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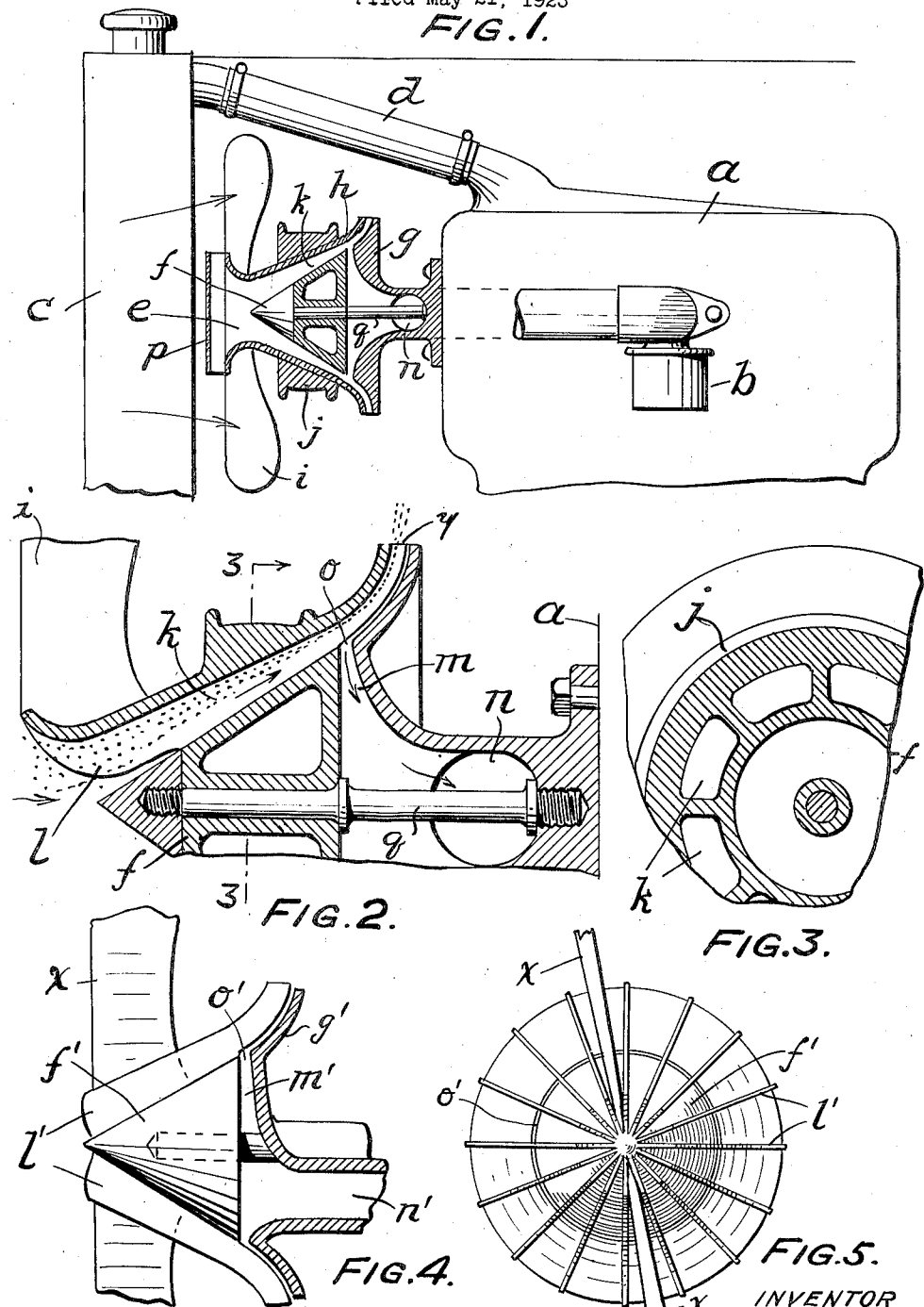
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E. P. DU PONT

AIR CLEANER FOR AUTOMOBILE CARBURETORS

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FIG. 1.



WITNESS:

R. H. Mitchell

INVENTOR

Eleuthere Paul du Pont

BY

Frank S. Russer
ATTORNEY.

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ELEUTHERE PAUL DU PONT, OF MONTCHANIN, DELAWARE.

AIR CLEANER FOR AUTOMOBILE CARBURETORS.

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My invention relates to means for cleaning the air supplied to the carburetors of automobiles.

In the well known type of automobile, the engine is provided with a carburetor the air supply for which is drawn through an intake pipe by suction created in the engine cylinders. The intake pipe receives air usually from some point beneath the hood and near the exhaust pipe of the engine in order that the air supply may be relatively hot, the open end of the pipe either being clear or covered with a screen to minimize the entry of dirt into the carburetor.

The air beneath the hood of the automobile is charged with grit, dust, etc., which is sucked in with the air by the cooling fan, and considerable of such dirt is drawn into the carburetor acting to cut away and clog up its parts. Further, a quantity of the dirt passes with the mixture to the engine cylinders acting to injure the valves and cylinder walls, and such dust is deposited on the walls of the combustion chamber, where it materially increases that deposit familiarly called "carbon", the cause of preignition knocks so annoying to the driver.

Now it is the object of my invention to provide means whereby the air supply drawn into the carburetor will be efficiently cleaned and the injurious grit and dirt removed before the entry of the air into the carburetor.

