CARBURETOR AIR DELIVERY SYSTEM


Assignee: Chrysler Corporation, Highland Park, Mich.

Filed: Sept. 8, 1969

Appl. No.: 885,892

U.S. Cl. 55/385, 55/419, 55/DIG. 28, 123/122 D, 261/64 R

Int. Cl. F02m 31/14

Field of Search 55/385, 419, 123/122 D; 261/64 R

References Cited

UNITED STATES PATENTS

1,784,006 12/1930 Hall.................................55/DIG. 28
1,931,039 10/1933 Steensen..........................123/122 D
1,933,365 10/1933 Chandler et al......................123/122 D
2,058,204 10/1936 Ball et al..........................123/122 D
2,356,452 8/1944 Fedden et al.........................123/122 D X
2,781,032 2/1957 Sebok et al..........................123/122 D
2,875,840 3/1959 Klemm...............................123/122 D X
2,881,860 4/1959 Ternes...............................55/385 X
3,481,117 12/1969 McKinlay............................55/385

Primary Examiner—Tim R. Miles

Attorney—Harness, Talbutt and Baldwin

ABSTRACT

An air delivery system for the carburetor of the engine of a motor vehicle in which cold outside air is taken in through laterally spaced scoops on the vehicle hood and then directed laterally to the opposite sides of a hood mounted chamber sealingly receiving the carburetor air cleaner; a door is provided in each lateral air duct and these doors may be selectively moved by a control member in the passenger compartment between a "cold air" position in which the doors open the ducts to allow cold outside air to enter the carburetor and a "warm air" position in which the doors block the flow of outside air through the ducts but open up a passage through the ducts for the delivery of warm under-hood air to the carburetor.

6 Claims, 5 Drawing Figures
CARBURETOR AIR DELIVERY SYSTEM

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an upward air delivery system for the carburetor of the engine of a motor vehicle.

A more specific object is to provide a carburetor air delivery system for a motor vehicle whereby the vehicle operator may selectively provide warm under-hood air or cold outside air to the carburetor.

In the air delivery system of the invention, an opening is provided in the hood of the vehicle and conduit means fixedly secured to the underside of the hood provide an air passage communicating at one end with the hood opening and at its other end under the hood. Means are also provided which are operative with the hood in its closed position to provide sealed air communication between the carburetor and the other end of the air passage, and port means are provided in the conduit means to provide communication between the air passage and the underside of the hood. A door is mounted on the conduit means and control means, including a control member positioned within the passenger compartment, and provided to enable the operator, by the manual manipulation of the control member, to move the door selectively between a "cold" air position in which the under-hood port means are blocked and the air passage is open to deliver cold outside air to the carburetor through the hood opening, and a "warm air" position in which the air passage is blocked upstream of the port means and the port means are opened to admit warm under-hood air to the carburetor.

These and other objects, features and advantages of the invention will be apparent from the detailed description of the preferred embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the invention is illustrated in the accompanying drawings in which:

FIG. 1 is a top fragmentary view of a motor vehicle embodying the carburetor air delivery system of the invention;
FIG. 2 is a perspective fragmentary view of the motor vehicle of FIG. 1 showing the hood in a raised position;
FIGS. 3 and 4 are cross sectional views taken respectively in line 5—5 and line 6—6 of FIG. 1; and
FIG. 5 is a fragmentary schematic view looking in the direction of the arrow 5 in FIG. 4.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The motor vehicle seen fragmentarily in the drawings includes a roof 10, doors 12 and 14, windshield 16, front quarter panels 18, 20, grille 22, headlamps 24, and hood 26. Roof 10, doors 12 and 14, and windshield 16 together define a passenger compartment 27, and hood 26 overlies an engine compartment 28 housing an engine 30. Hood 26 is mounted for movement between the closed position of FIG. 1 and the raised position of FIG. 2 by hood hinge structures 32 of known construction.

Hood 26 is of known sandwich construction and includes an outer panel 34 and an inner, reinforcing panel 36 suitably welded to outer panel 34. Hood inner panel 36 is not a solid panel but rather comprises an imperforate outer periphery surrounding a generally spindly central rib network to provide a plurality of cutouts selectively exposing the underside of hood outer panel 34. Outer panel 34 is provided with two forwardly opening air scoops 38, 40 positioned on top of hood outer panel 34 at opposite sides of the vehicle centerline; scoops 38, 40 directly overlie openings 42, 44 provided in the portions of hood outer panel 34 overlying generally triangular-shaped areas 46, 48 in hood inner panel 36.

