Sept. 18, 1923. 1,468,283

W. M. COWARD

AUXILIARY AIR VALVE

Filed April 28, 1921

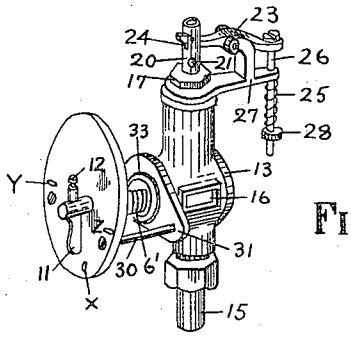


Fig. 1

Fig. 2

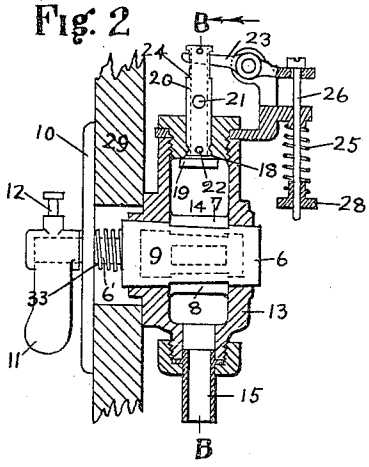


Fig. 3

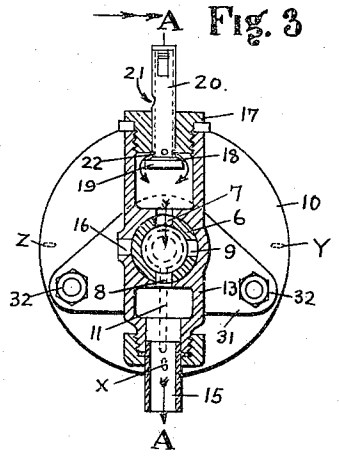


Fig. 4

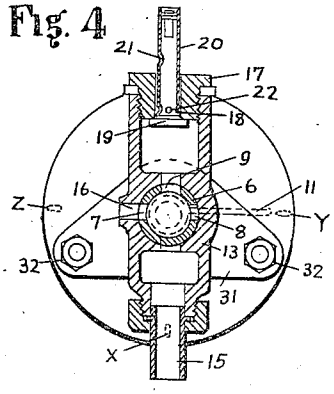
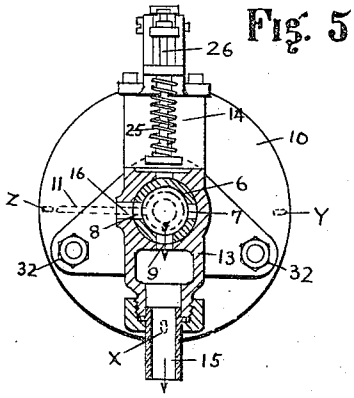


Fig. 5



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UNITED STATES PATENT OFFICE.

WILLIAM MONTAGU COWARD, OF NORTH SYDNEY, NEW SOUTH WALES, AUSTRALIA, ASSIGNOR TO FREDERICK CECIL GADSBY, OF SYDNEY, NEW SOUTH WALES, AUSTRALIA.

AUXILIARY AIR VALVE.

Application filed April 28, 1921. Serial No. 465,180.

To all whom it may concern:

Be it known that I, WILLIAM MONTAGU COWARD, a subject of the King of Great Britain and Ireland, residing at Hillcrest, 8 Blue Street, North Sydney, in the State of New South Wales and Commonwealth of Australia, have invented certain new and useful Improvements in an Auxiliary Air Valve, of which the following is a specification.

This invention relates to an auxiliary air supply for internal combustion engines and the object of the invention is to provide a simple and effective device which can be readily attached to the dash-board of a motor vehicle or in any other convenient position, by means of which, 1st. A supplementary air supply can be automatically drawn into the engine cylinders by the action of the pistons according to the requirements of the engine;

2nd. By means of which the supplementary air supply can be immediately cut off;

3rd. By means of which an unobstructed flow of air can be immediately admitted to the engine cylinders (a) for the purpose of flushing out and cooling the same, (b) to provide a more effective brake by supplying a greater resistance to the pistons during the compression strokes.

The invention comprises a three-way plug seating within a casing with corresponding ports therein, a stem on said plug with control handle movable in front of an indicator plate which is adapted to be secured to the dash-board or the like, a valve chamber and pipe socket on said casing, and an adjustable self-acting air valve within said valve chamber with inlet and outlet apertures.

But in order that the invention may be clearly understood reference will now be made to the accompanying drawings which illustrate a suitable method of carrying out the invention.

Figure 1 is a perspective view of the device.

Figure 2 is a vertical side elevation showing the device in position on the dash-board of a motor vehicle.

Figure 3 is a vertical back section showing the device set to automatically operate with the movement of the engine pistons.

Figure 4 is a similar section showing the device set to be out of action and the air supply cut off.

