March 11, 1924. 1,486,555

A. WIKFELD

AIR SUPPLY DEVICE FOR USE WITH CARBURETORS

Filed June 28, 1923

Fig. 1.

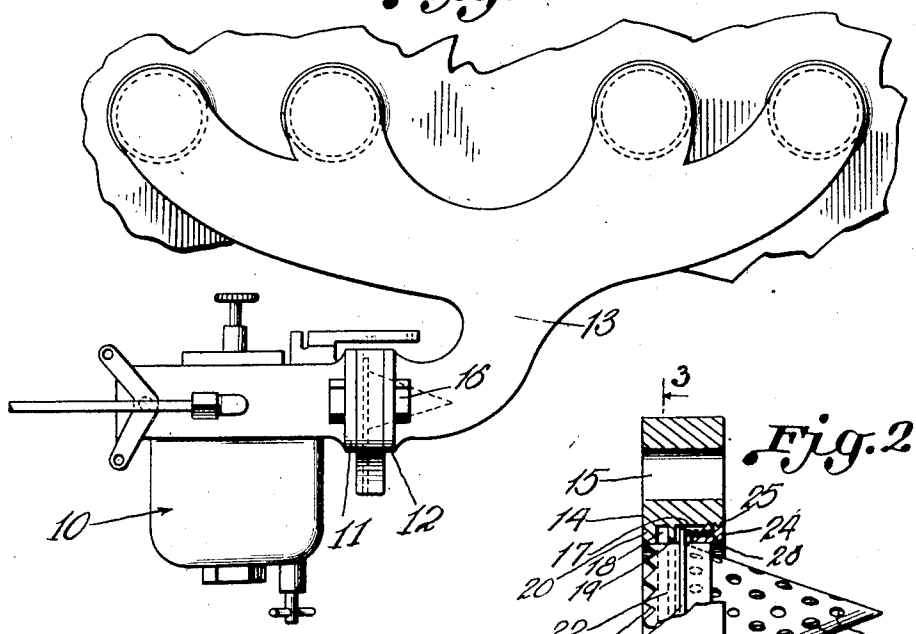


Fig. 2.

Fig. 3.

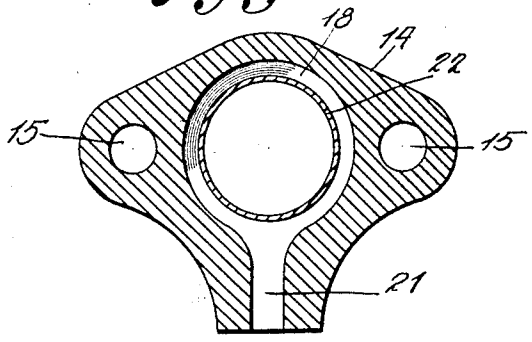


Fig. 5.

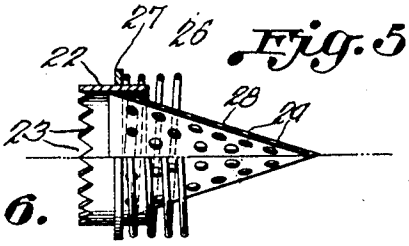


Fig. 6.

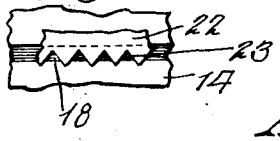
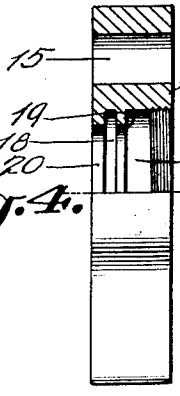


Fig. 4.



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UNITED STATES PATENT OFFICE.

ADOLPH WIKFELD, OF NORTH BERGEN, NEW JERSEY.

AIR-SUPPLY DEVICE FOR USE WITH CARBURETORS.

Application filed June 28, 1923. Serial No. 648,352.

To all whom it may concern:

Be it known that I, ADOLPH WIKFELD, a citizen of the United States, residing at North Bergen, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Air-Supply Devices for Use with Carburetors, of which the following is a specification.

My invention relates to an air supply device, for use in connection with a carburetor of an internal combustion engine.

An important object of the invention is to provide a device of the above mentioned character, which is adapted to supply additional air to the intake manifold, together with the incoming charge from the carburetor, and thoroughly mix the air with the charge, thereby reducing the amount of gasoline employed, in the operation of the engine.

