Oct. 22, 1940. R. W. HANSON 2,218,880

CLEANING AND REOILING DEVICE FOR AIR CLEANERS

Filed March 29, 1937

Fig. 1.

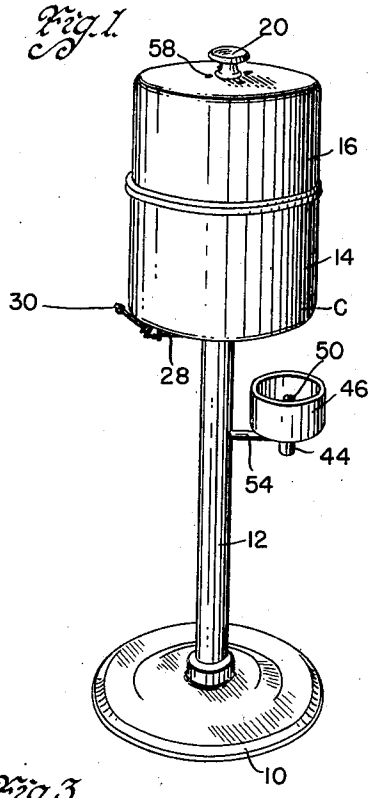


Fig. 2.

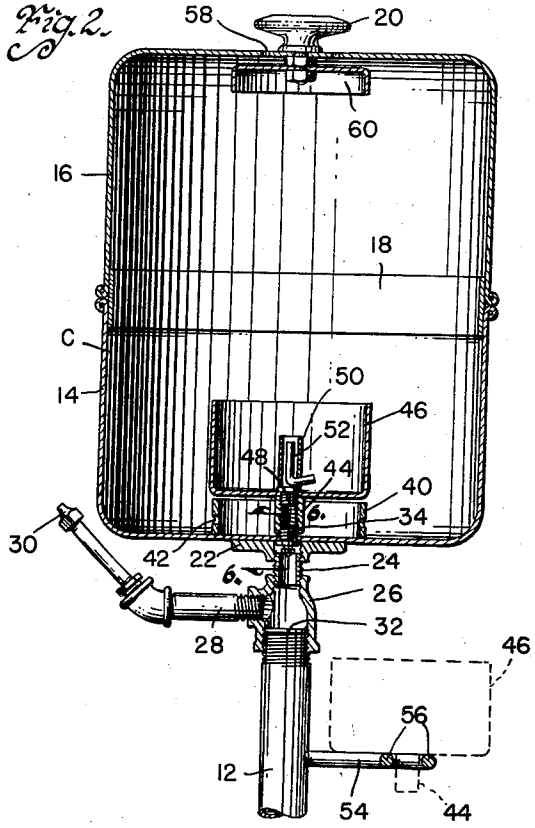


Fig. 3.

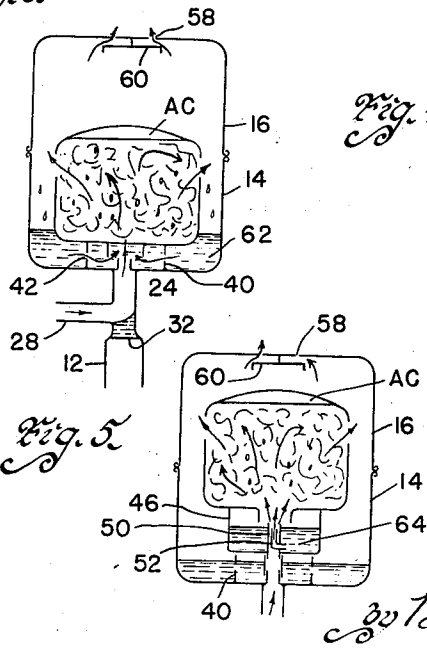


Fig. 4.

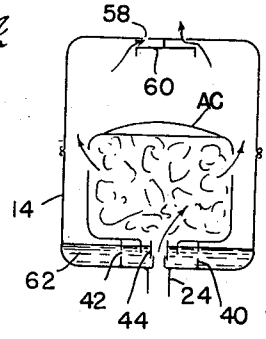
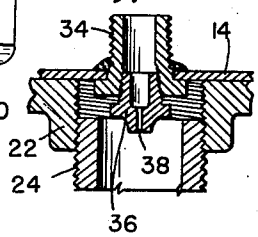


Fig. 5.