A conduit structure, seen generally at 50 and formed of phenolic or other rigid material, is provided for connection with each hood opening 42, 44. Each conduit structure 50 includes a main body tubular structure 52 defining a laterally inwardly extending air passage 54, and a hollow lower structure 56 extending integrally upwardly from the outerward end of tubular structure 52 to seat at its upper end in hood opening 42 or 44 with a downturned flange 42a, 44a around the hood opening coacting with a tower flange 56a to establish the seating. A longitudinally arranged row or ports 57 is provided in the bottom panel of each tubular structure 52 adjacent the inboard end of structure 52. The outboard end of each conduit structure is fixedly secured to the underside of the hood by a plurality of screws 58 passing through a flanged 59 provided on the outboard edge of tubular structure 52 for engagement with the adjacent peripheral portion of hood inner panel 36; the inboard end of each conduit structure is secured to the underside of the hood by a screw 60 passing through a bracket 61 carried by the inboard end of tubular structure 52 for engagement with the adjacent hood inner panel portion.

The inboard end of each tubular structure 52 opens into a chamber 62 defined by two generally oval upper and lower chamber structure halves 64, 66 having mating outboard peripheral flanges 64a, 66a suitably secured together. Member 64 has a stepped up portion 64b at each lateral side so that the halves in assembled location together define a generally rectangular opening 71 at either lateral side of chamber 62 for telescopic receipt of the selective manipulative control member.

The engine 30 includes a carburetor 76, and an air cleaner 78 is positioned on top of carburetor 76. Air cleaner 78 is of known form and is held in sandwiched relation between its base structure 80 and lid member 82 by a wing nut 86 threaded on a bolt 87 upstanding from the upper end of carburetor 76. Base structure 80 includes an external peripheral flange 88 extending completely around the air cleaner and defining at its upper face an angled annular sealing seat 89. The longitudinal side portions 89a of seat 89 lie in planes tangent to an imaginary engine roll orbit 90 centered on the engine roll axis 91. Air cleaner 78 may have the same oval configuration as chamber 62 but is somewhat smaller in exterior dimension than chamber 62. With hood 26 in its closed position, air cleaner 78 is received within chamber 62 and is supported and annularly sealed by the chamber structure 64, 66; gasket member 66b defined by lower chamber structure member 66 seats sealingly against annular sealing seat 89 of air cleaner flange 88 so that the only air entrance into chamber 62 is through conduit passages 54. Air may in turn enter passages 54 either through hood openings 42, 44 or through port rows 57.

A door or air valve 93 is provided in each passage 54 between port row 57 and hood opening 42, 44. Each door 93 comprises an elongated vane secured along its lower edge to a pivot rod 94. Each rod 94 extends parallel to and immediately outboard of port row 57 and is pivotally received at its opposite ends in a journal molded into the bottom panel of conduit structure 52. Rotary movement of rods 94 move doors 93 selectively between the vertically disposed positions of FIG. 3 in which port rows 57 are uncovered and passages 54 blocked upstream of port rows 57, and a horizontally disposed positions in which passages 54 are open and port rows 57 are covered.

The two air doors 93 are ganged together for joint movement by a bowden cable 95 (FIG. 5) extending between crank arms 94a formed on the rear end of each rod 94, and another bowden cable 96 extends from right hand crank arm 94a and passes through a grommet 97 in the vehicle firewall into pas...
3
senger compartment 27 where it terminates in a control knob 98 supported beneath instrument panel 100 by a suitable bracket 102 anchoring the end of the bowden cable sheath. Bowden cables 95, 96 are supported and directed by suitable brackets 104 secured to any convenient portion of the overall hood assembly.

The described air delivery system enables the vehicle operator to select between relatively cold outside air or relatively warm under-hood air for delivery to the carburetor. With control knob 98 in the extended solid line position of FIG. 4, air doors 93 are disposed in the vertical solid line positions of FIG. 3 in which passages 54 are blocked and warm under-hood air is delivered to the carburetor through port rows 57. When control knob 98 is pushed in to the dotted line position of FIG. 4, air doors 93 are pivoted to their horizontal positions in which port rows 57 are covered and passages 54 are opened to allow cold outside air to be ram conducted to the carburetor through hood openings 42, 44. Gasket member 66b maintains its sealing engagement with air cleaner flange seat 89 irrespective of engine rock since flange seat portions 89a, by virtue of their tangential relation to the rock orbit, are not vertically displaced relative to the gasket member in response to engine rock but rather slide sealingly relative to the gasket member without generating any substantial distortion of the gasket.

