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AIR CLEANER

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FIG. 1.

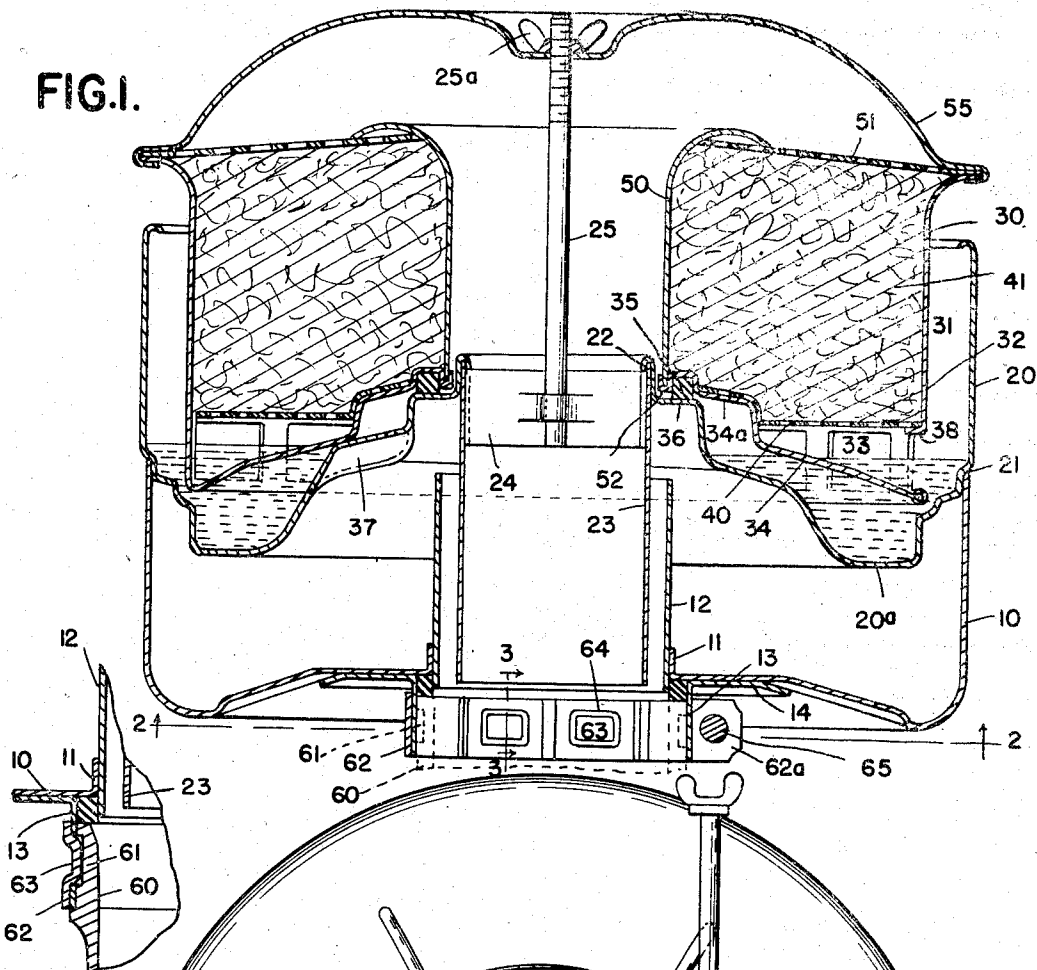


FIG. 3.