Fig. 6.



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CLEANING AND REOILING DEVICE FOR AIR CLEANERS

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4 Claims. (Cl. 141—1)

An object of my invention is to provide a cleaning and reoiling device for air cleaners of simple, durable and inexpensive construction.

A further object is to provide a cleaning and reoiling device particularly adapted for air cleaners such as now used on carburetors of automobiles and other internal combustion engines, the device being made in the form of a convenient unit adapted for use in a garage or service station.

Still a further object is to provide a cleaner and reoiler for air cleaners having means for readily cleaning the air cleaner with a cleaning fluid, the cleaning fluid being projected through the air cleaner by the simple expedient of applying a compressed air chuck, such as found available at garages and service stations, to the device.

A further object is to provide the device with different attachments whereby it is possible, by the use of compressed air, to first clean the air cleaner by using a cleaning fluid such as gasoline, then dry the cleaner by evaporating the gasoline therefrom, this being accomplished also by using compressed air, and third to reoil the cleaner by compressed air operation.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a perspective view of my cleaning and reoiling device for air cleaners.

Figure 2 is an enlarged sectional view through the upper end thereof showing the various parts assembled for a reoiling operation.

Figures 3, 4 and 5 are diagrammatical views showing the cleaning, drying and reoiling operations respectively; and

Figure 6 is an enlarged sectional view on the line 6—6 of Figure 2.

On the accompanying drawing I have used the reference numeral 10 to indicate a base. An upright post 12 extends therefrom and may be formed of a piece of pipe. On top of the post 12 a container C is mounted. The container is thereby supported by the post and base, although of course, any other type of support can be provided.

Using the post and base makes the device readily portable so it can be moved from one position to another depending on where compressed air is available, and where the device is most likely to be used.

The container C comprises a bottom part 14 and an upper part or removable lid 16. These parts may be formed of sheet metal on the same die and associated with each other by a band 18, preferably secured within the lower part 14 so that the upper part 16 can be telescoped thereover when it is desired to close the container C. A knob 20 is provided for the convenience of the operator in removing or replacing the lid 16.

The lower part 14 of the container C is mounted on the post 12 by a flange 22, a nipple 24 and a T fitting 26. A pipe 28 is threaded into the side of the T 26 and terminates in a fitting 30 adapted to coact with a compressed air or tire chuck. The fitting 30 preferably has an intake valve similar to a tire valve to prevent flow of cleaning fluid from within the container C out through the fitting 30. To prevent the cleaning fluid from going down into the pipe 12, the pipe is capped by a plate 32 brazed or otherwise sealed in position.

Extending into the bottom of the container C is an air nozzle 34. The amount of air which can pass through this nozzle is determined by a plug 36 having a small opening 38 therein, which is preferably about $\frac{3}{32}''$ in diameter, where the available air supply is between 100 and 125 pounds per square inch.

Surrounding the nozzle 42 and somewhat spaced therefrom is an air cleaner support 40. This is merely a cylindrical flange brazed or soldered to the bottom of the container, and it is provided with a plurality of perforations 42 through which cleaning fluid may flow.

Removably positioned on the air nozzle 34 is a coupling 44. Removably positioned on the coupling is an oil container 46 having a bushing 48 secured to the bottom thereof and adapted to be threaded into the coupling 44. A tube 50 forms an extension of the bushing 48 and acts as an oil nozzle. A Venturi tube 52 extends part way up through this nozzle, and its lower end is bent outwardly to extend through the wall of the tube 50 and terminates within the oil container 46.

The oil container 46 and the coupling 44 may be normally supported on an arm 54 extending from the post 12 and terminating in a ring 56 to receive the coupling when these parts are not being used on the nozzle.

At the top of the container C a plurality of air escape perforations 58 are provided. A baffle plate 60 is mounted below these to permit escape of air, yet prevent escape of cleaning fluid or oil into the atmosphere.

PRACTICAL OPERATION

1. Cleaning the Air Cleaner

This operation is illustrated in Figure 3. The air cleaner indicated at AC comprises a casing having an open bottom and perforations in its sides. It is usually filled with copper wool or other air filtering material, which is oiled to catch dust from the air passing through the air cleaner. Factory bulletins recommend that such air cleaners be cleaned and reoiled every two thousand miles of operation, otherwise dirt so clogs the cleaner that gasoline mileage drops and motor efficiency is impaired.

