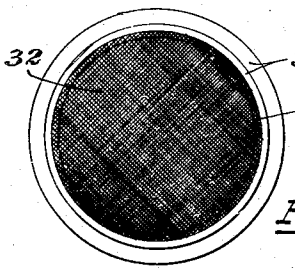


Fig. 4

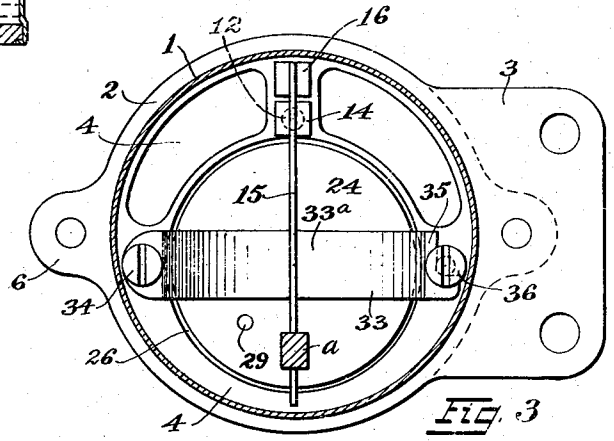


Fig. 3

Witnesses:
H. C. Valentine
L. Dantel.

Inventor:
Oscar Zerkowitz
by Obed B. Billman
his attorney.

UNITED STATES PATENT OFFICE.

OSCAR ZERKOWITZ, OF CLEVELAND, OHIO.

AUTOMATIC LIQUID-SEPARATOR.

No. 924,524. Specification of Letters Patent. Patented June 8, 1909.

Application filed August 28, 1908. Serial No. 450,667.

To all whom it may concern:

Be it known that I, OSCAR ZERKOWITZ, a citizen of Austria-Hungary, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Automatic Liquid-Separators, of which the following is a specification.

My invention relates to improvements in automatic liquid separators for separating liquids of different specific gravities, particularly water from gasolene.

The invention is designed more particularly for use in connection with the liquid-conduit leading from tank to carbureter of automobiles, motor boats, and the like, and is adapted to prevent any water or foreign matter entering the carbureter, the water and foreign matter being separated and accumulated in a chamber or receptacle and when the water has reached a predetermined height in said chamber or receptacle, a float-controlled valve automatically cuts off any further flow of liquid to the carbureter.

With these ends in view, the invention consists in the novel construction, arrangement, and combination of parts, hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

Referring to the drawings, forming a part of this specification, Figure 1, is a longitudinal sectional view of the improved separator, the float-controlled valve being shown in its closed position. Fig. 2, an elevation, partly in section, of the upper or valve-head and strainer-cup portion of the same. Fig. 3, a cross-section view taken through line 3—3, of Fig. 2. Fig. 4, a plan view of the under side of the strainer-cap or cover of the strainer-cup mounted in the upper portion of the improved separator.

Similar characters of reference designate like parts throughout all the figures of the drawings.

The improved separator comprises a cylindrical body or casing 1, depending from and secured to a supporting-plate comprising a ring portion 2, and a laterally-extending attaching plate 3.

A valve-head 4, is secured to the supporting-plate by means of oppositely-disposed bolts 5, extending upwardly therefrom and passing through openings in ears 6, of said valve-head. The valve-head is secured upon the supporting-plate by means of wing-nuts 5^a, which impinge upon the ends of said ears 6, said wing-nuts 5^a, being locked in position by means of a cross-rod 7 passing through suitable openings in the bodies of said wing-nuts.

The valve-head 4, is provided with an annular recess 8, for the reception of the ring portion 2, of the supporting-plate and an annular gasket 8^a, interposed between the same. The gasket 8^a, is preferably formed of cork, rubber-cork, or other suitable material adapted to resist the action of gasolene.

