April 27, 1937.

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2,078,558

CARBURETOR SCREEN

Filed July 1, 1935

FIG. 1

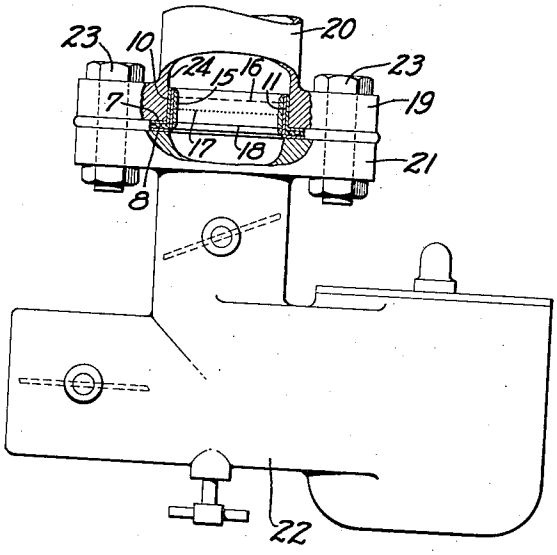


FIG. 4

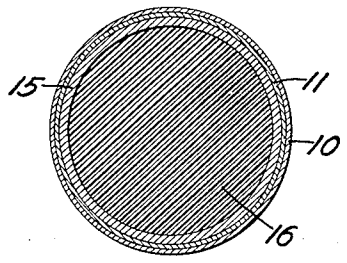


FIG. 5

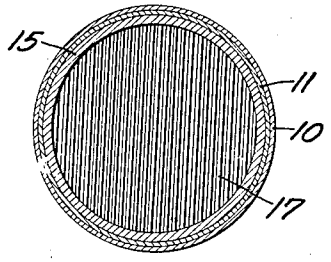


FIG. 2

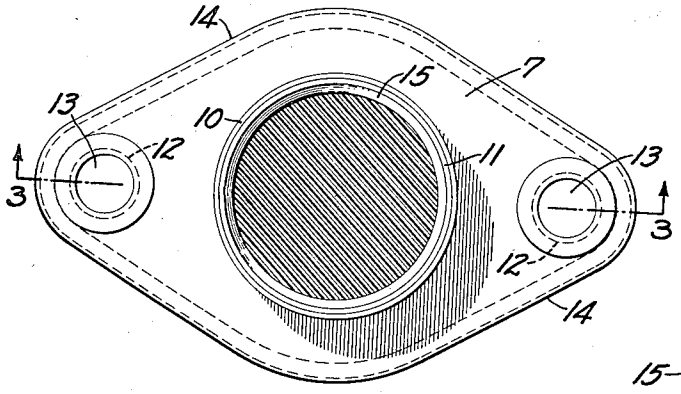


FIG. 6

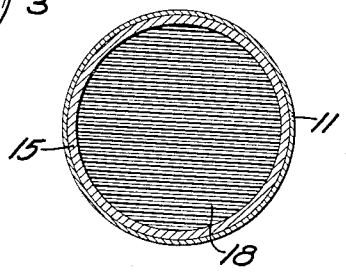
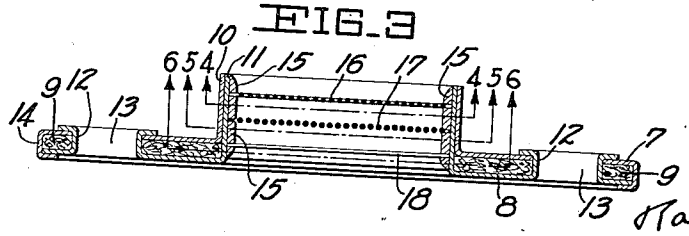


FIG. 3



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CARBURETOR SCREEN

Raleigh A. Borell, Berkeley, Calif.

Application July 1, 1935, Serial No. 29,320

2 Claims. (Cl. 48—180)

This invention relates to a device which may be interposed between the carburetor and the intake manifold of an internal combustion engine for assisting primarily in thoroughly mixing the minute drops of fuel with the stream of air entering the manifold, and secondarily for preventing the entry into the engine, through the carburetor, of large particles of dirt or similar undesirable matter.

It is an object of the invention to provide a device of the character described of such dimensions that it may be used in place of the customary gasket between the flanges used to attach the carburetor to the intake manifold.

Another object of the invention is to provide a substantially non-clogging screen, for the inlet of the intake manifold, which will readily pass the fuel vapor but which will stop particles of foreign matter from entering the engine.

Still another object of the invention is to provide a plurality of vibratory elements, in the fuel vapor passage of an engine which will disintegrate large drops of fuel and create turbulence in the vapor stream for the purpose of thoroughly mixing the fuel with the air.

My invention possesses other objects and features of advantage, some of which, together with the foregoing, will be pointed out in the hereinafter described embodiment of the invention, however, I do not wish to be limited by said description as various embodiments of the invention may be employed within the scope of the appended claims.

Referring to the drawing:

Figure 1 is a side elevational view, parts thereof being shown in section, of a carburetor and a portion of the intake manifold of an engine, showing the device of my invention mounted therebetween.

Figure 2 is a top plan view of the carburetor screen of my invention.

Figure 3 is a vertical sectional view of the screen; the view being taken in the plane indicated by the line 3—3 of Figure 2.

