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J. B. SEBOK

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HOOD AND AIR CLEANER MOUNTING ASSEMBLY

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2 Sheets-Sheet 1

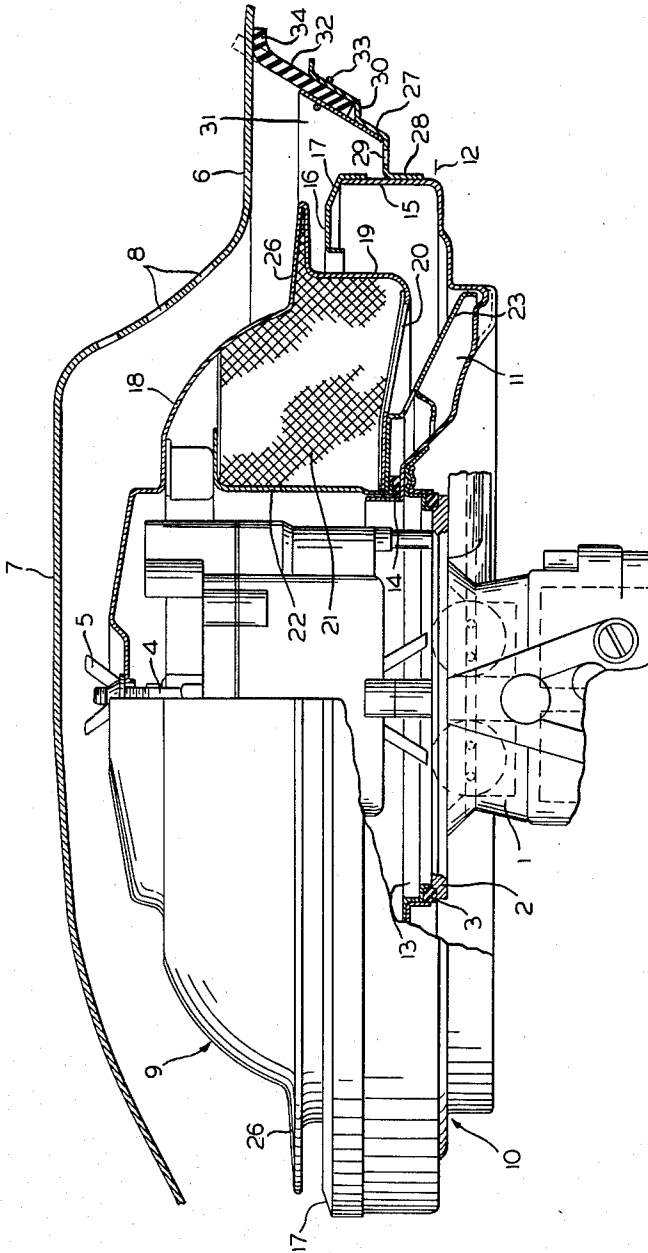


Fig. 1

INVENTOR.
JOSEPH B. SEBOK

BY

Hill, Sherman, Meroni, Gross & Simpson

ATTORNEYS

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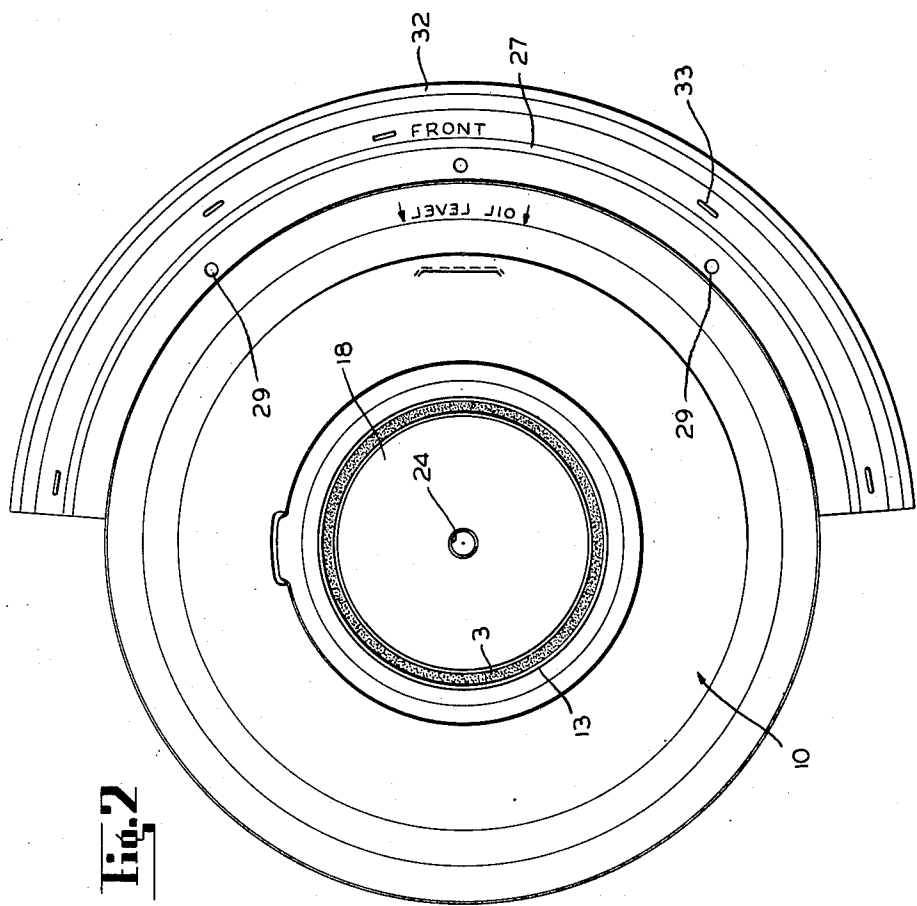


