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AIR FILTERING AND CLEANING DEVICE

Filed Feb. 26, 1927

Fig. 1.

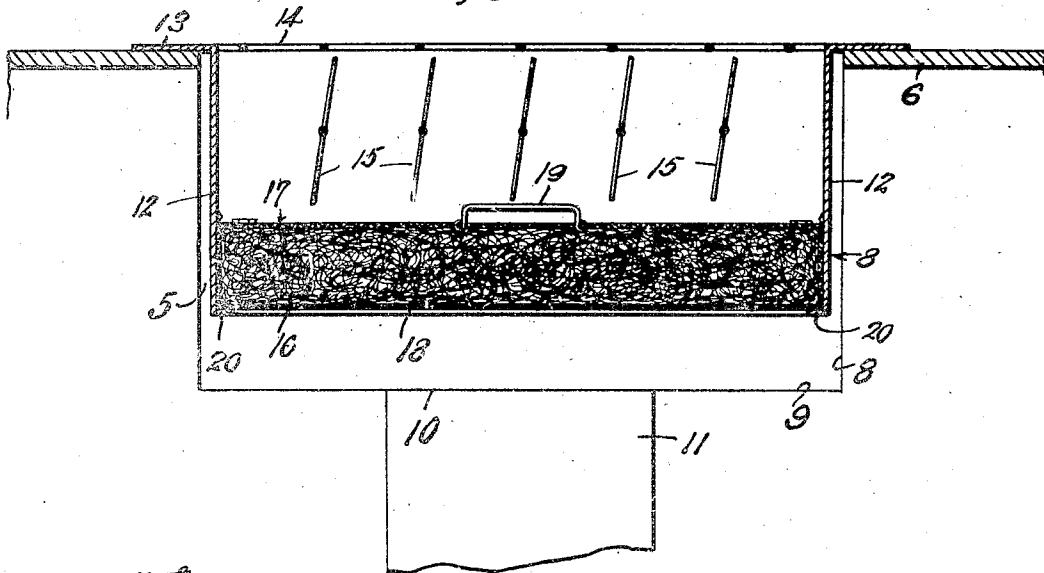


Fig. 2.

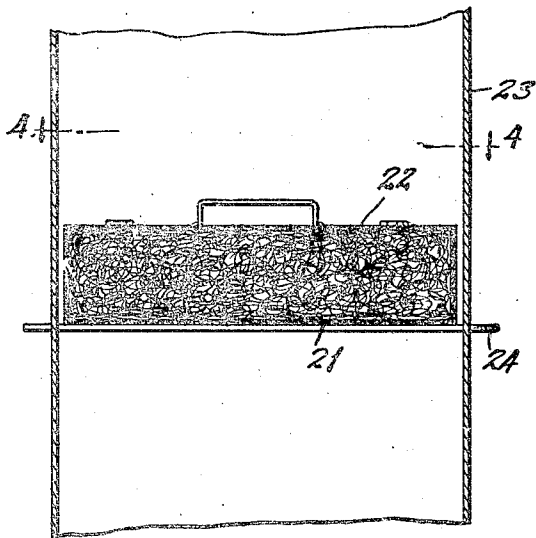


Fig. 4.

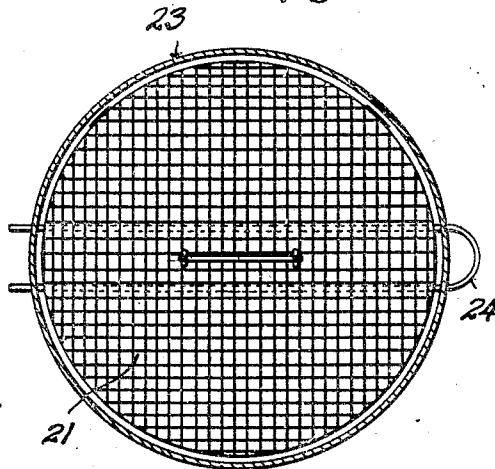
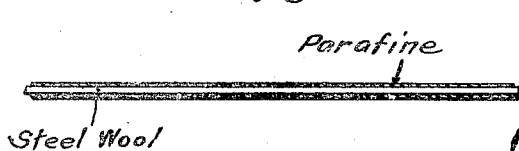


Fig. 3.



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## UNITED STATES PATENT OFFICE

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## AIR FILTERING AND CLEANING DEVICE

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My invention relates to air filtering and cleaning devices and more particularly to filters for use in connection with hot air furnaces.