While a preferred embodiment of the invention has been illustrated and described in detail, it is to be understood that various changes may be made in the disclosed embodiment without departing from the scope or spirit of the invention as defined by the appended claims.

We claim:
1. In an air delivery system for a motor vehicle having an engine compartment, an engine in said compartment having an air inlet means for combustion supporting air, said inlet means including an air filter, a hood for said compartment movable between closed and open positions, a chamber for said air cleaner comprising wall portions carried by said hood and having air inlet port means for conducting air into said chamber, said wall portions having flange means interengaging with said inlet means to provide communication between said filter and chamber and to close the latter for the admission of air thereto only through said inlet port means when said hood is in said closed position, air duct means carried by said hood and communicating with said inlet port means of said wall portions for supplying air thereto, air inlet port means in said hood communicating between the atmosphere at the exterior of said hood and said duct means for supplying atmosphere air to the latter, air inlet port means in said duct means communicating with said engine compartment for conducting air therefrom into said duct means, and control means for selectively controlling the air flow through said port means in said hood and duct means.
2. In an air delivery system according to claim 1, said hood comprising inner and outer panels integral with said wall portions and with said duct means, said wall portions depending from said hood around said filter in said closed position, said inlet means of said engine having a flange extending around said filter adjacent a lower portion of the latter, and said flange means of said wall portions comprising flexible resilient material yieldingly engaging said flange of said inlet means in sealing relationship when said hood is in said closed position.
3. In the combination according to claim 2, said flange of said inlet means having portions at opposite sides of the axis of engine rock extending generally normally to a radial line from said axis to reduce distortion of said flange means of said wall portions upon rocking of said engine.
4. In a motor vehicle having a passenger compartment, an engine positioned forwardly of said passenger compartment and having an air inlet, and a movable hood adapted in a closed position to overlie said engine and being movable to a raised position to provide access to said engine, an air delivery system for said engine comprising:
   A. duct means operative with said hood in its closed position for delivering air to said inlet from outside of said hood;
   B. said air inlet having an external peripheral flange;
   C. said duct means comprising a gasket for engaging said flange in sliding sealing relationship to sealingly position said air inlet within said duct means when said hood is in said closed position;
   D. portions of the upper face of said flange angling outwardly and downwardly from said air inlet and lying in planes that are generally tangential to an imaginary circle centered on the axis of engine rock, whereby to substantially preclude distortion of said gasket upon rocking movement of said engine.
5. In a motor vehicle having a passenger compartment, an engine positioned forwardly of said passenger compartment and having an air inlet for receipt of combustion air, and a movable hood adapted in a closed position to overlie said engine and being movable to a raised position to provide access to said engine, an air delivery system for said engine comprising:
   A. means defining an opening in said hood;
   B. conduit means fixedly secured to the underside of said hood and providing an air passage communicating at one end with said hood opening and opening at its other end under said hood;
   C. means operative with said hood in its closed position to provide sealed air communication between said air inlet and said passage other end;
   D. the last named means including a chamber structure fixedly secured to the underside of said hood and defining a downwardly opening chamber therewithin;
   E. said air inlet including an external peripheral flange;
   F. said chamber structure including a peripheral gasket adjacent its lower edge for engaging said flange in sealing relationship to sealingly position said air inlet within said chamber when said hood is in said closed position;
   G. said passage other end opening into said chamber to provide an air delivery path extending from said hood opening, through said passage, into said chamber, and thence through said air inlet;
   H. portions of the upper face of said flange angling outwardly and downwardly from said air inlet and lying in planes that are generally tangential to an imaginary circle centered on the axis of engine rock, whereby to substantially preclude distortion of said gasket member upon rocking movement of said engine.
6. In an air delivery system according to claim 5,
   I. port means in said conduit means providing communication between said passage and the underside of said hood;
   J. a door mounted on said conduit means movable between 1. a first position in which said port means is blocked and said passage is open, and
   2. a second position in which said port means is open and said passage is blocked upstream of said port means; and
   K. control means, including a control member accessible to an operator positioned within said passenger compartment, operative in response to operator actuation of said control member to selectively move said door between its said first and second positions and thereby enable the operator to selectively deliver relatively cold outside air to said carburetor through said hood opening or relatively warm under-hood air to said carburetor through said port means.