Feb. 2, 1937. W. W. MOE 2,069,379

AIR CLEANER

Filed March 13, 1936

Fig. 1.

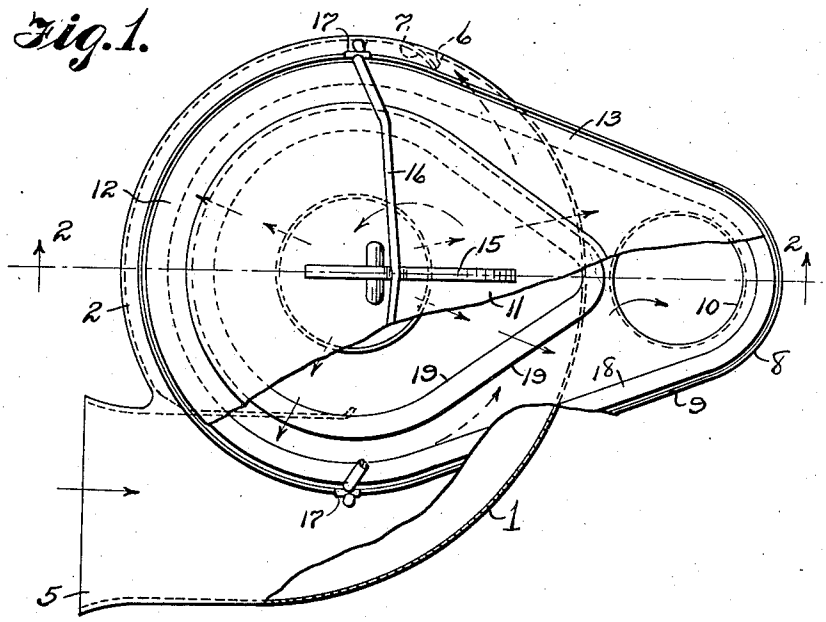
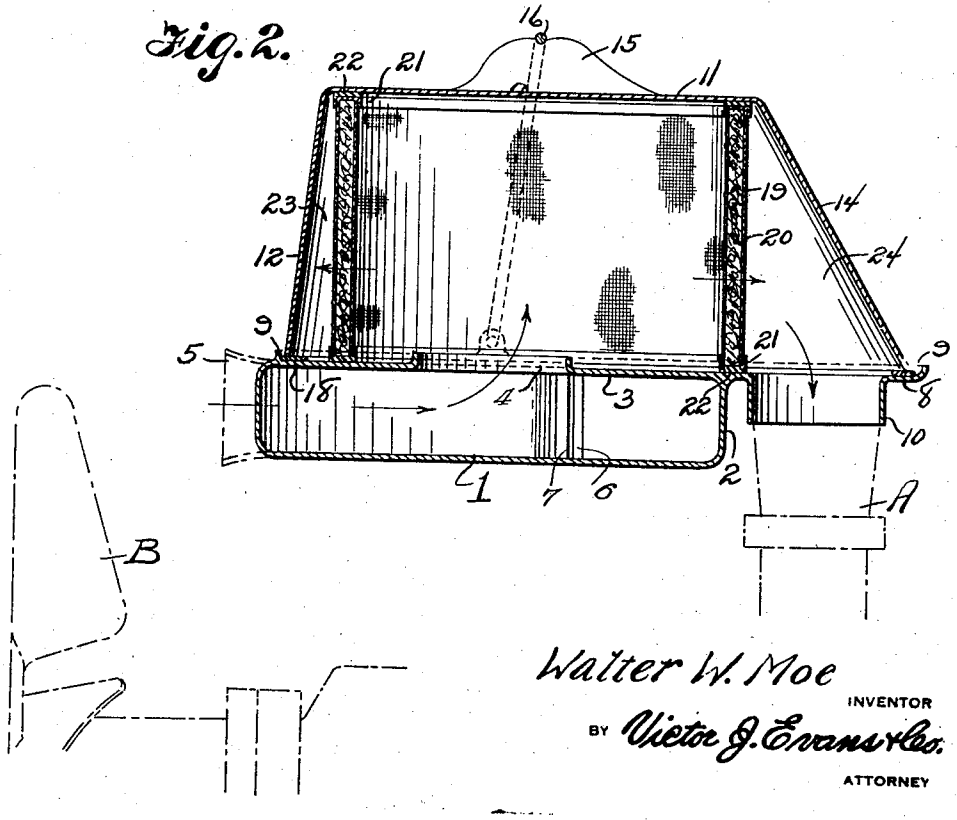


Fig. 2.



Walter W. Moe
INVENTOR

BY Victor J. Evans & Co.
ATTORNEY

Patented Feb. 2, 1937 2,069,379

UNITED STATES PATENT OFFICE

2,069,379

AIR CLEANER

Walter W. Moe, Milan, Minn.

Application March 13, 1936, Serial No. 68,756

2 Claims. (Cl. 183—48)

This invention relates to air cleaners, and its general object is to provide a cleaner primarily designed for use with internal combustion engines, that is capable of thoroughly and completely removing all dirt, dust and other foreign matter from the air before it reaches the engine, and in a manner whereby the larger and majority of the particles are removed and thrown out of the cleaner, by centrifugal force, so as to not accumulate therein, and clog the same, while the remaining particles are caught by removable filtering means, with the result that the air is rendered free from all foreign matter before it passes to the carburetor to be mixed with the fuel.

Another object of the invention is to provide a cleaner designed to be arranged in the path of the air currents created by the fan of the cooling system of the engine, to utilize the currents in forcing air through the cleaner.

A further object of the invention is to provide a cleaner that includes detachably associated parts, to allow for ready access to the interior thereof for any purpose, and particularly for removing the filter for cleaning or replacing the same.