5 The invention has for its object to provide a filter of the class described, of simple and economical construction, which will effectively remove and collect dust and other foreign particles of dirt from the warm fur-  
10 nace air passing therethrough, prior to the escape of the air through the usual registers.

Another object of my invention is to provide a filtering medium, the dust collecting  
15 properties of which will be increased when subjected to heat.

Other objects and advantages of my invention will be apparent as the following description is considered in connection with  
20 the accompanying drawings, in which:

Figure 1 is a side view of a portion of a hot air heating system showing my improved filter installed in the register thereof;

25 Figure 2 is a fragmentary view of the hot air pipe of a hot air heating system showing a modified form of filter installed in the hot air pipe; and

Figure 3 is a detail view of the steel wool fibers showing the paraffine coating, and

30 Figure 4 is a section on the line 4-4 of Figure 2.

Referring more particularly to the drawings wherein like reference numerals refer to corresponding parts throughout the several views, and with more particular reference to Figure 1, 5 indicates the usual register opening or hole in the floor 6 of the building to be heated. A boot or casing 7 is suitably secured at its upper open end to the  
35 edges of the register opening 5, by any desired fastening means (not shown). This boot, which is of open ended rectangular formation, and comprises sides 8 and bottom 9, has the opening 10 in its bottom in register  
40 with the upper end of the hot air feed pipe 11, in turn leading from the hot air furnace (not shown).

Removably fitted within the boot or casing 7 is a register frame 12 of similar shape  
45 but of slightly smaller dimensions than the

boot or casing 7. The register frame is telescopically supported within the boot by means of the outwardly extending marginal flange 13 resting upon the floor 6 around the edge of opening 5. The flange 13 is preferably an extension of the perforated register top 14 and the latter is preferably an integral part of the register frame. Dampers or shutters 15 of usual construction are mounted within the register frame below the  
55 perforated top 14.

The filter member consists of a rectangular receptacle or cage 16, preferably of wire mesh and formed with a hinged cover 17 to facilitate renewal of the steel wool mass or  
60 pad 18 removably contained therein. A handle 19 is also provided to facilitate placing the cage within or removal from the register. When the cage is in the position illustrated in Figure 1, the former rests upon and is re-  
65 movably supported by the intumed flange 20 on the lower open end of the register casing 12.

It will be understood that hot air flowing upwardly through the pipe 11 and thence  
70 into the register must pass through the steel wool 18 before passing into the dwelling or other place to be heated. In order to increase the dust collecting properties of the steel wool filter, the fibers of the steel wool are impreg-  
75 nated or coated with paraffine, as by dipping or other approved method. The warm air from the heat inlet pipe 11 causes the paraffine to soften and in consequence the coated fibers will have a much greater attraction  
80 for the dust, dirt, lint and other foreign particles present in the air.

In Figure 2 of the drawings I have illustrated a modified form of my invention, wherein the cage 21 containing a filter pad  
85 22 of paraffine coated steel wool is supported within the hot air feed pipe 23, a U-bolt 24 passing through the feed pipe being employed for this purpose.

While I have found steel wool to be a most  
90 effective filtering medium, and one which does not readily deteriorate, good results have been obtained by the use of other paraffine coated fibrous materials. In lieu of paraffine, other coating material possessing  
95 100

similar adhesive qualities, and having a low melting point may be employed.

For the purpose of further purifying the air before it leaves the register, the body of  
5 steel wool is preferably treated or saturated with any well known antiseptic.

What I claim as my invention is:

1. In a hot air heating system provided with a wall opening communicating with the  
10 hot air pipe, a register frame having out-turned flanges seated on the edge of said opening and extending into said opening and formed with in-turned flanges at its inner end, and an air filter comprising a shallow  
15 box formed throughout of open mesh screening and filled with fibrous material and free of plane surfaces tending to obstruct or deflect air currents, said member fitting in said frame and being supported by said flanges  
20 and positioned by the latter at a point spaced substantially from the outer end of said frame to provide for the usual register shutters.

2. In combination, a hot air furnace register box comprising a rectangular frame  
25 having a grille across the front thereof and provided with shutters behind said grille and with in-turned flanges behind said shutters and substantially spaced from the innermost  
30 elements of said shutters, and a filter for hot air positioned behind said shutters and comprising an open mesh cage in the form of a shallow box fitting in said frame and supported by said flanges and filled with a loose  
25 mass of entangled fibrous material and unobstructed by any plane members tending to impede or deflect the air stream through the cage.

In testimony whereof I affix my signature.

40 DANIEL V. TUTTLE.

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