The separator being adapted for use between tank and carbureter, a fluid-conduit is provided in the valve-head comprising in the present instance, two longitudinally-extending inlet and outlet passages 9, and 10, terminating at their inner ends at the center of the valve-head and threaded at their outer ends for the reception of the ends of the conduit-pipe, the fluid from the inlet-passage 9, being adapted to be diverted into the main chamber 11, formed by the casing 1, by means of an inlet-opening 12, and passing out through an outlet-opening 13, and into the outlet-passage 10, as indicated by the arrows in Fig. 1, of the drawings. The passage of fluid into and out of said main chamber 11, is controlled by means of a float-controlled valve for opening and closing communication between said fluid-conduit and said main chamber, said float-controlled valve comprising a pivotally-mounted valve-stem 14, having a self-centering conical head 14^a, adapted to remain at all times in position to enter the opening to be closed, the present embodiment of the invention showing said self-centering conical head applied to the inlet-opening 12, and closing the same by impinging on the edges of the lower end or valve-seat 12^a, of said inlet opening.

The valve-stem 14, is carried by a horizontally-disposed lever-bar 15, pivoted at one end to a depending bearing-stem or post 16, and at the other or free end pivotally-secured to a float 17, by means of a pivot-pin 18, passing through a pair of bearing-lugs 19, of a standard or stem "*a*" on said float and through a bearing-slot 20. The valve-stem 14, and self-centering conical head 14^a, are so disposed relative to the adjacent parts that when the float is in its extreme lower position either in its operative position in the main chamber 11, or when the valve-head 4, and attached float-con-

trolled valve are removed from the body or casing 1, that said self-centering conical head 14ª, cannot be withdrawn or otherwise disarranged with respect to the inlet-opening 12, which acts as a guide for same. It will be observed that when the lever-bar 15, is moved to its extreme lower position the valve-stem 14, will abut against the adjacent bearing-stem 16, before the extreme pointed end of the head 14ª, has been withdrawn. The float is adapted to normally maintain said valve-stem 14, in an open position, thus normally permitting communication between the fluid-conduit and the main chamber, the float being sustained near the bottom of said main chamber by means of a supporting-pin or stem 21, of the bottom or base 22, of the cylindrical body or casing 1. The bottom or base 22, is provided with a pet cock 23, for the purpose of drawing out the heavier liquid and settlings of foreign matter that may accumulate in the bottom portion of said main chamber. The character of the float is such that it will float in water or the heavier liquid and will sink in gasolene or the lighter liquid, and hence in the present instance, will rise and cut off communication between the inlet portion of the fluid-conduit and the main chamber when the water or the heavier liquid has reached a predetermined height.

As a further means of separating the heavier liquid or water from the lighter liquid or gasolene, a strainer-cup intercepts the fluid-conduit, said strainer-cup comprising a base or bottom portion 24, and a flanged or rim portion 25, and, in the present instance, is mounted in a pocket 26, of the valve-head, and covers the outlet-opening 13, leading to the outlet-passage 10, of the fluid-conduit. The flanged or rim portion 25, is provided with a plurality of openings 27, in the present instance, four in number and rectangular in form, and said openings 27, are covered with foraminous material, preferably, in the form of wire gauze 28, of very fine mesh (200 to the square inch gives good results). Through this gauze gasolene runs very freely, water with great difficulty. Should any water find its way through the gauze covered openings 27, it will naturally settle to the bottom 24, and is adapted to drain out through the small drain or outlet opening 29, in said bottom 24. A flanged strainer cap or cover 30, is mounted in the pocket 26, above the strainer-cup, said cap or cover being provided with a large circular opening 31, in its body portion, covered with foraminous material preferably, of wire gauze 32. The strainer-cup and its cap or cover, are removably mounted and supported in their proper position in the pocket 26, by means of a spring latch member 33, one end being pivotally mounted upon and supported by a depending bearing-screw 34, and the other or free end 35, being supported upon a second depending screw 36. When the cross or latch member 33, is in its normal or latched position its intermediate upwardly bowed portion 33ª, abuts against the bottom 24 of the strainer-cup and, when it is desired to remove said strainer-cup and its cover the latch member may be readily swung about horizontally on its pivot 34, and said strainer-cup and cover can then be readily removed.

