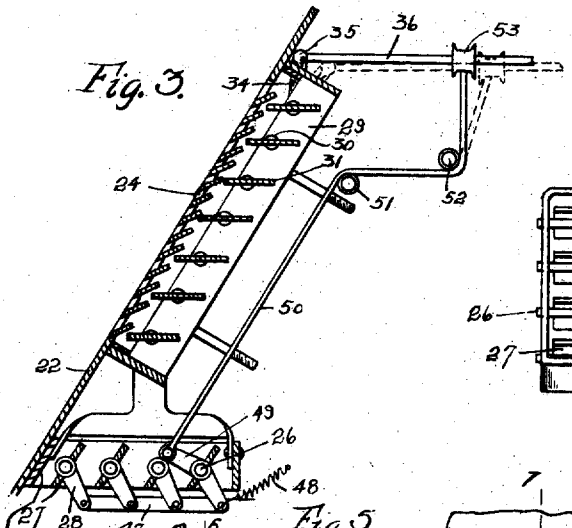
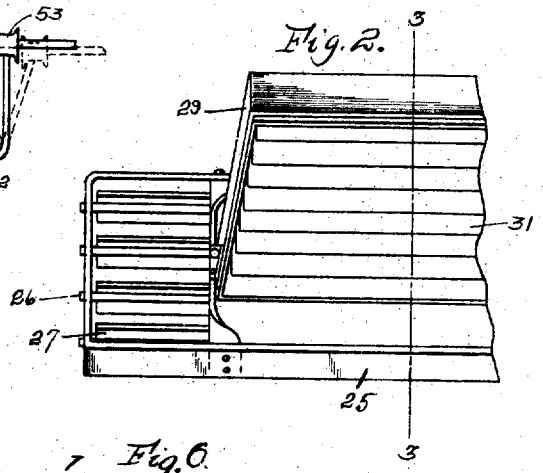
L. W. GRISWOLD.

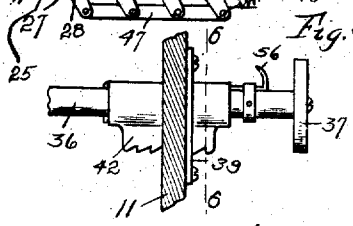
HEAT CONTROLLER FOR AIR COOLED ENGINES.

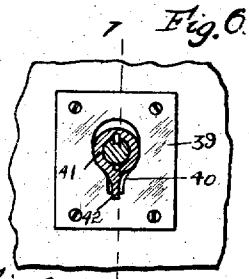
APPLICATION FILED SEPT. 4, 1917.

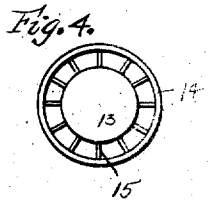
**1,257,219.** Patented Feb. 19, 1918.

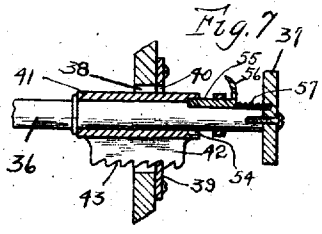


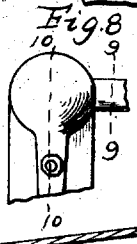



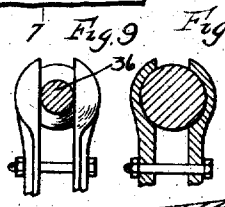










Witness:

A. Demirjian

Inventor:

Leslie W. Griswold

by Craig & Bair

atty.

# UNITED STATES PATENT OFFICE.

LESLIE W. GRISWOLD, OF COOPER, IOWA.

## HEAT-CONTROLLER FOR AIR-COOLED ENGINES.

1,257,219. Specification of Letters Patent. Patented Feb. 19, 1918.

Application filed September 4, 1917. Serial No. 189,665.

