A. C. BENNETT.

AIR CLEANER.

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1,276,016. Patented Aug. 20, 1918.

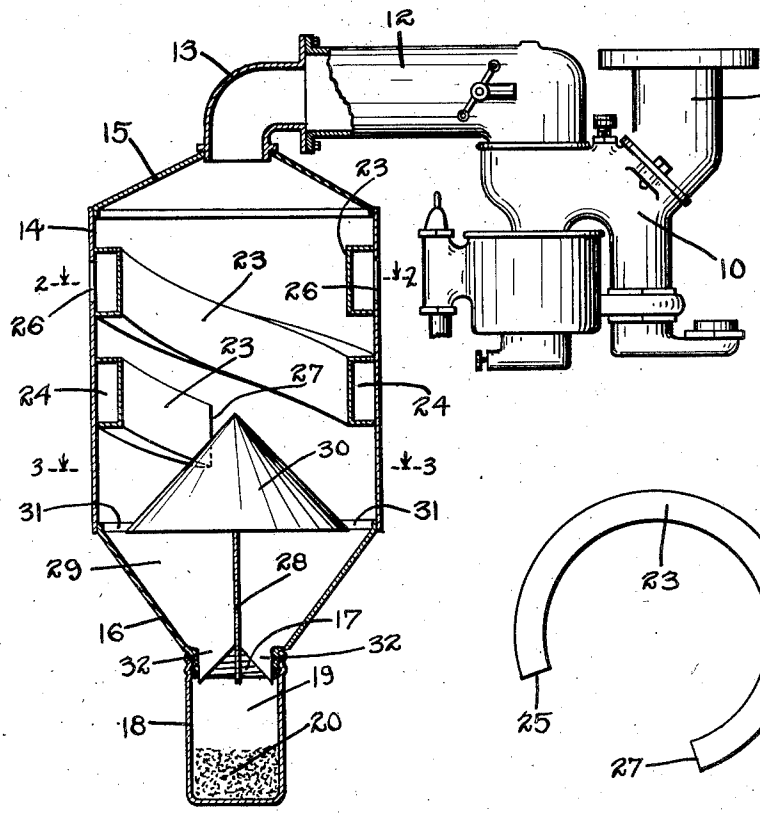
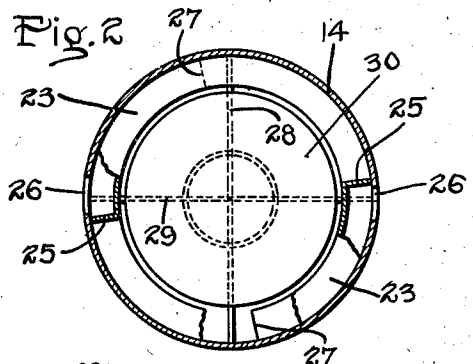


Fig. 1

Fig. 4

Fig. 2



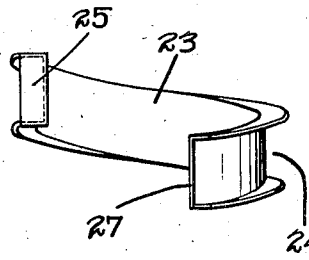


Fig. 5

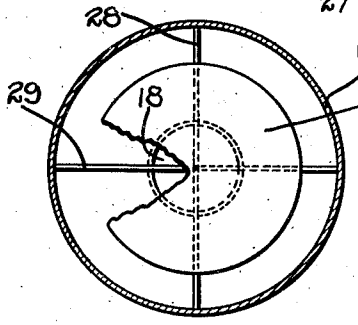


Fig. 3

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UNITED STATES PATENT OFFICE.

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AIR-CLEANER.

1,276,016. Specification of Letters Patent. **Patented Aug. 20, 1918.**

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To all whom it may concern:

Be it known that I, ASHLEY C. BENNETT, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Air-Cleaners, of which the following is a specification.

My invention relates to air cleaners for carbureters, and has for its object to provide such an air cleaner adapted to be connected with the intake passageway of a carbureter wherein means are provided for causing certain movements of the air and material carried by air within the cleaner for causing the same to gravitate within the cleaner into a closed casing at the bottom of the cleaner which is adapted to be removed bodily therefrom with any accumulation of dirt which may have been separated from the air by the cleaner. It is an especial object of my present invention to provide a cylinder having means for causing the air to circulate therein in combination with a conical member positioned in the cylinder and covering a portion of the lower part thereof which forms a dead air settling space, the edges of said conical member being spaced from the walls of the cylinder a distance sufficient to permit the gravitating solid impurities to pass through into the dead air chamber. In combination with this conical member and forming a support therefor are a series of radially extended plates which prevent circulation of air carried below the lower edge of the conical member. A further object of my invention is to provide a separable device for receiving the dirt which is removably attached to the lower portion of the air cleaner, preferably being threaded upon a downwardly converging conical extension of the cylinder before mentioned, the dirt receiver extending entirely below the point of union so that if removed when the engine is running the break will occur above the accumulations of dirt, which will be out of reach of the suction caused at the joint when the same is broken.