A further object of the invention is to provide a device of the above mentioned character, having means whereby the additional air supply is cut off upon the starting of the engine, but is automatically supplied and increased, as the suction in the intake manifold increases, due to the increased speed of the engine.

A further object of the invention is to provide a device of the above mentioned character, which is simple in construction, compact, and is adapted to be arranged between the outlet of the carburetor and the intake of the intake manifold.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification, and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a side elevation of a device embodying my invention, showing the same in use,

Figure 2 is a side elevation of the device removed, parts in central vertical section,

Figure 3 is a transverse section taken on line 3—3 of Figure 2,

Figure 4 is a view similar to Figure 2, with the interior elements removed,

Figure 5 is a side elevation, parts in vertical section, of the sliding sleeve-valve and associated elements, and,

Figure 6 is a fragmentary side elevation, partly diagrammatic, of the sleeve-valve and housing, showing the manner of covering the air supply chamber.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 10 designates a carburetor, of any well known or preferred type, having the usual flanged outlet 11, arranged adjacent to the flanged inlet 12 of the intake manifold 13, leading to the several cylinders of the internal combustion engine.

My device or attachment embodies a housing or body portion 14, which may preferably be in the form of a casting, adapted for arrangement between the flanged ends 11 and 12. This housing is provided in its ends with transverse openings 15, for the passage of the bolts 16, serving to connect the flanged ends 11 and 12, as shown.

The housing 14 is provided centrally thereof with a main preferably cylindrical chamber 17, and an annular air supply chamber 18, with annular flanges 19 and 20, which constitute the side walls of the air supply chamber 18. At its bottom, the air supply chamber 18 leads into a depending port 21, see Figure 3, in communication with the atmosphere.

Slidable within the main chamber 17, in spaced concentric relation thereto, is a preferably cylindrical sleeve-valve 22, the rear end of which is slidable and engages within the annular flanges 19 and 20. The rear end of this sleeve-valve is provided with teeth or serrations, forming tapered or triangular openings 23, which diverge or increase in width rearwardly, for a purpose to be described. The forward end of the sleeve-valve 22 is slidable within and is guided by a ring nut 24, preferably having screw-threaded engagement with the forward end of the wall of the main chamber 17, as shown at 25. A compressible coil spring 26 is arranged within the main chamber 17, and engages with the flange of the ring nut 24 and an annular flange 27, mounted upon the periphery of the sleeve-valve 22, and rigidly secured thereto, by solder or any other means. It is thus seen that the spring 26 and associated elements will serve to normally retain the sleeve-valve in the rearmost position, whereby this sleeve-valve covers the air supply chamber 18. When this sleeve-valve moves forwardly, as will be described, the tapered openings 23 gradually

uncover this air supply chamber, allowing the air to pass from this chamber through the interior of the sleeve-valve, and then to the intake manifold. The numeral 28 designates a preferably conical combined suction and mixing element, which is provided with apertures 29, of suitable size. This conical element preferably tapers forwardly and has its large end mounted within the sleeve-valve 22, preferably at the center of the same, and is rigidly secured thereto by solder or the like.

The operation of the device is as follows:

The housing 14 is arranged between the outlet of the carburetor and the intake of the intake manifold 13, as clearly shown in Figure 1, and the conical element 28 projects forwardly into the intake manifold 13. With the parts in the normal position, Figure 2, it is obvious that when the engine is started or is running slowly, the sleeve-valve 22 will completely cover and close the air supply chamber 18. However, when the speed of the engine increases, and the suction within the intake manifold increases accordingly, the conical element 28 will be drawn forwardly, in opposition to the spring 26, and the sleve-valve 22 will be drawn forwardly. The tapered openings 23 will then be drawn over the air supply chamber 18, thereby uncovering this chamber, as such sleeve-valve moves forwardly. The additional air supply will therefore pass through the sleeve-valve into the intake manifold 13. By turning the ring nut 24, the tension of the spring 26 may be regulated, if desired.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claim.

Having thus described my invention, what I claim is:

A device for use in connection with a carburetor, comprising a housing having a bore, and a surrounding groove formed upon its inner portion and in communication with the atmosphere and constituting an air supply chamber, a sleeve valve slidable within the bore of the housing and serving to cover and uncover the air supply chamber, said sleeve valve being provided upon its rear end with tapered openings decreasing in width toward the direction of opening movement of the sleeve valve, a spring surrounding the sleeve valve and opposing its opening movement, and a tapered apertured element secured to the sleeve valve.

In testimony whereof I affix my signature.

ADOLPH WIKFELD.