

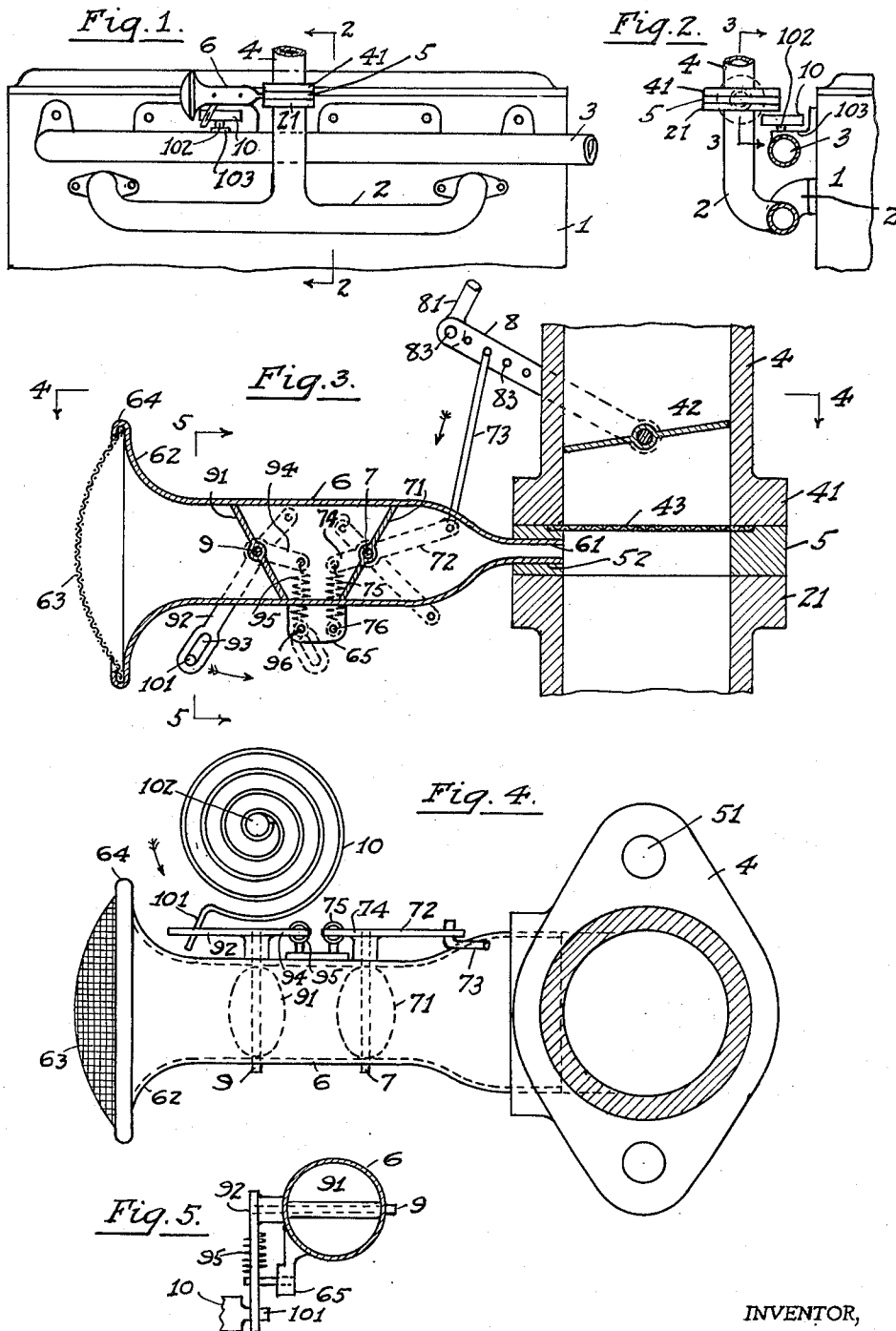
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AUXILIARY AIR INTAKE FOR INTERNAL COMBUSTION ENGINES

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AUXILIARY AIR INTAKE FOR INTERNAL COMBUSTION ENGINES

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3 Claims. (Cl. 123—119)

My invention relates to auxiliary air intakes for internal combustion engines, and its principal object is to provide means whereby an additional supply of pure air may under certain conditions be admitted to the intake manifold of the engine independently of the supply of gaseous mixture furnished by the carburetor, the amount of additional air being primarily controlled by the accelerator mechanism with its associated butterfly valve.

Another object of my invention is to provide a device of the character referred to which is secondarily controlled by the temperature of the engine.

A further object of my said invention is to provide a device of the character referred to which is constructed as a unitary structure adapted to be inserted between the co-acting flanges of the carburetor and the intake manifold, so that it may be easily and quickly applied to an engine without any changes or modifications of the existing parts.

With these and other objects in view, I will now describe a preferred embodiment of my invention with reference to the accompanying drawing, in which—

Figure 1 is a fragmentary front elevation of an engine showing my device applied thereto.

Figure 2 is a transverse section taken on line 2—2 of Figure 1.

Figure 3 is a longitudinal section of my device taken on line 3—3 of Figure 2 and drawn to an enlarged scale.

Figure 4 is a plan view of the same in section on line 4—4 of Figure 3, and

Figure 5 is a section on line 5—5 of Figure 3 illustrating certain details of the device.

Like characters designate corresponding parts throughout the several views.