The full objects and advantages of my invention will appear in connection with the detailed description thereof, and are particularly pointed out in the claims.

In the drawings illustrating the application of my invention in one form,—

Figure 1 is a side view of a carbureter shown in connection with my invention, partly in section. Fig. 2 is a sectional plan of the same on line 2—2 of Fig. 1. Fig. 3 is a similar sectional plan on line 3—3 of Fig. 1. Figs. 4 and 5 are details showing the manner of forming the spiral passageways.

The carbureter 10, of usual construction, has an outlet pipe 11 and an inlet pipe 12. To this is attached by a union 13 a cylindrical casing 14 connected to the union by a conical extension 15. The casing 14 stands vertically and preferably has connected to the lower portion a converging member 16 which is threaded, as indicated at 17, at its lower end and upon which is screwed an extended cap 18. The cap 18 depends a required distance below the entire receptacle formed by casings 14, 15, 16, and comprises a dust receiving chamber 19 in which dust, indicated at 20, will remain when cap 18 is removed, even though the engine is running so that air would flow into the casing at 17 after the cap is taken off.

A pair of spiral members 23, shown in detail in Figs. 4 and 5, each open along a side as indicated at 24 and closed at an end 25, have their open sides secured by soldering or otherwise to the interior of cylindrical casing 14, with the closed ends 25 just beyond openings 26 through the casing 14, thus forming spiral passageways extending in opposite directions within the casing and closed except for openings 26 to the outside air and at the ends of such passageways, as indicated at 27, which are near the bottom of casing 14.

Within the converging or conical members 16 are vertical radially disposed plates 28—29 which divide the space into four passageways opening at 27 to cap receptacle 18. Extending from members 28—29 into the space 19 of cap receptacle 18 are lips or projections 32 preferably integrally extended from plates 28—29. Upon the plates 28—29 rests a conical member 30 whose lower edge is spaced from the lower edge of case 14 so as to leave an annular passageway 31.

In operation, the pulsating suction of the engine draws air through openings 26 discharging the same at 27 in a direction to cause the air to whirl in, and against the outside wall of, the cylinder immediately above the annular passageway 31. This, assisted by gravity, causes all solid particles to pass through annular passageway 31. The rotating air in passing to carbureter

inlet 12 tends to flow along conical member 30 and through the center of chamber 14. Any particles of solid matter which gravitate upon member 30 are thus agitated in a circular direction on said member and ultimately will fall from the lower edge of the same.

The plates 28 and 29 prevent rotation of air below the lower edge of member 30 and provide dead air settling space through which particles of dirt and solid matter gravitate into cap casing 18. Accumulations in the cap may be removed at any time without stopping the engine by simply unscrewing the cap for emptying.

I claim:

1. An air cleaner comprising a cylindrical casing having means for securing the same in vertical position in communication with an air current inducing means, a pair of openings extending through said casing at opposite sides thereof, a pair of troughlike members within the casing having their upper closed end extending over said openings and their lower open ends at a lower point within the casing, said members forming oppositely extended spiral passageways discharging tangentially at diametrically opposite points within the casing to cause the induced currents of air to rotate in proximity to the wall of the casing in the plane of the discharge points of said passageways.

2. An air cleaner comprising a cylindrical casing, having means for securing the same in vertical position in communication with an air-current inducing means, said casing having an opening near the top thereof and being otherwise sealed from the outside air, and a trough-like member having side and bottom walls and one end wall secured to and supported by the inner wall of the casing so that the closed upper end thereof incloses said opening, said member extending spirally around and down said casing to a point near the lower end thereof and forming in conjunction with said inner wall a spiral passageway for conducting the induced currents of air from said opening and discharging the same in a cyclone within the lower part of the casing.

3. An air cleaner comprising a cylindrical casing, having means for securing the same in vertical position in communication with an air-current inducing means, means inside said casing for directing said air current in the form of a cyclone or whirl within and at the lower part of the casing, and a conical baffle-plate located within the casing with its lower edge spaced from the lower portion of the casing and with its apex extended through the center of said cyclone in the plane where the cyclone is produced within the casing.

4. An air cleaner comprising a casing having a vertical cylindrical portion, means for connecting the upper part of said casing with air-current inducing mechanism, means for admitting air into the casing and directing it in a cyclone at the bottom of the cylindrical portion thereof; a conical baffle having its lower edge spaced from the walls of the casing to form an annular passageway through which dirt and solid impurities are projected and gravitate, said casing being extended below the conical member, and a plurality of vertical partition plates extending from the lower edge of said baffle and dividing said extended portion into a multiplicity of passageways.

In testimony whereof I affix signature.

ASHLEY C. BENNETT.