L. W. GRISWOLD.

AIR CONTROL DEVICE FOR ENGINES.

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1,352,509.

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Fig 1

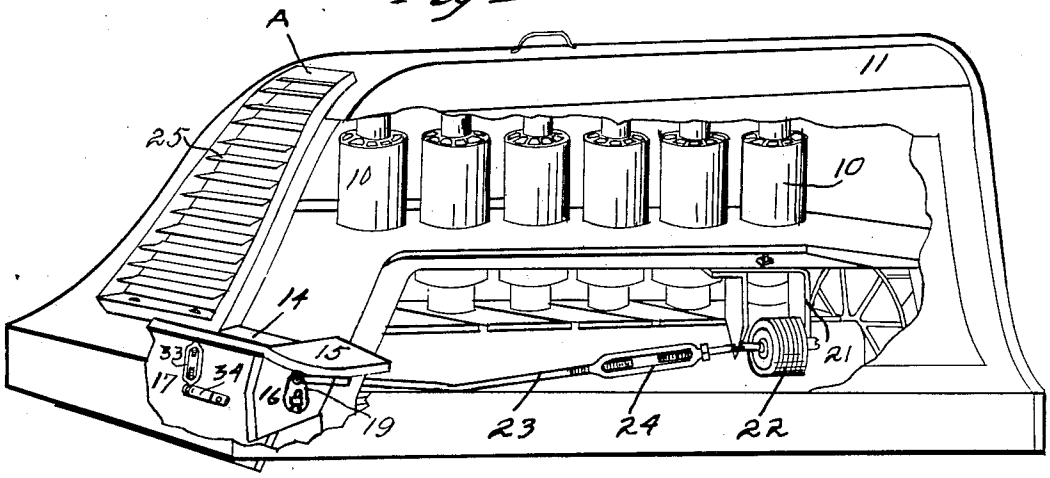


Fig 4

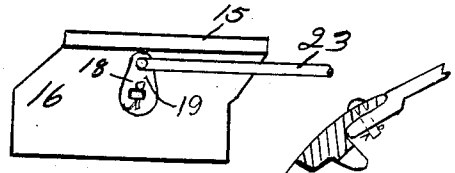


Fig 3

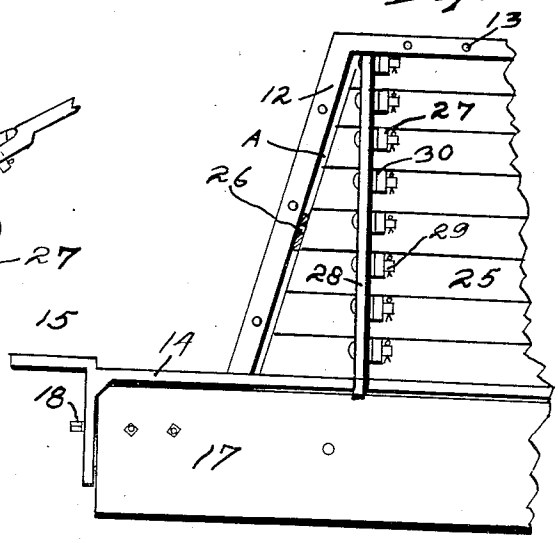


Fig 2

INVENTOR

Leslie W. Griswold

By Orwig & Bair Atty's

UNITED STATES PATENT OFFICE.

LESLIE W. GRISWOLD, OF DES MOINES, IOWA.

AIR-CONTROL DEVICE FOR ENGINES.

1,352,509. Specification of Letters Patent. Patented Sept. 14, 1920.

Application filed January 24, 1920. Serial No. 353,845.

To all whom it may concern:

Be it known that I, LESLIE W. GRISWOLD, a citizen of the United States, and a resident of Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Air-Control Device for Engines, of which the following is a specification.

The object of my invention is to provide an air controlled device of simple, inexpensive and efficient construction involving shutter means, and an automatic control therefor.

More particularly it is my object to provide such a device peculiarly adapted for use with air cooled engines of the type having a hood, which tilts forwardly, and which is provided in many cases with upper and lower air openings.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which:

Figure 1 shows a perspective view of an engine and hood equipped with an air controlled device embodying my invention, part of the hood being broken away to show the other parts.

