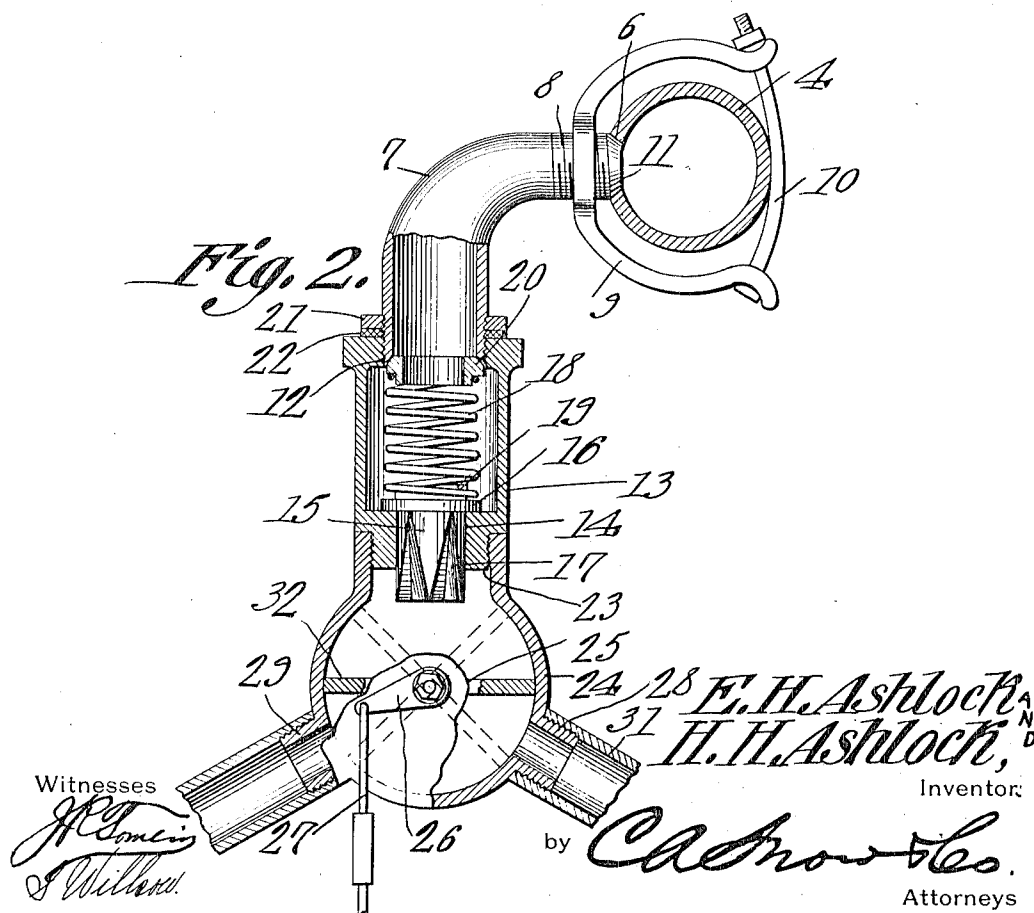
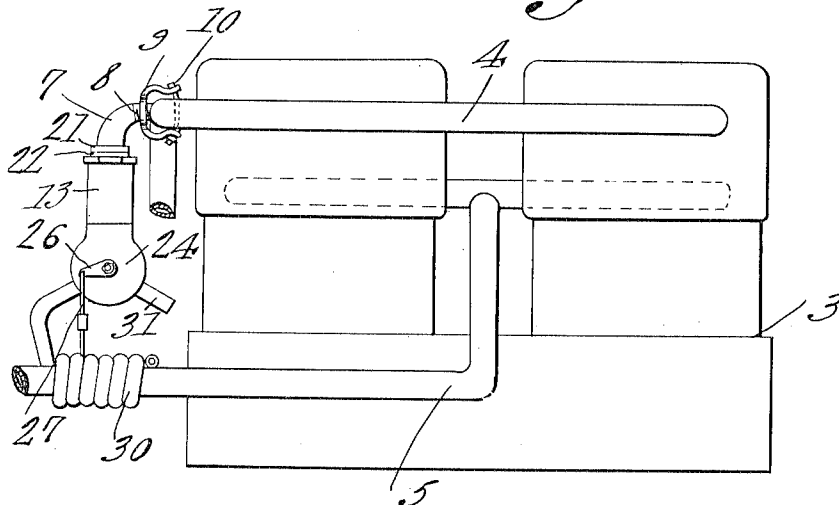


1,120,118.

