May 22, 1928. 1,670,348

G. HAIN

AIR FILTER

Filed April 23, 1925

Fig. 1

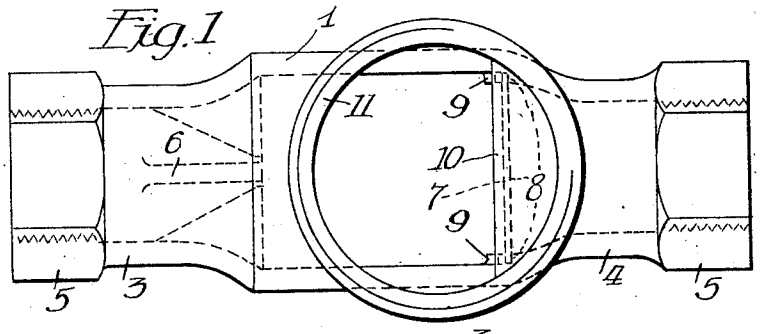


Fig. 2

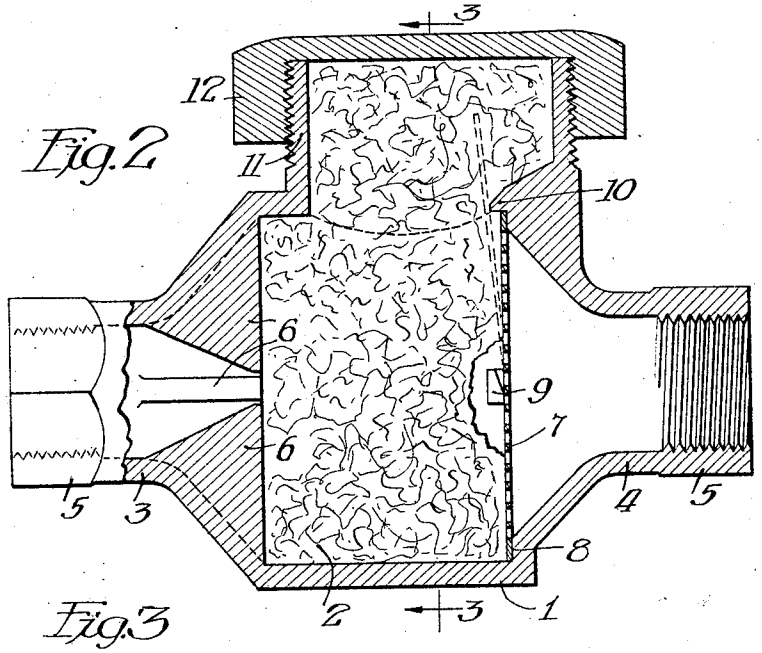
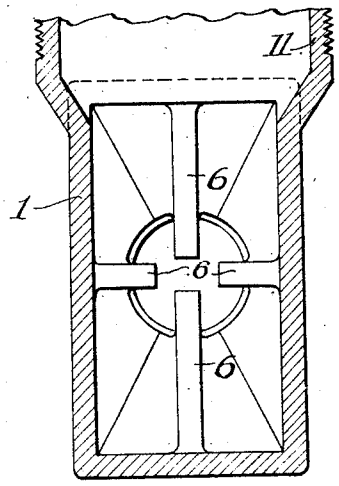


Fig. 3



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AIR FILTER.

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The invention relates to an air filter or strainer such as can be advantageously used in connection with railway brake systems, carburetors for internal combustion engines, and the like. The invention seeks to provide a simple, inexpensive and durable construction which will effectively filter the air without unduly obstructing its flow and which is so constructed that its interior is readily accessible for refilling with filtering material, cleaning and the like. The invention consists in the features of construction hereinafter set forth, illustrated in the preferred form in the accompanying drawing and more particularly pointed out in the appended claims.

In the drawing which illustrates a form of the invention more particularly designed for railway car brake systems,

Fig. 1 is a plan view, with the closure cap removed;

Fig. 2 is a vertical longitudinal section; and

Fig. 3 is a cross section on the line 3—3 of Fig. 2.

The improved filter comprises a casing or body portion 1 having a chamber 2 therein for receiving filtering material, such chamber being preferably substantially rectangular in vertical and horizontal cross section. In operation the chamber 2 is filled with suitable fibrous filtering material such as wool packing, cotton or the like.