Fig. 2 shows a vertical, sectional view through the shutter mechanism at the front of the hood.

Fig. 3 shows a rear elevation of the shutter devices partly broken away; and

Fig. 4 shows an enlarged, detail view of part of the controlling mechanism.

It is well-known that with various types of automobile engines, particularly with air cooled engines, it is common to have a hood which tilts. In several types of automobiles the hood is provided with upper and lower openings at the front so as to afford sufficient air for cooling the engine.

The air is usually, in some engines, drawn through the hood past the cylinders and discharged at the lower rear part of the engine.

Frequently a pump or fan is used near the fly wheel for drawing the air through the hood.

It is well-known that with engines of the air-cooled type the engine is designed for operation at a maximum efficiency, when the outside air is at some certain temperature.

While the engine can be operated, and with considerable practical success under varying conditions of temperature, it is known that especially in cold weather the efficiency of the engine is very much reduced, because of over-cooling.

It is also well-known that if the engine heat, after the engine has been running for a short time, can be maintained at a certain predetermined proper temperature, the engine can be run with much greater efficiency than otherwise.

I have provided a device whereby the engine can thus be maintained at the proper heat.

In the accompanying drawings I have used the reference numeral 10 to indicate generally an air cooled internal combustion engine of the general type used on well-known Franklin automobiles.

The engine 10 is covered by a hood 11 which in the illustration shown and on the cars of the type mentioned is raised by tilting upwardly and forwardly. The hood 11 is provided in its forward portion with an opening of considerable size for admitting air, and ordinarily at the lower part of the hood in front there is also another opening.

I have provided a shutter device which can be mounted on the hood, and an automobile controlling device which is also mounted on the hood, so as to be movable with the hood and not interfere in any way with free access to the engine parts.

My device includes a frame arranged to fit the first described opening at the front part of the hood, which frame is indicated generally by the reference character A. The frame A is provided with upper and side flanges 12 designed to fit against and be fastened to the hood by bolts or rivets extending through the holes 13 in said flange.

Connected with the lower member of the frame A is a transverse frame member 14, which may be made integral with the frame A or may be detachably secured thereto.

The frame member 14 projects laterally beyond the frame A, as illustrated for instance in Figs. 1 and 3.

On the ends of the frame member 14 are fixed closure members 15, adapted to close the ends of the lower opening in the hood.

On the frame member 14 near the ends thereof are downward extensions 16.

Mounted in the lower opening, indicated generally at B in Fig. 2, is a shutter device

17 having at its ends spindles 18, one of which has its outer end angular or squared. Mounted on the squared outer end of one of said spindles is a short upwardly extending arm 19.

Supported on the hood 11 at the side thereof on the inside of the hood in any suitable way, is a bracket 20 having a downwardly extending arm 21 on which is supported a thermostat 22. Connected with the thermostat and extending forwardly therefrom is a two-part rod 23, the adjacent ends of which are connected by a turn-buckle 24 for securing proper adjustment. The forward end of the two-part rod 23 is pivoted to the upper end of the short arm 19, as illustrated in Fig. 4.

It will be seen that when the thermostat 22 expands with heat, the rod 23 is moved forwardly for rotating the spindles 18 through the medium of the arm 19, for moving the shutter device 17 toward position for closing the opening B.

Mounted in the frame 10 is a series of shutters 25. Each of the shutters 25 has at its ends spindles 26 rotatably mounted in the frame A.

Each shutter 25 has at its lower edge a flange 26 adapted to overlap the upper edge of the next lower flange when the shutters are closed.

Extending rearwardly from each shutter member 25 is an arm 27. An operating bar 28 is pivoted to the respective arms 27 by means of pins 29. I preferably provide anti-noise washers 30 between the bar 28 and the respective arms 27.

The bar 28 is provided with a series of notches 31 to receive the upper rear edges of the shutter member 25. When the shutters 25 are open the provision of these notches is not necessary. It is made in order that the bar 28 may be mounted a little closer to the shutter members 25 than would be otherwise possible.