Fig. 1.



UNITED STATES PATENT OFFICE.

ERNEST H. ASHLOCK AND HENRY H. ASHLOCK, OF SAN DIEGO, CALIFORNIA.

AUXILIARY AIR-INLET DEVICE FOR INTERNAL-COMBUSTION ENGINES.

1,120,118.

Specification of Letters Patent.

Patented Dec. 8, 1914.

Application filed November 19, 1913. Serial No. 801,910.

To all whom it may concern:

Be it known that we, ERNEST H. ASHLOCK, and HENRY H. ASHLOCK, citizens of the United States, residing at San Diego, in the county of San Diego and State of California, have invented a new and useful Auxiliary Air-Inlet Device for Internal-Combustion Engines, of which the following is a specification.

This invention relates to an attachment for internal combustion engines and more particularly to a device for supplying either cold or heated air to the inlet manifold beyond the carbureter.

A further object is to provide an attachment to be secured to the fuel inlet manifold of an internal combustion engine so that by the manually operating of a lever or valve, warm or cold air can be supplied to the engine.

A further object is to provide a fuel inlet manifold air supplying device which will automatically open for the supplying of air to the engine when the latter is traveling at high speed and will automatically close when the speed of the engine is materially lessened.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the drawings accompanying this specification and forming a part thereof, the preferably form of our invention is illustrated, in which:—

Figure 1 is a diagrammatic view of an internal combustion engine with our improved device attached to the fuel inlet manifold thereof. Fig. 2 is a detail sectional view of the device.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, 3 is an internal combustion engine and is provided with the usual fuel inlet manifold 4 and exhaust manifold 5. The fuel inlet manifold 4 is as illustrated in Fig. 2, provided with an opening 6 extending there-

through and with which opening my improved device communicates.

An elbow 7 is externally threaded at one end as at 8 and to which is secured the yoke 9. The yoke 9 embraces the fuel inlet manifold 4 therebetween and is held rigidly thereto by the curved bolt 10. The extreme end of the elbow 7 is beveled as at 11 and effects an air-tight joint with the side walls of the opening 6 of the fuel inlet manifold. The remote end of the elbow 7 is also externally threaded as at 12 and to which is secured the valve chamber or casing 13.

The valve casing 13 is provided with the lower restricted opening 14 extending there-through and in which is slidably positioned the valve 15. The valve 15 comprises the head 16 which is adapted to seat upon the sides adjacent the opening 14 of the valve casing and effect a tight joint therewith. The valve also includes the spider 17 which guides the valve in its axial or longitudinal movements and at the same time provides for the proper opening being effected and also in the present instance provides that the area of opening of the valve is dependent upon the height the valve is raised. A spring 18 is positioned within the valve casing, and rests upon the upper portion of the valve head, it being prevented from shifting laterally or transversely thereof, due to the fact that the head is provided with the upstanding projection 19, around which the coiled spring 18 extends. The upper extremity of the spring is held in place and bears against the annular washer 20 which in turn is held in place and rests against the extremity of the elbow 7. Thus the area of opening of the valve will be dependent upon the pressure within the valve casing so that the amount of air admitted to the fuel inlet manifold 4 will be dependent upon the vacuum existing therein.

A nut 21 threadedly engages the end 12 of the elbow and with a washer 22 effects a tight joint between the elbow and valve casing. The lower extremity of the valve casing is externally threaded as at 23 and to which is secured the air chamber and mechanical valve casing 24. The casing 24 is, as illustrated in the drawings, circular in cross sectional contour and in which is pivotally mounted the butterfly valve 25. The butterfly valve is pivoted upon an axis extending centrally through the valve cas-

ing 24 and which axis or shaft is provided with the crank arm 26 to which the link 27 is secured whereby the piston of the butterfly valve may be controlled.

5 The air chamber or mechanical valve casing 24 is provided with the threaded sleeves 28 and 29 communicating therewith and which are so arranged that either one of which may be brought into communication
10 with the valve chamber 13, provided that the valve 15 be open, or so that both of the said sleeves may be closed out of communication therewith. The threaded sleeve 29 communicates with a pipe coil 30 which latter is
15 wound about the exhaust manifold 5 and with its remote end open to the atmosphere so that any air entering the casing 24 through the coil 30 will be suitably heated. The oppositely disposed sleeve 28 commu-
20 cates with the pipe 31 which latter is in direct communication with the atmosphere so that air entering therein will be at atmospheric temperature.