Fig. 2

INVENTOR.
JOSEPH B. SEBOK

BY

Schill, Sherman, Meroni, Gross & Simpson
ATTORNEYS

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HOOD AND AIR CLEANER MOUNTING ASSEMBLY

Joseph B. Sebok, Dearborn, Mich., assignor, by mesne assignments, to Purolator Products, Inc., Rahway, N. J., a corporation of Delaware

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4 Claims. (Cl. 180—54)

This invention relates to improvements in an air cleaner assembly, and more particularly to an air cleaner of the liquid bath type highly desirable for the cleansing of air entering the carburetor of internal combustion engines, for air compressors, and other apparatus requiring a supply of clean air, the air cleaner being specially designed for disposition in a limited space.

In the past, extreme difficulty has been experienced in mounting air cleaners for automotive vehicle engines underneath the hood of the vehicle, because of the limited space. Obviously, the air cleaner must be of sufficient size to adequately supply the engine with clean air. It has been proposed to provide an elevation in the vehicle hood to accommodate the carburetor on the air cleaner, and here again extreme difficulty arose owing to the fact that the elevation of the hood must be provided with ventilation openings through which rain may enter, and the air cleaner dare not receive water in the oil sump. Further, in such a location the air cleaner may receive charges of hot air from the engine fan blowing the air directly from the radiator. Should the air entering the cleaner be too warm, vapor lock might result in the carburetor, and in any event the engine efficiency will be lowered.

With the foregoing in mind, it is an important object of this invention to provide a liquid bath air cleaner structure that will provide adequate capacity and yet fit within a limited space, the air cleaner being so constructed as to discharge any water tending to enter the inlet.

Another important object of the invention is the provision of an air cleaner having sealing means in the forward portion thereof below the inlet to the cleaner to effect a seal with another part of the vehicle and prevent warm air being blown directly into the cleaner by the engine fan.

A further object of the invention resides in the provision of an air cleaner for an internal combustion engine to be mounted beneath the hood of a vehicle, the air cleaner carrying a resilient air sealing element in the front portion thereof which effects an air seal with the hood of the vehicle.

A further object of the invention resides in the provision of an air cleaner equipped with both a watershed and a resilient air sealing element with means carrying the sealing element and also functioning as a drain for the watershed.

Another object of the invention is the provision of an economical and efficient liquid bath air cleaner for disposition beneath an elevation in the hood of a vehicle, the air cleaner automatically preventing the entrance of hot air blasts, and also eliminating any water that may enter by way of ventilation openings in the hood elevation.

While some of the more salient features, characteristics and advantages of the instant invention have been above pointed out, others will become apparent from the fol-

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lowing disclosures, taken in conjunction with the accompanying drawings, in which—

Figure 1 is a fragmentary part elevational part vertical sectional view of an air cleaner embodying principles of the instant invention operatively associated with the carburetor of an internal combustion engine beneath the hood of a vehicle; and

Figure 2 is a bottom plan view of the air cleaner itself removed from the carburetor.

