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G. B. GALVIN

1,873,573

DUST CATCHER AIR FILTER

Filed Oct. 31, 1928

Fig. 1.

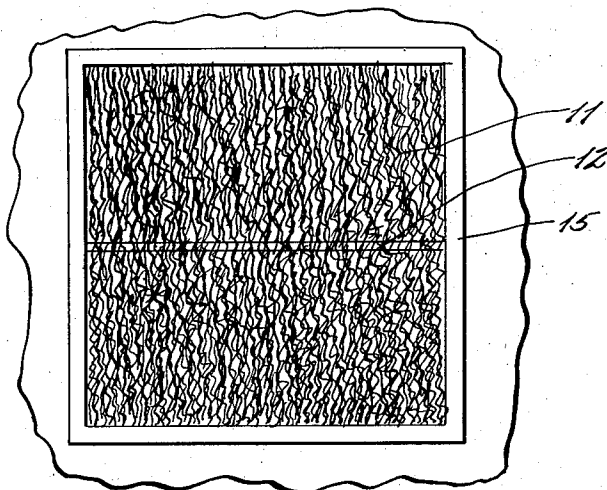


Fig. 2.

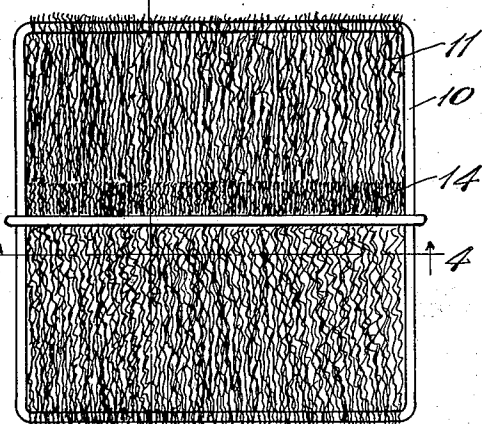


Fig. 3.

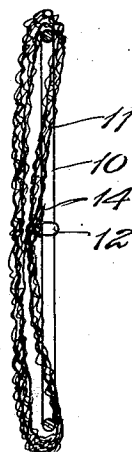


Fig. 4.

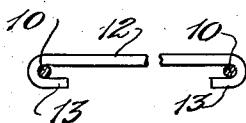
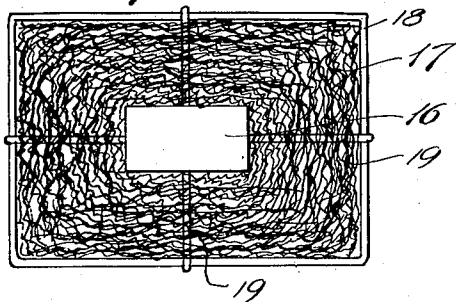


Fig. 5.



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UNITED STATES PATENT OFFICE

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DUST CATCHER AIR FILTER

Application filed October 31, 1928. Serial No. 316,257.

This invention relates to air filters or, as I preferably call them, dust catchers.

It is well understood that hot air heating systems, in which air is heated and then led through conduits to desired points, have the inherent objection that any dust drawn into the system tends to pass out with the heated air into the room or compartment it is desired to heat.

The principal object of the present invention is to provide a novel and highly efficient form of dust catcher which may be inserted in a hot air conduit, preferably adjacent the delivery end (register opening) and which, when so inserted, will catch the dust tending to pass out with the air and yet permit the air to pass out substantially without retardation.

A second important object of the invention is to provide a novel dust catcher employing metallic wool such as steel wool for catching the dust.

With the above and other objects in view as will be hereinafter apparent, the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawing and specifically claimed.

In the accompanying drawing like characters of reference indicate like parts in the several views, and:

Figure 1 is a face view of a hot air register with the device in position.

Figure 2 is a rear or back view of the preferred form of the device.

Figure 3 is a section on the line 3—3 of Figure 2.

Figure 4 is a detail section, partly broken away, showing part of the frame construction only, the section being taken on the line 4—4 of Figure 2.

Figure 5 is a face view of a modified form of the device.

