

Oct. 23, 1923.

J. A. ROOSEVELT ET AL

1,471,807

FILTER

Filed Oct. 11, 1921

Fig. 1.

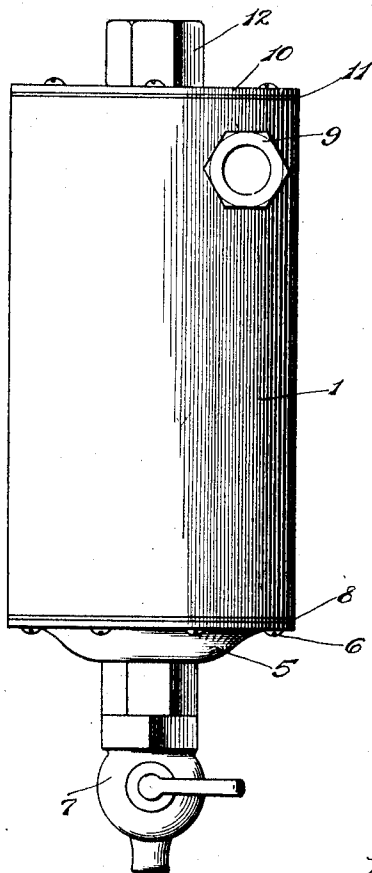


Fig. 2.

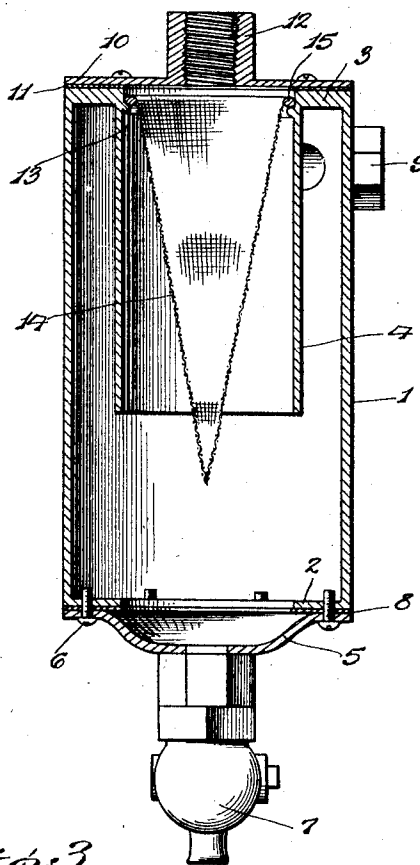
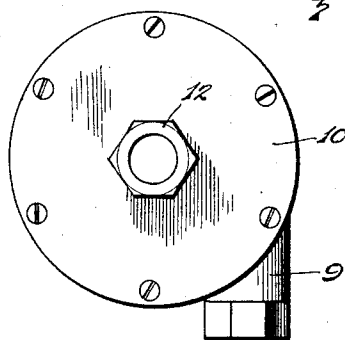


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES A. ROOSEVELT AND LLOYD C. ROOSEVELT, OF SAN ANTONIO, TEXAS.

FILTER.

Application filed October 11, 1921. Serial No. 507,045.

To all whom it may concern:

Be it known that we, JAMES A. ROOSEVELT and LLOYD C. ROOSEVELT, citizens of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented certain new and useful improvements in Filters, of which the following is a specification.

Our invention is a filter intended more particularly for use in connection with internal combustion motors and has for its object the provision of a simple, inexpensive and efficient device whereby all impurities will be removed from gasoline, oil or other liquid. The strainers heretofore employed upon gasoline engines in connection with the carbureters or other parts have frequently become clogged and rendered the operation of the motor unreliable and subjected the user to considerable expense owing to the necessity for frequently cleaning the apparatus. By our invention, we provide a very simple filter in which centrifugal action and gravity are utilized before subjecting the oil or other liquid to passage through a strainer so that the oil or gasoline which passes to the working parts of the motor will be freed of all impurities. The invention is illustrated in the accompanying drawings and will be hereinafter fully set forth.

In the drawings—

Figure 1 is an elevation of a filter embodying our invention;

Fig. 2 is a vertical section of the same;

Fig. 3 is a plan view.