*To all whom it may concern:*

Be it known that I, LESLIE W. GRISWOLD, a citizen of the United States, and resident of Cooper, in the county of Greene and State of Iowa, have invented a certain new and useful Heat-Controller for Air-Cooled Engines, of which the following is a specification.

My invention relates to heat controlling means for air cooled engines.

The object of my invention is to provide in combination with an air cooled engine, a heat controlling device of simple, durable, and inexpensive construction for controlling the passage of air passing the cylinders for cooling the engine.

Still a further object is to provide a casing or means for conducting the flow of air, having a plurality of openings, and in connection with such a casing, a plurality of closure devices, whereby the respective openings may be controlled, and to provide a single controlling member whereby a plurality of closure devices may be operated.

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 vertical, sectional view through the dash and hood of an automobile having an engine equipped with my improved air controlling device.

Fig. 2 shows a front elevation of a portion of the frame for supporting the closure devices, with the closure devices mounted thereon.

Fig. 3 shows a vertical, sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 shows a top or plan view of one of the cylinders showing the spaced jacket thereon.

Fig. 5 shows an enlarged, detail view of the single controlling member.

Fig. 6 shows a vertical, sectional view taken on the line 6—6 of Fig. 5.

Fig. 7 shows a vertical, sectional view taken on the line 7—7 of Fig. 6.

Fig. 8 shows a detail view of the ball and socket joint.

Fig. 9 shows a vertical, sectional view taken on the line 9—9 of Fig. 8, and

Fig. 10 shows a vertical, sectional view taken on the line 10—10 of Fig. 8.

In the illustration of my invention shown in the accompanying drawings, I have used the reference numeral 10 to indicate generally the frame of a motor vehicle having the dash 11 in front of which is mounted the engine 12 having the cylinders 13.

On the cylinders 13 are the spaced jackets 14. In the cylinders 13 and jackets 14 are the radiating connecting web members 15.

The engine is received within a suitable casing, the lower part of which is indicated at 16. The casing 15 has an upwardly extending forward wall 17 and a rear wall 18 formed with a central air discharge opening 19, adjacent to which is a fan 20 for drawing air through the opening 19.

Above the engine is a hood 21 having at its forward end a downwardly extending front wall member 22, spaced forwardly from the wall member 17.

Connecting the upper ends of the wall members 17 and 18 is a substantially horizontal casing member 23, located about midway between the upper and lower ends of the cylinders 13 and forming, as it were, a partition between the casing member 16 and the upper portion of the hood 21, whereby upper and lower compartments of the engine casing are provided.

The member 23 is formed with openings to snugly receive the cylinder jackets 14.

It will be noted that there is an opening at the lower ends of the wall members 22 and 17, between said wall members, and also that the wall member 22 is provided with an opening 24 in its central portion for admitting air to the interior of the casing and to the upper compartment thereof.

I will now describe the adjustable closure devices forming part of my air controlling means.

Fitted within the opening between the lower ends of the wall members 22 and 17 is a substantially rectangular frame 25.

The ends of a plurality of transverse shafts 26 are rotatably mounted in the end members of the frame 25.

Fixed on each shaft 26 is a shutter member 27. On each of the shafts 26 is fixed an arm 28, as shown in Fig. 3.

Above the frame 25 and adjacent to the opening 24 is a second substantially rectangular frame 29, having mounted thereon a plurality of transverse shafts 30. On the shafts 30 are shutter members 31. On each shaft 30 is fixed an arm 32. The arms 32

are all pivoted at their outer ends to a single controlling link 33. Secured to the upper shaft 30 is an arm 31, which is connected, by means of a universal joint 35, with a rearwardly extending link 36, which extends through and beyond the dash 11.

On the rear end of the rod 36 is a head or hand-wheel or the like 37. The dash 11 is provided with an opening 38. Surrounding it on the side farthest from the engine is a plate 39 in which is an opening 40.