In the first form of the invention, shown

in Figures 1 to 4 inclusive, there is provided a frame 10 of rectangular shape and preferably of round wire. Around two of the opposite side members of this frame is mounted a batt or thin sheet or ribbon of steel wool 11, the thin sheet being carried around as many times as may be desired and, as shown in Figure 3, there may be two or more layers. A brace and securing member 12 is provided with hook ends 13 and stretches across the frame from one side member to the other, the brace running transversely of the batt or ribbon and thus serving to hold the batt ends 14 from coming loose although, owing to the nature of the steel wool, these ends would naturally interlock with the other portions of the batt. This structure thus formed is set into the opening or conduit where it enters the room or compartment, the end being usually provided with a frame 15 as shown in Figure 1 which illustrates the appearance of the device in position.

In the form shown in Figure 5 a central block or support 16 has a batt or ribbon of metallic wool wound around it as at 17 to form a structure which may be fitted into the conduit.

While steel wool is found to be especially adapted for this purpose it is to be understood that I may use other metallic wool and it will be noted that the steel wool in the thin batt or ribbon offers little or no obstruction to the flow of air yet, owing to its highly irregular interstices, the flow of air is similarly irregular and consequently the steel wool catches the dust while allowing the air to flow freely therethrough.

It will be noted that in the form shown in Figure 5 the usual frame, here indicated at 18 is provided around the wall, this frame having the block 16 connected thereto by the wires 19.

It is to be understood that the "batt" herein referred to is made by arranging metal

wool in the form of a ribbon just as cotton or other material is formed into a batt.

This wool may, if desired, be made rust and corrosion proof by immersion in or
 5 spraying with japan lacquer or paint in such manner as to leave a thin film of the coating material on the wool.

There has thus been provided a simple and efficient device of the kind described and for
 10 the purpose specified.

It is obvious that minor changes may be made in the form and construction of the invention without departing from the material spirit thereof. It is not, therefore, desired
 15 to confine the invention to the exact form herein shown and described, but it is desired to include all such as properly come within the scope claimed.

Having thus described the invention, what
 20 is claimed as new is:

1. In a dust catcher for the conduit outlets of hot air heating systems, a frame adapted to fit the conduit, a batt of metallic wool wrapped around and supported by said frame and
 25 extending across the space within the frame to cover the same, and a cross bar extending between opposite sides of the frame transverse the batt and engaging over the batt adjacent the outer end of said batt to hold the
 30 end from unwrapping.

2. In a dust catcher for the conduit outlets of hot air heating systems, a rectangular frame of light metal adapted to fit in the conduit, a batt of metallic wool having a width
 35 equal to one side of the frame and wrapped around that side and the opposite side to cover the space between the remaining sides of the frame, and a cross bar extending between opposite sides of the frame transverse
 40 the batt and engaging over the batt adjacent the outer end of said batt to hold the end from unwrapping.

3. In a filtering device for a dust laden fluidal stream, a holder adapted to fit a conduit of the stream, and a batt of metal fibres
 45 wound around said holder, said batt having the free ends thereof interlaced with the fibres of the batt.

4. In a filtering device for a dust laden fluidal stream, a frame adapted to fit a conduit of the stream, a batt of metal fibres stretched across said frame, the free ends of
 50 said batt being folded over said frame and brought together, and means for holding said ends together.

5. In a filtering device for a dust laden fluidal stream, a frame adapted to fit a conduit of the stream, a batt of metal fibres passing over and around the opposite sides of said
 60 frame, the free ends of said batt being brought together, and a cross member for holding said ends together.

6. In a filtering device for a dust laden fluidal stream, a frame adapted to fit a conduit of the stream, a batt of metal fibres
 65

wound around said frame, and means for holding the free ends thereof in place and from unwrapping.

7. A dust filter comprising a holder, a strip of metal fibres wrapped about said holder, and means engaging the free ends of the strip to prevent unwrapping of the strip.

8. In a filtering device for a dust laden fluidal stream, a holder adapted to fit within a conduit, and a batt of metal fibres wound upon itself a plurality of times around said holder, the ends of the fibres at the exposed extremity of the batt being interlocked with the fibres of the contiguous portion of said batt.

In testimony whereof I affix my signature.
 GEORGE B. GALVIN.