In carrying out our invention, we employ a cylinder 1 which is provided at its lower end with an inwardly projecting flange 2 and at its upper end with an inwardly projecting flange 3 from the inner edge of which an inner cylinder 4 depends. The cylinder with the flanges and the inner cylinder may be a single casting, the inner cylinder or wall terminating short of the lower end of the outer or main cylinder and providing ample space below its open lower end for circulation of the liquid to be filtered without causing agitation of any impurities which may be deposited in the lower end of the outer cylinder. A dished cap plate or head 5 is secured to the lower end of the main cylinder by screws or similar fastenings 6 inserted through the edge

portion of the cap plate and the flange 2 and from the center of this dished cap plate, a drain cock 7 of any preferred construction depends. A packing 8 is interposed between the cap plate and the flange 2 so as to prevent leakage of liquid between the cap plate and the end of the cylinder as will be readily understood. Upon the side of the main cylinder, near the upper end thereof, is an inlet nipple 9 which is preferably arranged tangentially to the cylinder, as shown, although it may be disposed upon a diameter of the cylinder or at any angle intermediate the tangential position and the radial position. A cap plate 10 is secured upon the upper flange 3 and a packing 11 is inserted between the said cap plate and the upper end of the main cylinder to prevent leakage of liquid between the cylinder and the cap plate and an outlet nipple 12 is provided upon the cap plate at the center of the same. Upon the inner surface of the inner cylinder 4, at the upper end thereof, is a bead or projection 13 which supports an inverted conical screen 14, the said screen being preferably formed of very fine mesh wire and provided at its upper end with an annular bead 15 to rest upon the projection 13, as clearly shown in Fig. 2.

The liquid to be filtered is drawn through the filter by a vacuum feeding apparatus or forced into the same by a gravity or force feed device. Entering the cylinder through the inlet 9, the liquid will be forced to travel in a circular path between the inner and outer cylinders, and a swirling action will ensue so that the heavier particles including dust, dirt and water will be separated from the gasoline or oil by the centrifugal action, as well as by the force of gravity, and will settle to the bottom of the outer cylinder. The oil or gasoline will rise through the inner cylinder and will be thereby carried against the under surface of the inverted conical screen 14 and will pass through said screen, the finer particles which may be in suspension in the oil being filtered from the oil and caught by the screen as the oil flows upward therethrough. These finer particles will tend to adhere to the screen while the oil passes through the screen and outlet 12. Should the motor stop, however, or the feeding action be suspended, the oil will have a slight backward flow and this backward flow

will loosen from the screen all particles which may have adhered thereto, said particles then dropping to the bottom of the outer cylinder, as will be readily understood.

5 The accumulation of sediment in the lower end of the outer cylinder may be withdrawn by opening the drain valve 7 at more or less frequent intervals as experience may suggest.

10 It will be readily noted from the foregoing description, taken in connection with the accompanying drawings, that we have provided an exceedingly simple filter which will be entirely automatic in its operation and
15 which will effectually remove from gasoline or oil all objectionable matter. Should the interior of the device require cleaning after long continued use, the fastenings 6
20 tion may be easily withdrawn and the entire interior of the cylinder will then be accessible. The filter screen is held in place by the cap plate 10 but may be easily lifted from the rest or support 13 after the said cap
25 plate 10 has been removed from the cylinder, renewal, cleaning or repairing of the screen being thus facilitated.

Having thus described the invention, what is claimed as new is:

A filter comprising an outer cylinder having an open lower end and provided on its side at its upper end with a tangentially arranged inlet, a dished cap plate secured upon and covering the lower end of the cylinder and provided with a drain valve, an inner cylinder carried by the upper end of the outer cylinder and having a lower open end short of the lower end of the outer cylinder, a cap plate secured upon the outer cylinder and extending over the inner cylinder and provided with a central outlet, a rest at the upper end of the inner cylinder on the inner surface of the same, and an inverted conical filtering screen loosely supported on said rest and depending therefrom through the inner cylinder, the lower end of said screen being below the lower end of the inner cylinder and above the lower end of the outer cylinder.

In testimony whereof we affix our signatures.

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