Figure 5 is a rear sectional elevation showing the device set to shut the automatic valve off and fully open the pipe way: and showing the spring control for the automatic valve.

The plug 6 which is preferably of the usual tapering form is hollow with three ports 7, 8 and 9, of which 7 and 8 are directly opposed to each other and 9 is midway between 7 and 8, that is to say has its center line at right angles to the center line of 7 and 8. The plug 6 has a projecting stem 6^1 which passes through an indicator plate 10 and has on its free end an adjustable control lever or handle 11 with set screw 12. The plug 6 seats in casing 13 and forms a three-way cock communicating through the ports 7, 8 and 9 in the manner hereinafter explained with the valve chamber 14, with the pipe 15 leading to the induction pipe of engine, and with the port 16 cut in the casing wall which port has an area equal to the sectional area of the pipe 15. The valve chamber 14 is closed at its top end by a screw plug 17 which has formed therein seat 18 for valve 19 that has a hollow stem 20 which passes through plug 17 and has inlet apertures 21 and outlet apertures 22.

The valve 19 is normally held on its seat 18 by a spring controlled pivoted lever 23 one arm of which engages a slot 24 in valve stem 20 while the other arm is depressed by a spring 25 surrounding rod 26 which passes through bracket 27. A nut 28 is provided on rod 26 for adjusting the tension of spring 25. The device is preferably secured to the dash-board 29 (Figure 2) by bolts 30 which pass through the indicator plate 10, the dash-board 29, and the lugs or flange 31 formed on the casing 13 where they are secured by nuts 32. A coil spring 33 surrounds the plug stem 6^1 between the plate 10 and the plug 6 to keep the latter in close contact with its seat. In operation the control handle 11 on plug 6^1 is adjusted and locked by set screw 12 to register opposite the mark (X) on indicator plate 10 when the opposing ports 7 and 8 in the plug 6 are in open communication with the valve chambers 14, and the pipe 15, as shown in Figure 3. In this position the suction stroke of the engine pistons automatically operates the valve 19 and draws in a supply of air according to requirements the volume being adjustable by the tension on spring 25.

When the control handle 11 is rotated 90°

to register opposite the mark (Y) on the indicator plate 10 the plug turns and the automatic air valve 19 is shut off from the pipe 15 and the device is out of action, as shown in Figure 4.

When the control handle 11 is rotated to register opposite the mark (Z) on plate 10, the valve chamber 14 is shut off from the pipe 15 and the port 16 in casing 13 is brought into communication with pipe 15 and an unobstructed passage is opened through which air is drawn to the cylinders.

I claim:—

1. The hereindescribed device for automatically controlling an auxiliary supply of air to the cylinders of motor vehicles comprising a casing, a valve chamber connected with the valve casing, an induction pipe for the engine connected with the casing at the opposite side to the valve chamber, and an inlet port for the valve casing intermediate the valve chamber and the induction pipe, in combination with a three-way valve within the valve casing for selectively establishing communication between the valve chamber and the induction pipe, between the valve chamber and the port, and between the port and the induction pipe, a dial, and a pointer for the valve indicating on the dial the co-relation of the valve to the port, valve chamber and induction pipe.

2. The hereindescribed device for automatically controlling an auxiliary supply of air to the cylinders of motor vehicles comprising a casing, a valve chamber connected with the valve casing, an induction pipe for the engine connected with the casing at the opposite side to the valve chamber, and an inlet port for the valve casing intermediate the valve chamber and the induction pipe, in combination with a three-way valve within the valve casing for selectively establishing communication between the valve chamber and the induction pipe, between the valve chamber and the port, and between the port and the induction pipe, a dial, a pointer for the valve indicating on the dial the co-relation of the valve to the port, valve chamber and induction pipe, a valve seated within the valve chamber, a tubular stem for the valve having ingress and egress ports, and means for automatically closing the valve.

3. The hereindescribed device for automatically controlling an auxiliary supply of air to the cylinders of motor vehicles comprising a casing, a valve chamber connected with the valve casing, an induction pipe for the engine connected with the casing at the opposite side to the valve chamber, and an inlet port for the valve casing intermediate the valve chamber and the induction pipe, in combination with a three-way valve within the valve casing for selectively establishing communication between the valve chamber and the induction pipe, between the valve chamber and the port, and between the port and the induction pipe, a dial, a pointer for the valve indicating on the dial the co-relation of the valve to the port, valve chamber and induction pipe, a valve seated within the valve chamber, a tubular stem for the valve having ingress and egress ports, and means for automatically closing the valve, said means comprising a spring controlled pivoted lever one arm of which engages a slot in the valve stem and the other arm of which is depressed by a spring surrounding a rod which passes through a bracket secured to the casing.

In testimony whereof he has affixed his signature in presence of two witnesses.

WILLIAM MONTAGU COWARD.

Witnesses:
T. C. ALLEN,
W. ALLEN.