The float-controlled valve being adapted to normally permit of the free passage of the liquid from tank to carbureter, it is evident that the float being lighter than water but heavier than gasolene it will remain near the bottom of the main chamber when surrounded by gasolene, thus permitting the liquid to freely enter said main chamber through the inlet-opening 12; the liquid passes from the main chamber through the gauze-covered openings 27, of the strainer-cup into the supplementary chamber 37, formed by said strainer-cup; thence upwardly through the gauze covered opening 31, of the strainer-cap and through the outlet opening 13, leading to the outlet passage 10, of the fluid-conduit, and thence to the carbureter. The heavier liquid or water during the passage from tank to carbureter naturally settles to the bottom of the main chamber and consequently when the heavier liquid reaches a predetermined height, the float will rise closing the inlet-opening 12, as indicated in the drawings, thus cutting off any further flow of liquid to the carbureter. The engine will thus be brought to a standstill and before a particle of water has entered the carbureter. The chauffeur can then drain off the heavier liquid through the pet cock and operations may be resumed as before.

From the foregoing description, taken in connection with the accompanying drawings, the operation and advantages of my invention will be readily understood.

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

1. A liquid separator for liquids of different specific gravities, comprising a casing forming a main chamber, a valve-head having a fluid-conduit communicating with said main-chamber, a strainer intercepting the outlet portion of said fluid-conduit, and a normally open float-controlled valve connected to said fluid-conduit, the float of said valve being adapted to sink in the lighter liquid and float in the heavier liquid and close said valve when the heavier liquid has reached a predetermined height in said main chamber.

2. A liquid separator for liquids of different specific gravities, comprising a casing

forming a main chamber, a valve-head having a fluid-conduit leading into and out of said main chamber, a strainer-cup intercepting said fluid-conduit and communicating with said main chamber by means of openings covered with foraminous material, and a normally open float-controlled valve in said main chamber.

3. A liquid separator for liquids of different specific gravities, comprising a cylindrical body forming a main chamber, a valve-head provided with inlet and outlet openings communicating with said chamber, a cup having openings covered with foraminous material and forming a supplemental chamber within said main chamber and covering said outlet opening, and a float-controlled valve adapted to open and close said inlet opening.

4. A liquid separator for liquids of different specific gravities, comprising a casing forming a main chamber, a valve-head having an obstructed fluid-conduit provided with an inlet and an outlet opening leading into and out of said main chamber, a strainer-cup covering said outlet-opening and forming a supplemental chamber, communicating with said main chamber by means of openings in said strainer-cup covered with foraminous material, and a float-controlled valve the float of which is adapted to sink in the lighter liquid and float in the heavier liquid and to close said inlet opening when the heavier liquid has reached a predetermined height in said main chamber.

5. In a liquid separator for liquids of different specific gravities, the combination with a casing forming a main chamber, a valve-head on said casing and provided with an obstructed fluid-diverting conduit normally communicating with said main chamber, and a strainer cup intercepting said fluid conduit in the upper portion of said main chamber; of a float-controlled valve the float of which is adapted to sink in the lighter liquid and float in the heavier liquid and to close said fluid-diverting conduit when the heavier liquid in said main chamber has reached a predetermined height.

6. In a liquid separator for liquids of different specific gravities, the combination with a main chamber provided at its top with a valve-head having a fluid-conduit leading into and out of said main chamber, and a strainer cup providing a supplemental chamber at the upper portion of said main chamber and intercepting said fluid-conduit; of a float-controlled valve the float of which is arranged to sink in the lighter liquid and float in the heavier liquid and to close said fluid-conduit when the heavier liquid, in said main chamber has reached a predetermined height, and means for draining off the accumulated liquid in said main chamber.

7. In a liquid separator for liquids of different specific gravities, a casing forming a main chamber, a valve-head provided with a fluid-diverting conduit normally communicating with said chamber, and a normally open float-controlled valve the float of which is arranged to sink in the lighter liquid and float in the heavier liquid and to close said fluid-diverting conduit when the heavier liquid in said main chamber has reached a predetermined height.

In testimony whereof I have affixed my signature, in presence of two witnesses.

OSCAR ZERKOWITZ.

Witnesses:
GEO. H. BILLMAN,
O. C. BILLMAN.