As shown on the drawings:

The illustrated embodiment of the instant invention is shown in operative association with a carburetor 1 which may be any suitable type of carburetor for supplying a fuel mixture to an internal combustion engine (not shown). The carburetor in a lower portion thereof is provided with a platform 2 having suitable openings in the interior for the admission of fuel and air, and which is shaped around its upper bounding edge to seat a gasket 3 carried by the air cleaner structure to be later described. It will be noted that much of the carburetor extends above the platform and the upper part of the carburetor is housed or enclosed by the air cleaner. At the top thereof, the carburetor is provided with an upstanding stud 4 fixed to the carburetor, which stud has a threaded end for engagement by a wing nut or the like 5 to removably hold the air cleaner in proper position over the carburetor.

It will be noted that in the illustrated instance the carburetor and air cleaner are disposed immediately beneath a hood 6 of the vehicle, this hood having an elevated portion as indicated at 7, and the forward part of this elevated portion or the inclined front face thereof may be provided with ventilation openings 8. A part of the air cleaner and the carburetor extend upwardly inside the hood elevation as seen in Fig. 1.

The air cleaner itself comprises a casing divided into separable sections, an upper section generally indicated by numeral 9, and a lower section generally indicated by numeral 10.

The lower casing section 10 is shaped to define a sump 11 for cleansing liquid which may have an initial or starting level as indicated by the dotted line 12. Inside the liquid sump the lower casing section is provided with a depending portion 13 which carries the aforesaid gasket 3. Immediately above that portion 13, the lower casing section is shaped to support a gasket 14 on which the inner part of the upper casing section may seat.

The outer wall of the lower casing section is substantially cylindrical as indicated at 15, and this wall is provided with an inwardly extending lip 16 the outer portion of which slopes outwardly and downwardly as indicated at 17. The wall 15 of the lower section is of greater diameter than the outer wall of the upper section so as to provide an annular air inlet passageway between the casing sections. The lip 16 covers the outer and major portion of this passageway, but terminates sufficiently short of the upper casing section to admit an adequate quantity of air.

The upper casing section 9 includes a cover 18 which, as illustrated, may be formed integrally with the outer cylindrical casing wall 19, if desired. The wall 19 curves inwardly and is provided with large openings as indicated at 20 through which air might travel over the liquid sump and into a filter mass 21 between the cover and outer wall 19 and an inner wall 22 which provides not only an outlet for clean air but also a housing for the carburetor 1. This upper casing section also carries a baffle 23 which extends down into the liquid sump to limit the quantity of cleansing liquid that may be carried into the filter element by traveling air. The junction

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between the inner wall 22, the baffle, and the bottom of the filter compartment seats upon the aforesaid gasket 14 to effect an air tight seal. The aforesaid threaded stud 4 on the carburetor extends through an aperture 24 (Fig. 2) in the cover 18 and when the wing nut 5 is tightened, the lower section is pressed against the carburetor platform at the gasket 3, and the upper section is pressed against the gasket 14 so that the structure is firmly mounted in assembled position. When the wing nut 5 is released, the upper section may be lifted out of the lower section, and the lower section then lifted from the carburetor for servicing.

Now as will be noted from the showing in Fig. 1, the space beneath the hood 6 of the vehicle is quite limited, and the air cleaner approaches very closely to the hood. Accordingly, there is grave danger of moisture from dew, condensation, rain, etc., entering the ventilation openings 8 in the elevated portion of the hood and lodging in the liquid sump of the air cleaner. In order to eliminate this, it will be noted that the upper casing section is provided with a watershed 26 which has a downward slope as seen clearly in the left-hand portion of Fig. 1, and which watershed extends outwardly over the inlet opening, and over a part of the lip 16, so that any water accumulating on the cover of the air cleaner, will gravitate from the watershed onto the sloping portion 17 of the lip 16. There is little possibility, therefore, of this water entering the liquid sump of the air cleaner. In the rear portion of the air cleaner, the water may gravitate from the sloping portion 17 of the lip 16 down into the engine compartment where it will cause no injury.

However, in view of the fact that the air cleaner is so closely mounted to the hood of the engine, and may be disposed fairly close to the engine fan, it is desirable to block a direct blast of hot air by the fan through the car radiator directly toward the inlet opening of the air cleaner. Consequently, the front portion of the air cleaner is provided with air sealing means now about to be described to eliminate any such blast of hot air.