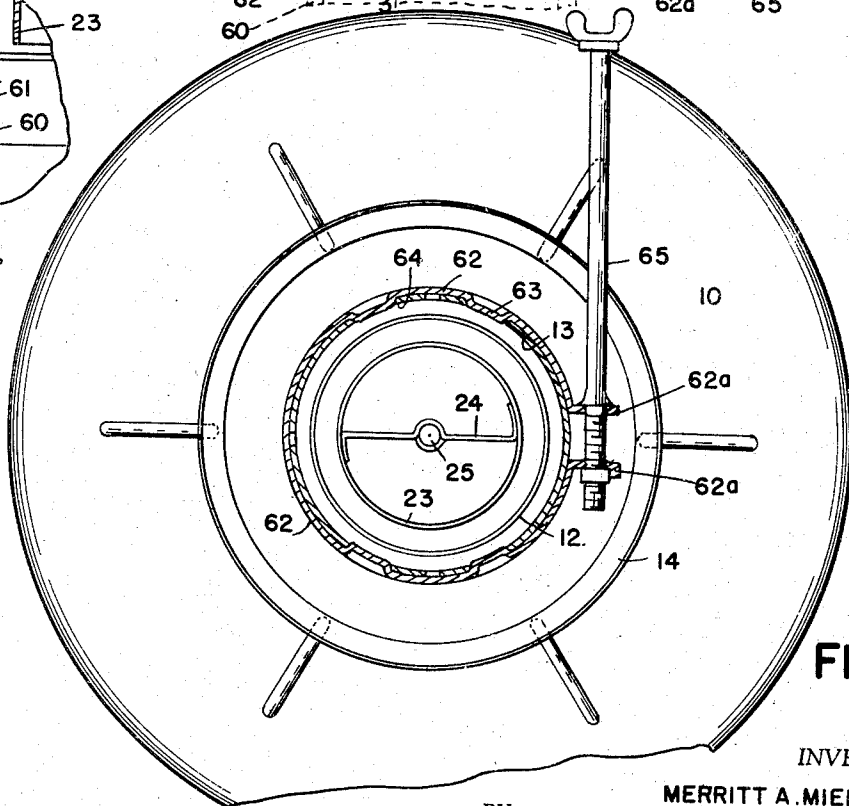


FIG. 2.

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AIR CLEANER

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2 Claims. (Cl. 183—15)

The present invention relates to air cleaners and more specifically to that type of air cleaner in which the air is passed through a loose spongy mass of filamentary material having oil absorbed therein.

Among the objects of the invention is an air cleaner in which the incoming air carries oil from a pool up into the filter material more efficiently than in similar devices.

Another object is an air cleaner of the type indicated, which is simple and inexpensive in construction, easy to assemble and difficult to render inoperative.

Still another object is means for attaching such cleaners to the carburetors of engines, which means is more efficient and less likely to allow accidental detachment.

Other objects will readily occur to those skilled in the art upon reference to the following description and the accompanying drawing in which

Figure 1 is a vertical central section of the cleaner.

Figure 2 is a section on line 2—2 of Fig. 1.

Figure 3 is a section on line 3—3 of Fig. 1, showing a portion of a carburetor air intake.

As shown in the drawing, the cleaner consists of several annular cupped elements nested together and held by means of a tension rod. Of these several elements, the lower cup 10 consists of a comparatively smooth annular cup with a short upward flange 11 around its central opening and has a short tube 12 welded thereto, this tube being of the approximate height of the outer walls. Cup 10 also is provided with a downwardly extending flange 13 by welding a suitably flanged plate 14 around the central opening upon the bottom of the cup.

Nesting within cup 10 is a second cup 20, the bottom portion of which extends down into cup 10 for some distance below the annular seat 23 formed thereon for co-action with the upper edge of cup 10. These two cups 10 and 20 are preferably welded together.

The bottom wall of cup 20 is of such shape that near its outer periphery is formed an annular sump or trough 23a while the inner periphery is elevated well above the sump level and has its inner edge 22 crimped over the upper edge of a tube 23 which is of such diameter as to pass into and be spaced from tube 12.

Tube 23 has fixed in its upper portion a spider 24 to which is welded a rod 25 threaded at its upper end.

Nested in cup 20 is a third cup 30, sufficiently

less in diameter than cup 20 to provide an annular space 31 serving as an air inlet.