Mounted on the rod 36 within the openings 38 and 40 is a sleeve 41. The sleeve 41 is fixed against sliding movement on the rod 36 and is designed to permit the free rotation of said rod within said sleeve. The opening 40 has substantially the shape of a key hole slot, and the sleeve 41 is provided with a downwardly extending flange or plate 42, the lower edge of which is provided with teeth 43 designed to coact with the plate 39.

Suitably mounted is a fixed member 44 to which is secured a spring 45, and one end of the spring 45 is secured to an arm 46 on the rod 36, so as to normally hold the shutter members 31 in open position.

It will be seen that when the rod 36 is drawn rearwardly, the teeth 43 may be made to engage the plate 39 for holding the shutters 31 closed against the pressure of the spring 45.

When, however, the rod 36 is raised by grasping the handle or the like 37 for moving the teeth out of engagement with the plate 39, the spring 45 will move the rod 36 forwardly, for opening the shutter members 31.

The arms 28 are all pivoted to a single connecting link 47.

A spring 48 is connected with the frame of the machine, and with one of the arms 28 for normally holding the shutter members 27 open.

On one of the shafts 26 is an arm 49 to which is secured a flexible member 50 which extends upwardly around a guide member 51, thence around a second guide member 52, and is then wound on and secured to a drum or pulley or the like 53 fixed on the rod 36.

It will be seen that by rotating the rod 36 the flexible device 50 may be wound on the pulley 53 for closing the shutter members 27 against the pressure of the spring 48.

It is, of course, obvious that it is desirable to have means for locking the rod 36 against rotation in the opposite direction after it has been once rotated for closing the shutters 27. Such a locking means has been provided.

In the rear end of sleeve 41 are opposite notches 54. Slidably mounted on the rod 36 just rearwardly of the spring 41 is a locking bolt 55 having an outwardly extending finger engaging member 56. The locking bolt 55 is normally pressed toward the sleeve by means of a spring 57.

I will now describe somewhat briefly the practical operation of my improved air controlling device.

It is, of course, obvious that where an engine of the type mentioned herein is used, air openings are provided of such size as to serve proper radiation, as nearly as possible. However, all such arrangements are necessarily simply approximate insomuch as no fixed openings can supply proper air to the engine in hot summer weather and also supply proper air in extreme cold winter weather. I have found that with certain engines with which I am familiar there is a proper radiation in summer, but that there is too much air supplied in cold weather, and have, therefore, provided my improved air control mechanism herein shown.

The air is normally drawn through the opening between the lower ends of the walls 22 and 17, and through the opening 24 into the upper compartment of the engine casing and thence downwardly between the cylinders and their jackets, and thence rearwardly through the opening 19 by means of the pump 20.

For controlling the passage of air through the openings between the lower ends of the front walls, and the opening 24, the adjustable closure devices, hereinbefore mentioned, may be conveniently used.

It will be seen that owing to the great variation in temperature, to which an engine of the kind under consideration is subject in this part of the country, it is desirable to have more than one closure device. In other words it is desirable to control the passage of air through both of the openings for which the closure devices are provided in this application.

As a matter of convenience, I have shown my closure devices applied to the ordinary air cooled engine, commonly used on the Franklin car. The engine in itself forms no part of my invention.

In the practical use of my closure devices, if the weather is cool enough so that the ordinary openings provide a little too much air, I grasp the handle or wheel 37 and pull it rearwardly against the pressure of the spring 45, and then cause the teeth 43 to engage the plate 39, whereupon the shutters 31 may be closed.

If desired, however, the parts being in their normal position, instead of closing the shutter 31 the shutters 27 may be closed. This is accomplished by simply grasping the member 37, and with the finger draw back the handle 56 for releasing the locking bolt 55 from the notch 54 in the sleeve 41.

The rod 36 is then rotated for winding the flexible member 50 on to the pulley or the

like 53 for closing the shutters 27 against the tension of the spring 48.

When either of the shutter closing operations has been performed, it will be noted that the other shutter closing operation may then be performed without interfering with the shutters that have first been manipulated.