In order to clean the cleaner, the container C is opened and the cleaner placed therein, after a supply of gasoline or other cleaning fluid **62** (about two to four quarts) is placed in the container C. Compressed air is then introduced through the pipe **28** and discharged from the nozzle **34**. Since this nozzle is below the level of the gasoline, it will carry the gasoline with it in the form of a spray through the air cleaner AC, the air discharging through the perforations **58** to atmosphere, and any droplets of gasoline, together with entrained dirt, will fall back into the container.

2. Drying the Air Cleaner

This is accomplished by placing the coupling **44** on the nozzle **34**, as illustrated in Figure 4. This coupling forms an extension of the nozzle and the top of the extension is above the level of the gasoline, which has been somewhat depleted by evaporation during the cleaning operation. Application of an air chuck to the fitting **30** will now result in blowing air only through the air cleaner for evaporating any gasoline remaining therein.

3. Reoiling the Air Cleaner

This is accomplished by placing a supply of oil **64** (to about an inch above the intake end of the Venturi tube **52**) in the oil container **46**, and then screwing its bushing **48** into the upper end of the coupling **44**. By then introducing compressed air to the pipe **28**, the air will be discharged through the nozzles **34** and **50** and by Venturi action will draw in oil from the container **46**, the oil being atomized by such operation and sprayed throughout the air cleaner. This will cause a film of oil to adhere to the filtering material within the air cleaner, and the cleaner will thus be properly oiled for accomplishing its purpose for another two thousand miles of operation.

I have provided a very convenient device or unit for servicing air cleaners, the one device taking care of all three operations, and each operation is performed by the mere introduction of compressed air to the pipe **28**. An air cleaner can be re-serviced in a very short time and the operator is assured of a thorough job when using my apparatus.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:

1. In a device of the class described, an openable container for cleaning fluid and adapted to receive an air cleaner, said container being divided substantially midway between the bottom and top thereof and having therein an annular flange to support the air cleaner, means for projecting cleaning fluid through said cleaner comprising an air nozzle projecting into the container, means on the intake end thereof to coact with an air chuck, the discharge end of said nozzle being located below the normal liquid level in the container, and means for permitting escape of air from the container.

2. In a filtering unit cleaner, a tank adapted to contain a cleaning liquid, nozzle means having an inlet end and having a discharge end opening directly into the tank at the bottom thereof and directed upwardly, means defining a chambered support for the filtering unit open at the top, closed at the bottom, and having a side wall surrounding said discharge end, the lower portion of said side wall being imperforate, said side wall being provided with an opening above the imperforate portion but below the normal liquid level in the tank for circulation of cleaning liquid through said support, said nozzle means having a restricted passage discharging into a passage of greater cross sectional area at the discharge end thereof, and means to feed compressed air to the inlet end of said nozzle means.

3. In a filtering unit cleaner, a tank to receive the cleaning fluid, a ring-shaped support for a filtering unit in the bottom of the tank, having the lower portion of its side wall imperforate and provided with an opening above the imperforate portion communicating with the tank and spaced above the bottom of the tank to prevent circulation of foreign material in the cleaning fluid through the support, a fitting discharging directly into said support and having an inlet and a discharge end and having a restricted passage discharging into a passage of greater cross sectional area at the discharge end of said fitting, and means to feed compressed air to the inlet end of said fitting.

4. An air filter unit cleaner comprising a cup-shaped element, nozzle means having a discharge end directly upwardly into the bottom of said cup-shaped element, means adapted to contain cleaning fluid and comprising a bottom wall surrounding said cuplike element and terminating at its periphery in an upstanding wall, said discharge end of the nozzle means opening below the level of the cleaning fluid, a pipe connected with said nozzle means and extending therefrom outwardly and upwardly to provide a space to receive a charge of cleaning fluid from said nozzle means, said pipe having an inlet at its outer end for receiving compressed air, said cup-shaped element having its side wall imperforate and provided with an opening below the level of cleaning fluid contained on said bottom wall and within said wall for the circulation of cleaning fluid through said cuplike element as a result of supplying compressed air to said inlet of said pipe.

RALPH W. HANSON.