Pivoted to the lower end of the operating bar 28 is a two-part rod 32, the adjacent ends of which are screw-threaded and connected by a turn-buckle 33. The lower end of the two-part rod 32 is pivoted to an arm 34 on the shutter member 17, located below the pivot axis of said shutter member.

In the practical use of my improved device, when the thermostat 22 is in its contracted position, the shutter members 17 and 25 will be held closed.

When the shutter devices are closed the shutter member 17 is inclined from its upper edge upwardly and rearwardly.

When the engine is operated and becomes thoroughly heated, the thermostat 22, which is located near the point of discharge of the air passing over the engine through the hood, expands, moving the rod 23 forwardly, thereby rotating the spindles 18 for opening the shutter device 17 and moving it toward its position shown in Fig. 2, where its inclination from its lower forward edge upwardly is much sharper than when it is closed.

The opening movement of the shutter member 17 serves, through the arm 34 and the rod 32, to pull the operating bar 28 downwardly for thereby opening the shutter members 25.

It will be understood that the arms 27 are located above the pivot axes of the shutter members 25.

It will be noted from the foregoing that my device is of very simple construction, and that the entire device is carried on the hood so as to be removable from the car if the hood is removed, and also to be tilted with the hood out of the way of a mechanic who desires to work on the engine.

One advantage of my structure arises from the arrangement of the shutter devices at the forward end of the hood controlled by a thermostat located near the point of discharge of heated air, and yet supported on the hood in operative relation with the shutter devices.

The single thermostat serves to control both of the shutter devices, and a wide range of adjustment is possible on account of the use of the turn-buckles 24 and 33 or some equivalent.

The advantage of having an air controlling device automatically regulated according to the heat of the engine is obvious.

Another advantage of my structure arises from the fact that the thermostat automatically closes the shutter devices after the engine cools down, so that the heat is retained under the hood, and therefore enables doing away with card-board or other crude device for closing the opening in the front of the hood in cold weather.

Some modifications of my device may be made which would be within the spirit of my invention, and it is my intention to cover by my claims any such modifications or use of mechanical equivalents which may be included within their scope.

I claim as my invention:

1. In a device of the class described, the combination of a tiltable hood, with an adjustable closure member in one end, a bracket on the interior of said hood adjacent to its other end, a thermostat on said bracket, and means for operatively connecting said thermostat with said member whereby the closure member and thermostat are wholly supported on and movable with the hood.

2. In a device of the class described, the combination of a tiltable hood having in one end spaced air openings, movable closure devices mounted in said openings, and supported on said hood, a thermostat device mounted on said hood, and means

for operatively connecting said closure devices with said thermostat device.

3. In a device of the class described, the combination of a tiltably mounted hood, having in one end spaced air openings, adjustable closure devices mounted in said openings on said hood, a thermostat device supported on said hood, means for operatively connecting said thermostat device with one of said closure devices, and mechanism for operatively connecting the closure devices with each other.

4. In a device of the class described, the combination of a tiltably mounted hood, having in one end spaced air openings, closure devices mounted in said openings on said hood, a thermostat device supported on said hood, means for operatively connecting said thermostat device with one of said closure devices, said means being adjustable for regulating the effect of the thermostat on the closure device with which it is connected.

5. In a device of the class described, the combination of a tiltably mounted hood, having in one end spaced air openings, shutter closure devices mounted in said openings on said hood, a thermostat device supported on said hood, means for operatively connecting said thermostat device with one of said shutter devices, mechanism for operatively connecting the shutter devices with each other, said last means being adjustable for varying the operative effect of said shutter devices on each other.

6. In a device of the class described, the combination of a hood, having an engine mounted for tilting movement, said hood having in its forward end upper and lower openings, a frame fitted into said upper opening, shutter members mounted in said frame, a shutter device mounted in the lower opening, a common controlling bar for controlling all of the shutter members on the upper opening, adjustable means for connecting the shutter devices in the upper and lower openings, a bracket stand along the interior of said hood on one side thereof supported on said hood, a thermostat supported on said bracket near the rear end of said hood, means for operatively connecting said thermostat with the shutter device in the lower opening, said shutter device and thermostat and bracket being wholly mounted on said hood and movable therewith.

Des Moines, Iowa, January 14, 1920.

LESLIE W. GRISWOLD.