A still further object is to provide an air cleaner that requires very little attention, is simple in construction, inexpensive to manufacture and extremely efficient in use, operation and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a top plan view of the cleaner which forms the subject matter of the present invention, with parts broken away and in section, and illustrates the course that the air takes in passing therethrough, by the use of arrows.

Figure 2 is a vertical sectional view taken through the cleaner and illustrates its application to bring out the association thereof with respect to the fan of the cooling system of the engine.

Referring to the drawing in detail, it will be noted that my cleaner includes what may be termed a lower or air chamber 1 which is preferably of circular formation, in that it includes a circular wall 2, preferably integral with upper and lower walls, the former being indicated by the reference numeral 3 and has a centrally arranged flanged outlet opening 4 therein, with the flange thereof rising from about the edge of the opening, as clearly shown in Figure 2.

The inlet means 5 for the air chamber 1 is in the form of a pipe section that extends laterally from the chamber and is curved to be directed forwardly therefrom, and terminates in an outwardly flared outer end, as best shown in Figure 1. Preferably arranged in the curved wall of the air chamber 1, diametrically opposite the entrance of the inlet means with respect thereto, is a slot or opening 6 that is provided with a baffle 7, and the slot 6 is preferably provided by cutting the metal of the circular wall and disposing the cut portion inwardly to form the baffle. The slot or opening 6 acts as an outlet opening, for dirt, dust and foreign matter, as the air in passing through the air chamber will be given a circular motion due to the shape thereof and thereby throw the foreign matter outwardly by centrifugal force which will cause the same to pass through the slot 6.

The air chamber in fact forms a part of the base section for my cleaner, and formed with the upper wall 3 for disposal flush therewith is a rearwardly extending portion 8 which together with the upper wall 3 has an upturned flange 9 extending about the outer edge thereof, and the extending portion 8 is provided with a downwardly directed nipple 10 to be secured to the air intake pipe A of a carburetor not shown, and the pipe A is disposed whereby the inlet means 5 of the air chamber 1 is arranged in close association to the fan B.

The upper or filter chamber of my cleaner includes a top wall 11, a rounded forward wall portion 12 which merges into converging side wall portions 13, while the rear wall is rounded but slopes downwardly as at 14.

The top wall 11 of the upper or filter chamber has formed therewith and rising therefrom a fin 15 having a notch in the upper end thereof, to act as a keeper for receiving a substantially bail shaped latch member 16 for securing the filter chamber to the lower section and for disposal about the air inlet means 5. The bail shaped latch member has the lower ends of its arms pivotally received by apertured ears 17 which are formed on and rise from diametrically opposite sides of the upper wall 3, and hold the filter chamber or upper section secure to the lower section, with the lower edge of the upper section in fitting association inwardly of the flange 9.

A gasket 18 is disposed between the lower edge and the lower section to provide a leak proof connection, as will be apparent.

The filter is of a shape to follow the general outline of the filter chamber or section and such is of substantial oval configuration, as best shown in Figure 1. The filter is made up of a pair of spaced screen walls 19 which has disposed between the same metallic wool 20, and flanged cap strips are provided at the upper and lower ends of the filter, as shown. The filter is of a height to snugly fit between the upper wall 3 and wall 11, and disposed between the strips 21 and those walls, are gaskets 22. It will be further noted from Figure 2, that the filter is of a size to allow a relatively large air space about the outer side thereof, and which for distinction is indicated by the reference numeral 23 and the downwardly sloping rear wall 14 provides an outlet chamber 24 disposed in direct communication with the nipple 10.

From the above description and disclosure of the drawing, it will be obvious that due to the combined force created by suction in the engine, and the air currents from the fan B, that the air will be forced through the cleaner, and initially within the air chamber 1, wherein the larger and majority of the particles of dirt, dust and foreign matter will be removed from the air by passing through the slot 6. From the chamber 1, the air passes into the filter chamber for disposal directly within the filter, as best shown in Figure 2, thence through the filtering medium for disposal in the air space exteriorly of the filter, and from the air space the air is further forced toward the outlet chamber 24 for passage into the air intake pipe A, with the result it will be seen that the air will be rendered free from dirt, dust and foreign matter before it reaches the carburetor to be mixed with the fuel.

Again, it will be further obvious that the particular shape of the cleaner will offer very little resistance to the air as well as adds to the stream line effect which is becoming an important factor in the present day motor vehicles.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:

1. An air cleaner comprising a lower section including a circular air inlet chamber having an outlet in the peripheral wall thereof, inlet means for the chamber and arranged with respect thereto to produce centrifugal force therein, an upper section including a filter chamber and mounted on the lower section, with the filter chamber communicating with the air chamber, bail means pivotally secured to the lower section, keeper means secured to the upper section for receiving the bail means to detachably secure the sections together, hollow cylindrical filtering means surrounding the communicating means and providing air space exteriorly of the filtering means, and outlet means for the air space and extending from the lower section.

2. An air cleaner comprising a relatively flat substantially circular lower section providing an air inlet chamber having an outlet in the peripheral wall thereof, inlet means for the chamber and including a pipe section extending tangentially from said wall to produce centrifugal force within the chamber by the passage of air therethrough, a relatively large substantially oval shaped upper section providing a filter chamber and resting upon the lower section with the air chamber of the latter communicating with the filter chamber, said upper section having a downwardly inclined rear portion providing outlet means for the filter chamber, a downwardly directed nipple on the lower chamber with the outlet means of the filter chamber registering therewith, hollow substantially oval shaped filtering means within the filter chamber and following the shape thereof, said filtering means cooperating with the upper and lower walls of the respective chambers to enclose the communicating means and arranged to provide an air space exteriorly thereof in communication with the filter chamber outlet means, and bail and keeper means detachably securing the sections together.

WALTER W. MOE.