Having now in a general way indicated the nature, purpose and advantage of my invention, I will proceed with a more detailed description of a preferred embodiment thereof, with reference to the accompanying drawings, in which—

Fig. 1 is an elevational view, partly in section, showing my invention applied to an automobile engine.

Fig. 2 is a sectional view of a device embodying my invention.

Fig. 3 is a sectional view on line 3—3, Fig. 2.

Fig. 4 is a view, partly in section, of a modified form of my invention.

Fig. 5 is an end view of the device shown in Fig. 4.

Referring to Figures 1-3: *a* is the engine of an automobile, *b* the carburetor, *c* the radiator, and *d* the outlet connection from the water jacket of the engine to the radiator. A fan is provided, the hub of which has formed in it a cone-shaped passage *e*,

partly closed at its forward end by means of a conical shaped member *f* pivotally mounted on a fixed shaft *g* so as to be rotatable thereon, and partly closed at its rear end by means of a member *g*, which is fixedly secured to the engine. The members *f* and *g* form with an outer casing *h*, which supports the fan blades *i* and carries a pulley *j*, an annular passage *k*. Ribs *l* extend between the casing *h* and member *f* and act to rotate the air in passage *k* and support casing *h*. A casing *m*, leading to the intake pipe *n* of the carburetor, is connected with passage *k* by means of an annular port *o*. A baffle plate *p* may be positioned before the forward end of the cone-shaped passage *e*.

The operation of the device will be understood from the following: air entering through the radiator passes into the cone-shaped passage *e*. As the members *f* and *h* are rotated by a belt on pulley *j*, the air passes through passage *f* and is given a rapid rotary motion by the ribs *l*, which causes the dust carried by the air to be thrown to the outside of the passage. The cone shape of the passage *e* induces a current of air which travels from *l* to the rear end *y* of the passage and carries out the dust thrown to the outside of the passage by the action of centrifugal force. A part of the air that is on the inside of passage *f* and hence free from dust is drawn through port *o* through passage *m* and into the carburetor intake pipe *n*. The air on the outside of the passage *f* and containing the dirt, passes out at the rear of passage *k*.

Referring now to Figures 4 and 5 in which I have illustrated a modification, the fan *x* is attached directly to the rotatable conical shaped member *f'*. A fixed member *g'* forms with the rear of the conical member *f'* a passage *m'*, leading to the intake pipe *n'* of the carburetor. The general structure and operation of the modification shown in Fig. 4 and 5 is similar to that of Figs. 1-3 except for the elimination of the outer casing *h*, the air being rotated and the dirt thrown off, the clean air passing through port *o'* and passage *m'* to the carburetor intake pipe *n*.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

1. An air cleaner for carburetors comprising an air inlet for a carburetor, a fixed

member in front of said inlet, a rotatable member in front of said fixed member and forming therewith a narrow annular laterally opening port in communication with
 5 said inlet, there being a stream line passage beyond said port for air carrying dirt, whereby the setting up of an eddy current at said port is avoided, and means to rotate
 10 said rotatable member whereby air adjacent said annular port will be subjected to centrifugal action and solid matter removed therefrom.

2. An air cleaner for carburetors comprising an air inlet for a carburetor, a fixed
 15 member in front of said inlet, a rotatable member in front of said fixed member and forming therewith a narrow annular port in communication with said inlet, a casing around said members and forming there-
 20 with a conical passage, means affording a connection between said casing and said rotatable member and means for rotating said casing whereby air passing through said conical passage, will be stratified into
 25 strata of clean air and air with solid matter.

3. An air cleaner for carburetors comprising an air inlet for a carburetor, a fixed
 member, a rotatable member positioned adjacent said fixed member and forming there-
 with a passage to said inlet, a casing surrounding said members and forming an annular passage therewith in communication
 with said first mentioned passage, vanes forming a connection between said casing and said rotatable member, and means to rotate said casing.

4. An air cleaner for carburetors comprising a rotating member, vanes carried by
 said member and adapted to form a vortex
 40 in the air, whereby foreign matter in the air will, under the action of centrifugal force, be thrown to the outer regions of said vortex, the air in the central regions thereof being relatively clean, and a passage in communication with a carburetor opening laterally into the inner regions of said vortex

whereby relatively clean air may be led therefrom to a carburetor, and an unobstructed passage for the air in outer regions of the vortex.

5. An air cleaner for carburetors comprising a rotating member provided with a passage for air, an inlet for air to said passage, means for rotating air in said passage whereby, under the action of centrifugal
 55 force, foreign matter carried by the air will be thrown toward the periphery of said passage and a zone of relatively clean air formed, an outlet from said passage in connection with said passage within the zone
 60 of clean air, an unobstructed outlet from said passage in connection with said passage without the zone of clean air for the passage of foreign matter, and means affording communication between said first mentioned
 65 outlet and a carburetor.

6. An air cleaner for carburetors comprising an air inlet, a rotatable member provided with a passage for air, means for inducing a flow of air through said ro-
 70 tatable member, means for rotating said rotatable member, whereby air in its passage therethrough will be rotated, and an air port in communication with said passage between the ends of the rotatable
 75 member, said port being so located relative to the direction of extension of said passage that air entering said port will be substantially without the influence of centrifugal force, while air passing out at the
 80 end of said passage will be under the direct influence of centrifugal force of the rotatable member, whereby particles of dust entering said passage will, under the influence
 85 of centrifugal force, pass out at the end thereof and the air entering said port will be substantially free from dust.

In testimony of which invention, I have hereunto set my hand, at Wilmington, Del., on this 16th day of May, 1923.

ELEUTHERE PAUL DU PONT.