Figure 4 is a horizontal sectional view showing one of the screen sections. The plane of section in which this view is taken is shown by the line 4—4 of Figure 3.

Figure 5 is a horizontal sectional view showing another of the screen sections. The plane of section in which this view is taken is indicated by the line 5—5 of Figure 3.

Figure 6 is a view similar to Figures 4 and 5 showing still another of the screen sections. The plane in which this view is taken is indicated by the line 6—6 of Figure 3.

As is best shown in Figure 3, my invention consists of a composite member formed in the shape of an oval gasket having an upper plate 7 and a lower plate 8 between which is disposed a sheet of fibrous material 9, preferably asbestos. The plate 7 is provided, at its center, with a large aperture having an axially extending peripheral rim 10 and the plate 8 is similarly apertured and provided with a similarly extended rim 11, which is disposed in telescopic relationship with the rim 10, so that the two rims together provide a sleeve projecting axially from one side of the plate 7. The plate 7 is also provided with a pair of apertures through which are passed tubular sleeves 12, struck out of the material of the plate 8, and the ends of these sleeves are spun over the surface of the plate 7 to provide a pair of spaced eyelets 13 which assist in holding the plates together. Further means for securing the plates together is provided in the rim 14 of the plate 7 which is crimped over the lower surface of the plate 8.

Within the bore of the tubular rim 11 are sweated, in spaced relationship, a plurality of spacing rings 15 and in the gaps between each of the rings are positioned three separate groups, 16, 17, and 18, of spaced, parallelly disposed wires.

The wires of each group, as will be seen in Figures 4, 5, and 6, are disposed in a common plane with their axes lying at an angle with respect to the axes of the wires of the other groups, the purpose of which will be explained presently.

The screen just described is adapted to be mounted, as is illustrated in Figure 1, in the space between the flange 19 of the intake manifold 20, of an internal combustion engine, and the flange 21 of the carburetor 22, the attachment bolts 23 passing through the apertures provided therefor, in the flanges, and through the eyelets 13 of the screen. The outer diameter of the rim 10 is such that it will slide easily into the bore 24 of the manifold.

The plates 7 and 8 are constructed of soft copper, this being the material of which most gaskets used in gasoline engines are made, so that when the bolts 23 are cinched down, the plates and the sheet 9 of fibrous material, will conform to any irregularities in the flange faces.

In operation, the mixture of hydrocarbon vapor and air coming from the mixing chamber of the carburetor will strike the first group of wires 18 and will be deflected to either side thereof after which it will impinge against the wires of the second group 17 and be deflected in a differ-

ent direction to that in which it was directed by the first group of wires. Continuing onwardly the vapor will contact the third group of wires 16 which will deflect it in still another direction. Thus, it is evident, a great degree of turbulence is created in the vapor stream with the result that the hydrocarbon vapor is thoroughly mixed with the air thereby insuring better combustion in the engine and consequently greater efficiency thereof.

Another condition, in which the screen of my invention demonstrates its usefulness, is during the period of starting the engine when the latter is cold. It is necessary, as the reader is well aware, to "choke" the engine, that is cause the fuel mixture to be enriched so that it may be readily ignited. During such choking a cross section of the vapor stream will be found to consist of an outer annulus of air, containing a small amount of fuel, and a dense core of fuel particles. Such a stream entering the engine cylinders is not capable of proper combustion and as a result the engine is not started in the shortest possible time. By use of the screen described above however, the dense core of fuel is scattered and distributed in the air stream, thereby resulting in a mixture which is readily combustible.

Another valuable feature of my invention lies in the fact that particles of solid matter are prevented from entering the engine, through the carburetor air inlet, which might lodge in the valve seats and prevent the valves from closing, or, if of an abrasive nature, cause scoring of the cylinder walls.

Since the wires, of which the screen sections are composed, are resilient, they will tend to vibrate while the engine is running, thereby intercepting the majority of the liquid fuel particles in the vapor stream and disentegrating any large particles which may be present therein. In addition to this, since most carburetors are provided with chambers through which exhaust gases are passed to heat the incoming fuel, the wires of the screen sections will become quite warm and this will serve to atomize the vapor to a greater degree than is accomplished by the carburetor.

I claim:

1. A carburetor screen comprising a gasket-like body provided with a circular opening therein and a sleeve extended axially from said body and having one end in register with said opening, said sleeve being of a diameter to fit the interior of the intake manifold of a carburetor, a plurality of spacing rings fixedly secured to the inner surface of said sleeve in axially separated relation, and screens located between said spacing rings, each screen consisting of a group of straight resilient wires maintained in spaced parallel relation and in a common plane, but extended at an angle with respect to the angles of extension of the respective groups of wires of the other screens.

2. A carburetor screen comprising a gasket-like body consisting of two plates secured together in relatively spaced parallel relation to provide a chamber between them, each plate having a hole therein registering with a similar hole in the other plate, each plate also having an axially extended sleeve, one end of which is in register with the opening of its plate, one of said sleeves being located inside of the other sleeve, the outer sleeve being adapted to fit the interior of the intake manifold of a carburetor, a plurality of spacing rings fixedly secured to the inner surface of the inner sleeve and in axially separated relation, and screens located between said spacing rings, each screen consisting of a group of straight resilient wires maintained in spaced parallel relation and in a common plane, but extended at an angle with respect to the angles of extension of the respective groups of wires of the other screens.

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