The outer wall 32 of the cup 30 extends down nearly to the bottom of cup 20 and has in its lower edge a plurality of openings 33, while the bottom wall 34 slopes upward to substantially the level of the inner periphery of cup 20, and is provided with a seat in its under face for a gasket 35 by means of which there is produced an oil-and-air tight joint between cups 20 and 30 at their inner peripheries, the gasket 35 being set upon a suitable shoulder 36 on cup 20. Further, in order to aid in the support of cup 30, a plurality of bumps 37 may be formed in the sloping bottom of cup 20, the bottom of cup 30 resting upon these.

It will be noted that, in producing the openings 33, at the upper edges of the openings, the metal of the wall is turned in as at 38. These short flanges provide a seat or support for an annulus of screen wire 40 which in turn supports a body or mass of spongy filamentary material 41, this being packed loosely in the space between the outer wall of cup 30 and a tube 50 which is preferably flared out at its upper end and extends outwardly to rest upon an upper screen 51 arranged over the material 41. The lower end of the tube 50 is fixed in a suitable seat 52 in the inner edge of cup 30.

The outer wall of cup 30 is preferably curved outwardly at its upper portion and overhangs the spaced outer wall of cup 20, and both the upper edge of cup 30 and the outer edge of screen 51 are preferably held by the crimped over outer edge of the cover 55.

Cover 55 is, as shown, dome-shaped and provided at its center with an opening for rod 25 so that, when the nut 25a is tightened, the several parts are held tightly together.

With the assembled parts fixed together as described, the device is fixed to the air intake 60 of a suitable carburetor by means of the novel clamp shown.

The air intake is indicated as provided with a wide groove 61 and cooperating therewith is a split clamping band or collar 62 in which are formed a number of deeply depressed inwardly extending rectangular portions 63. These extend inwardly through corresponding openings 64 in the flange 13 to engage in groove 61 when the ends 62a are pressed toward each other by the screw 65.

In the operation of the cleaner, oil is poured into the sump 20a until the oil level is about half-way up the openings 33, a small opening

34a being provided to allow escape of air from beneath the sloping bottom 34 of cup 30.

When the sump has been filled to the indicated level, air entering the intake 31 passes over the surface of the pool and entrains considerable oil which is carried up into the material 41 thoroughly wetting the latter, and, since this oil wet material acts as an efficient cleaner, clean air passes out into the dome 55 and down through tubes 50 and 23 to the carburetor.

The chamber in cup 10 being closed except for the small opening between tubes 23 and 12 acts as a resonating chamber to reduce noises.

Now having described the invention and the preferred embodiment thereof, what is claimed is:

1. An air cleaner consisting of an annular cup having its bottom wall depressed to provide a sump for containing a body of oil and having an annular shoulder surrounding the central opening, a second annular cup nested within the first and seated upon said shoulder, said second cup being of such diameter as to provide an annular air inlet between the outer walls of the cups, said second cup having its outer wall extending downwardly into said sump and provided with a plurality of air openings and having its bottom wall sloping upwardly toward the center of the cup, the outer cup being reduced in diameter adjacent the juncture of the outer and bottom walls of the inner cup, but spaced there-

from, whereby a restricted annular oil passage is formed connecting the sump with the air inlet, a mass of spongy filamentary material in said second cup and supported above the air inlets and bottom wall thereof, and air outlet means arranged beyond said material from the air inlet.

2. An air cleaner consisting of an annular cup having its bottom wall depressed to provide a sump for containing a body of oil and having an annular shoulder surrounding the central opening, a second annular cup nested within the first and seated upon said shoulder, said second cup being of such diameter as to provide an annular air inlet between the outer walls of the cups, said second cup having its outer wall extending downwardly into said sump and provided with a plurality of air openings and having its bottom wall sloping upwardly toward the center of the cup, the outer cup being reduced in diameter adjacent the juncture of the outer and bottom walls of the inner cup, but spaced therefrom, whereby a restricted annular oil passage is formed connecting the sump with the air inlet, means to prevent trapping of air under said sloping bottom wall, a mass of spongy filamentary material in said second cup and supported above the air inlets and bottom wall thereof, and air outlet means arranged beyond said material from the air inlet.

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