Referring more particularly to Figures 1 and 2 of the drawing, 1 designates the body of an engine provided with the usual intake manifold 2 and exhaust manifold 3, while 4 indicates the lower portion of a down-draft carburetor of conventional construction. Between the flange 41 of the carburetor and the coacting flange 21 of the intake manifold is inserted a member 5, the shape of which in general corresponds to that of the said flanges including openings 51 through which the usual connecting bolts are designed to pass. Within the face of the member 51 is an elongated opening or slot 52 into which is inserted, by pressure or other means, the inner end 61 of the tubular body 6.

The body 6 in its central portion is of cylindrical shape formed from a tube of such dimensions that when its inner end is flattened, as at 61, the flattened portion will fit tightly into the opening 52 in the member 5, while the outer end of the body is flared or bell-mouthed, as indicated at 62, so as to form an inlet opening of relatively large area which is protected from the entrance of dust and dirt by a wire mesh screen 63. The screen 63 may be held in position in various ways such as the overturned or beaded edge 64 shown. Journaled in openings in the body 6 is a transverse shaft 7 which passes diametrically through the opening and carries a butterfly valve 71 designed, when required, to provide a total closure for the body. To the shaft 7 is secured a lever 72, one end of which is connected by a rod 73 to a lever 8, the latter forming a part of the ordinary accelerator mechanism which controls the butterfly valve 42 of the carburetor and is operated through the accelerator rod 81 by any of the usual means well known in the art. The lever 72 has an extension 74 to which is connected one end of a helical tension spring 75, the other end of which is secured to a pin 76 carried by a bracket 65 upon the body 6. It will be seen that by this arrangement depression of the accelerator rod 81, opening the butterfly valve 42, will also tend to open the valve 71, the relative movement and timing of the two valves being adjustable by various means such as the series of openings 83 in the lever 8 in which the rod 73 may selectively engage.

It is well known that in order to obtain the best results as regards increase of power and economy of fuel in a device of this character, the amount of additional air admitted must be varied more or less according to the temperature of the engine, and with this in view I have incorporated in my device a butterfly valve 91 mounted upon a shaft 9 which is adapted to be operated by any of the well known thermostatic devices. In the present example there is provided upon the shaft 9 the lever 92 having a slot 93 in which engages the free end 101 of a thermostat 10, the said thermostat being in the form of a bimetallic spiral having its inner extremity fixed to a pin 102 carried upon a bracket 103 secured to the exhaust manifold 3 as shown in Figures 1 and 2. The thermostat shown is of the type in which the spiral uncoils with rise of temperature, but obviously my device may be adapted for use with other forms of thermostat. By the arrangement shown, increase of temperature in the engine causes opening of the valve 91, the latter being normally held in closed position by a helical tension spring

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95, one end of which is connected to an extension 94 upon the lever 92, while the other end is secured to a pin 96 carried by the bracket 65.

It will be observed from the foregoing description and by reference to the drawing that I have provided a device which is eminently adapted to the purpose set forth, and while I have herein shown a preferred embodiment of my invention, it will be understood by those skilled in the art to which the same relates that various modifications may be made in detail as required in order to adapt the device to engines of various makes and operating characteristics, so that the proper adjustment for each individual engine and its associated carburetor will result in a considerable increase in power and economy of operation.

In order to insure proper mixing of gas and air issuing from the carburetor, the screen 43 of wire mesh is inserted in a rebate in the upper surface 20 of the member 5 so as to be clamped between the said member and the flange 41 of the carburetor.

Having thus described my said invention, what I claim and desire to secure by Letters Patent of the United States is:

25 1. An auxiliary air inlet device for internal combustion engines comprising a gasket adapted to fit between the opposed flanges of a carburetor delivery conduit and of a manifold intake conduit, said carburetor delivery conduit being controlled 30 by a throttle valve the said flange having an opening continuous with the bores of said conduits, and having an elongated slot substantially circumferentially disposed with respect to said opening; a cylindrical member having one 35 end flattened and secured within said slot and having at the other end a bell-mouthed inlet opening; a butterfly valve pivotally mounted within said member and operatively connected to the throttle valve operating mechanism of the 40 carburetor; and a second butterfly valve similarly mounted within said member and operated by a thermostatic element mounted adjacent the exhaust manifold of the engine.

2. An auxiliary air inlet device for internal combustion engines comprising a gasket adapted to fit between the opposed flanges of a carburetor delivery conduit and of a manifold intake conduit, said carburetor delivery conduit being controlled 5 by a throttle valve the said flange having an opening continuous with the bores of said conduits, and having an elongated slot substantially circumferentially disposed with respect to said opening; a cylindrical member having one end 10 flattened and secured within said slot and having at the other end a bell-mouthed inlet opening, the cylindrical bore merging gradually into said slot; a butterfly valve pivotally mounted within said member and operatively connected to the throttle 15 valve operating mechanism of the carburetor; and a second butterfly valve similarly mounted within said member and operated by a thermostatic element adjacent the exhaust manifold of the engine. 20

3. An auxiliary air inlet device for internal combustion engines comprising a gasket adapted to fit between the opposed flanges of a carburetor delivery conduit and of a manifold intake conduit, said carburetor delivery conduit being controlled 25 by a throttle valve the said flange having an opening continuous with the bores of said conduits, and having an elongated slot substantially circumferentially disposed with respect to said opening; a cylindrical member having one end 30 flattened and secured within said slot and having at the other end a bell-mouthed inlet opening, the cylindrical bore merging gradually into said slot and the said opening being closed by a dust screen; a butterfly valve pivotally mounted with- 35 in said member and operatively connected to the throttle valve operating mechanism of the carburetor; and a second butterfly valve similarly mounted within said member and operated by a thermostatic element mounted adjacent the ex- 40 haust manifold of the engine.

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