To this end, a flange member 27 is secured by a depending portion 28 to the outside of the wall 15 of the lower casing section, well below the lip 16 or inlet opening. The flange extends laterally above the portion 28 to form in effect a channel, which receives moisture descending over the sloping part 17 of the lip 16. The bottom of this channel portion is provided with a plurality of drain openings 29 for the exit of the water. Above the sloping portion, the flange 27 is stepped outwardly as indicated at 30 and then again extends upwardly and outwardly at an inclination. Inside this flange portion is another inclined flange member 31 secured to the flange 27 below the step 30 so as to provide a space between these two members. Into that space a resilient air seal 32 is secured, and the securement may be enhanced by the use of one or more staples 33 or the equivalent extending through both flange members 27 and 31. A satisfactory substance for the air seal flange 32 is a cork and rubber composition so the flange will be both flexible, and have sufficient inherent resiliency to tend to assume its original shape at all times, which is an upward and outward inclination throughout its width as indicated by the dotted lines in Fig. 1. As seen in Fig. 2, this flange extends substantially half way around the air cleaner, and covers the forward portion of the air cleaner. The sealing element 32 is of sufficient width to abut the hood 6 and be turned downwardly slightly by the hood as indicated at 34 in Fig. 1 and thus establish an air seal with the hood, effectively preventing hot air being blasted into the cleaner by the engine fan.

From the foregoing, it is apparent that I have provided an efficient liquid bath air cleaner for installation in an extremely limited space, and one that is highly satisfac-

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tory for installing immediately adjacent the hood of a vehicle, and beneath an elevation in that hood. Adequate means are provided to effectively dissipate any moisture that may enter through ventilation openings in the hood and prevent that moisture from settling in the liquid sump of the air cleaner, and at the same time adequate means are provided to effect an air seal to prevent blasts of hot air from the engine fan entering the air cleaner. It will be noted, however, that while the sealing element 32 prevents hot air from the fan entering the cleaner, it does not block the cleaner inlet to the rear of the sealing element. There is plenty of room behind the flange for air to enter the inlet opening of the air cleaner entirely therearound, so that all of the air does not enter the rear portion of the air cleaner and cause turbulence of the sump liquid or inefficient operation by unequal distribution. The entire structure is economical, readily serviced, and highly durable.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claim as my invention:

1. In combination, a vehicle hood having an elevation therein, an air cleaner having an annular air inlet disposed beneath the hood elevation, said cleaner extending into the space under the elevation, upwardly and outwardly extending resilient sealing means on the forward part of said cleaner to contact the hood beyond the forward edge of the elevation, the forward part of said elevation having vent openings therein, a sloping watershed on the cleaner beneath said openings and above said air inlet and extending laterally beyond said inlet, and a channel member below said air inlet having drain ports in the bottom to receive moisture from the watershed, said channel member carrying said sealing means.

2. In combination, a vehicle having an engine compartment and a hood over said compartment with an elevation therein, the forward part of said elevation having vent openings therein, an air cleaner mounted in the engine compartment and projecting into the space under said elevation, said air cleaner having an annular air inlet, and resilient sealing means on said air cleaner extending upwardly over the forward part of said inlet into sealing engagement with said hood forward of said elevation.

3. In combination, a vehicle having an engine compartment with a hood over said compartment with an elevation therein, the forward part of said elevation having vent openings therein, said hood being movable between open and closed positions, an air cleaner carried by the engine in said compartment and projecting into the space under said elevation, said cleaner having an annular inlet, and a resilient flange secured to said air cleaner and normally extending obliquely upwardly over and beyond the forward part of said inlet into sealing engagement with said hood when in closed position, said hood forcing the upper margin of said flange out of its normal position to effect such sealing engagement.

4. In combination, a vehicle having an engine compartment and a hood over said compartment with an elevation therein, the forward part of said elevation having vent openings therein, an air cleaner, a casing having an annular air inlet and an outlet for clean air spaced therefrom, and a resilient flange carried by said casing around the forward part thereof, said flange extending upwardly over and beyond said inlet in spaced relation thereto into sealing engagement with said hood forward of said elevation, channel means on the exterior of said casing carrying said flange and having drain ports therein, and a watershed spaced above said inlet and extending outwardly thereover to discharge into said channel means.

References Cited in the file of this patent

UNITED STATES PATENTS

1,855,038	Walker	Apr. 19, 1932
1,859,644	Altgelt	May 24, 1932
1,873,252	Altgelt	Aug. 23, 1932
1,957,919	Tice	May 8, 1934
2,002,165	Winslow	May 21, 1935
2,058,204	Ball et al.	Oct. 20, 1936

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2,652,901	Moller	Sept. 22, 1953
2,670,055	Dorman et al.	Feb. 23, 1954
2,701,024	Thomas	Feb. 1, 1955
2,788,086	Sebok	Apr. 9, 1957

OTHER REFERENCES

"Ford Field," publication; March 1954; article entitled "Thunderbird"; pages 24 and 25.