In operation, the valve vane 32 which con-
25 stitutes the moving member of the butterfly valve is positioned as illustrated in full lines in Fig. 2, when the engine is being started. In the said position, both of the air inlets are closed irrespective of the position of the
30 automatic valve 15. When the engine has been started and is running under normal conditions, the valve vane will be turned so that heated air will be supplied to the fuel inlet manifold if it is a cold day and will
35 be turned in the opposite direction if the day be warm. Thus upon a cold day, heated air will be supplied to the fuel inlet manifold to provide a more combustible mixture of gases and to also maintain the engine at the
40 proper temperature. Likewise upon warm days, the vane will be turned to its opposite position so that cold air will be supplied to the fuel inlet manifold to prevent excessive heating of the engine and to also form a
45 more combustible mixture of fuel gases. Thus the device is adapted to regulate and govern the temperature of the motor and also due to the automatic valve will effect a considerable saving in fuel. When the
50 engine is turning slowly such as will occur when a steep grade is encountered and the engine laboring hard, the vacuum produced within the valve casing 13 will be insufficient to overcome the force of the spring 18 so
55 that a rich mixture will be fed to the engine in order that it may properly and successfully negotiate the said grade. However, when the engine is laboring under light loads and the speed thereof rises, the vacuum
60 necessarily produced within the fuel inlet manifold will overcome the resiliency of the spring 18 to raise the valve 15 so that either cold or heated air will be supplied to the fuel inlet manifold so that a considerable saving
65 in fuel will be effected. In this connection

it is pointed out that the area of opening of the valve 15 being dependent upon the vacuum within the fuel inlet manifold, the amount or quantity of air supplied to the engine will also be proportional to the speed
70 of rotation thereof.

Having thus fully described our invention, what we claim is:—

1. An automatic auxiliary air inlet device for internal combustion engines comprising
75 a valve casing communicating with an inlet manifold and with the atmosphere, an automatic valve disposed within said casing, means for controlling the area of opening of said valve so as to be dependent upon
80 the difference in pressure between the inlet manifold and atmospheric pressures, a manually operated valve disposed within said casing and communicating with the auto-
85 matic valve, and means for supplying cool and heated air to said casing, said air selected and controlled by said manually operable valve.

2. An air controlling and supplying device for the inlet manifolds of internal com-
90 bustion engines comprising a valve casing, a spring controlled valve positioned therein with the area of opening of said valve depending upon the pressure within said valve casing, an air chamber in communication
95 with said valve, hot and cold air inlets communicated with said air chamber, and a manually operated valve disposed within said air chamber adapted to swing into communication with the said automatic
100 valve.

3. A device of the class described comprising a valve casing, a valve slidably disposed therein, a spring engaging said valve and holding the same normally in a closed
105 position, means carried by the said valve for guiding the same in its axial movements and providing that the area of opening of the valve will be dependent upon the displacement thereof from its normal position, said valve casing communicating with the fuel inlet manifold of an internal combustion engine, an air chamber communi-
110 cating with said valve casing, a butterfly valve disposed within said air chamber, two air inlets communicating with said air chamber, means for heating the air entering through one of the said air inlets, said butterfly adapted to open and close the said air
115 inlets.

4. An air controlling and supplying device for the fuel inlet manifold of an internal combustion engine comprising a pipe communicating with the said fuel inlet
120 manifold, a valve casing carried by and communicating with said pipe, a valve slidably disposed within said casing, means for resiliently holding the said valve normally in a closed position, means carried by the valve adapted to guide the same in its lon-
125

gitudinal movements and providing that the
area of opening thereof will be dependent
upon the pressure within said valve casing,
an air chamber communicating with the said
5 valve, a vane valve member pivotally mount-
ed therein, hot and cold air supplying pipes
communicating with said air chamber, said
vane rotating in front of one of said air in-
lets to close the same, simultaneously open-
10 ing the other of said air inlets, said vane

further adapted to close both of said air
inlets.

In testimony that we claim the foregoing
as our own, we have hereto affixed our sig-
natures in the presence of two witnesses.

ERNEST H. ASHLOCK.
HENRY H. ASHLOCK.

Witnesses:

FERDINAND ARTYNE,
D. B. RICHARDS.