The body or casing is provided, preferably at its opposite narrower sides, with air inlet and outlet portions 3 and 4. In order that the air may be distributed over a large area of the filtering material, and to prevent the latter from unduly obstructing the flow of air, the inner ends of the inlet and outlet portions are gradually tapered or expanded to substantially the vertical cross sectional filtering chamber. That is to say, the extreme inner ends of the air inlet and outlet portions are substantially of the same size and of like rectangular cross section as the filtering chamber, and from such inner ends they gradually taper, in the preferred form shown, to contracted outer ends of cylindrical cross section. The contracted outer ends of the inlet and outlet portions, in the preferred form shown, are provided with hexagonal portions 5 and are internally threaded so that the filter may be readily connected to pipe sections.

To retain the filtering material in place, the inner expanded end of the air inlet portion is provided with integral triangular ribs 6, which project inwardly from its top, bottom and side walls. The inner edges of these ribs are preferably all arranged in the same vertical plane as shown in Fig. 1, and the extreme inner ends terminate closely adjacent one another, as most clearly shown in Fig. 2. For the same purpose, a screen 7 is provided at the inner end of the air outlet portion. Preferably this screen is formed of a perforated metal plate and rests against a seat or shoulder 8 formed on the inner surface of the casing about the rectangular inner end of the air outlet. The screen is preferably held in position by integral lugs 9 formed on the casing wall at opposite sides of the seat 8 and arranged to overlap the side edges of the screen, a third lug or rib 10 being provided on the casing wall at the upper end of the seat and arranged to project over the upper edge of the screen.

A neck 11, formed upon the upper end of the casing, affords a filling opening for the filtering chamber. This neck is preferably cylindrical and is externally threaded to receive a closure cap 12. To afford a large opening through which the filtering material may be readily inserted and removed, the neck preferably has a diameter somewhat greater than the thickness of the body portion of the filter. Also, to facilitate insertion and removal of the screen 7, the neck portion is preferably offset toward the air outlet. As indicated in dotted lines in Fig. 2, the screen 7 can be inserted into position between the shoulder or seat 8 and the lugs 9, which are arranged at the sides of the seat substantially midway between its upper and lower ends. When fully inserted, the upper end of the screen will snap under the lug or rib 10 and be thereby securely held in position, but in such a manner that it can be readily removed for cleaning, repairs or the like.

The improved construction is such that the large cross sectional area of the filtering material is exposed to the passage of air therethrough to effectively remove dirt and other foreign matter and at the same time a free flow of air through the filter is permitted. It is also noted that the filtering material and the screen can be readily inserted or removed for cleaning.

Obviously, changes may be made in the details set forth without departure from the scope of the appended claims.

I claim as my invention:

1. An air filter comprising a casing provided with air inlet and outlet portions having expanded inner ends and an intermediate chamber for filtering material having a filling opening, ribs within the inner end of said air inlet portion, a screen at the inner end of said air outlet portion, lugs for releasably locking said screen in position, the screen being insertable and removable through said opening and into and out of engagement with said lugs and a cap for closing said opening, substantially as described.

2. A filtering device comprising a chamber provided with inlet and outlet portions having expanded inner ends, filtering material within said chamber, means for retaining said material within said chamber at said outlet portion comprising a screen, a seat formed in the inner end of said outlet portion for said screen, and guide lugs integral with the walls of said chamber for releasably holding said screen against said seat.

3. In an air filter, the combination of a casing having a filtering chamber therein provided with an air inlet, an air outlet and a filling opening, a screen for said outlet, means for positioning said screen across said outlet comprising a seat in said casing, retaining lugs opposite said seat for holding the screen against the seat, and a stop lug adjacent the upper portion of said seat for preventing endwise displacement of the screen, said screen being insertable through said filling opening into position between said lugs and said seat and under said stop lug.

4. In an air filter of the class described, the combination of a casing provided with air inlet and outlet portions and an intermediate filtering chamber having a filling opening, a screen for said outlet, means for positioning said screen over said outlet comprising a seat in said casing adjacent the inner end of said outlet portion, means integral with said casing for preventing lateral displacement of said screen from said seat, and stop means also integral with said casing and extending over the edge of the screen for preventing endwise displacement thereof, said screen being insertable through said opening into position on said seat and being sufficiently resilient to permit flexing thereof past said stop means.

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