In other words the construction of my device is such that either set of shutters may be operated independently of the other set, or the sets of shutters may both of them be left open or closed at the same time if desired.

This variation of possible operations may be accomplished by means of the single controlling member.

Some changes may be made in the construction and arrangement of my improved device without departing from the essential features and spirit of my invention, and it is my intention to cover by my present claims any such modified forms of structure or use of mechanical equivalents, as may be reasonably included within the scope of my claims.

I claim as my invention:

1. In a device of the class described, the combination of a frame with an engine supported thereon, said frame having a dash, a casing for receiving the lower portion of said engine having an upwardly extending forward wall, a hood for receiving the upper portion of said engine having a downwardly extending portion spaced forwardly from the forward wall of said casing, and provided with an opening, and being so arranged as to leave an opening below the lower portion of said forward wall and said forward downwardly extending portion, adjustable closure devices for said openings, and a single controlling means operatively connected with both of said closure devices, whereby movement of said controlling means in one direction operates one of said closure devices without operating the other, and the movement of said controlling means in another direction operates the other of said closure devices without operating the one.

2. In a device of the class described, the combination of a frame, with an engine supported thereon, an inclosing casing for said engine having two openings, adjustable closure devices for said openings, a single operating controlling member, means for operatively connecting said controlling member with both of said closure devices, whereby the movement of said controlling member in one direction operates the one of said closure devices independently of the other, and whereby the movement of said controlling member in another direction operates the other of said closure devices independently of the one.

3. In a device of the class described, the combination of a frame, with an engine supported thereon, an inclosing casing for said engine having two openings, adjustable closure devices for said openings, a single operating controlling member, means for operatively connecting said controlling member with both of said closure devices, whereby the movement of said controlling member in one direction operates the one of said closure devices independently of the other, and whereby the movement of said controlling member in another direction operates the other of said closure devices independently of the one, and whereby said controlling member may be operated for holding both of said closure devices at the same time in a predetermined position.

4. In a device of the class described, an engine, an inclosing casing therefor, having a plurality of openings, adjustable closure devices for said openings, yielding devices for normally holding said closure devices in one position of their movement, a controlling member, means for operatively connecting said controlling member with both of said closure devices, whereby movement of the controlling member in one direction operates one of said closure devices against the pressure of said yielding means, and whereby movement of said controlling member in another direction operates the other of said closure devices against said yielding means.

5. In a device of the class described, an engine, an inclosing casing therefor, having a plurality of openings, adjustable closure devices for said openings, yielding devices for normally holding said closure devices in one position of their movement, a controlling member, means for operatively connecting said controlling member with both of said closure devices, whereby movement of the controlling member in one direction operates one of said closure devices against the pressure of said yielding means, and whereby movement of said controlling member in another direction operates the other of said closure devices against said yielding means, and whereby both of said closure devices may be simultaneously held in position other than said predetermined position against the pressure of said yielding means.

6. In a device of the class described, a member having a plurality of openings, adjustable closure devices for said openings, a single controlling member, means for operatively connecting said operating member with said adjustable closure devices whereby said single controlling member may be operated for independently operating said closure devices.

7. In a device of the class described, a member having a plurality of openings,

adjustable closure devices for said openings, a single controlling member, means for operatively connecting said controlling member with said adjustable closure devices, whereby said single controlling member may be operated for operating said controlling devices either independently or simultaneously.

8. An adjustable device for controlling air flow, comprising closure devices, a single controlling member for said closure devices, and means for operatively connecting said member with said adjustable closure devices, whereby said controlling member may be operated for independently operating said closure devices.

9. An adjustable device for controlling air flow, comprising closure devices, a single controlling member for said closure devices, means for operatively connecting said controlling member with said closure devices, whereby movement of the controlling member in one direction operates one of said closure devices, and movement of the controlling member in another direction operates the other of said closure devices.

Des Moines, Iowa, August 16, 1917.

LESLIE W. GRISWOLD.