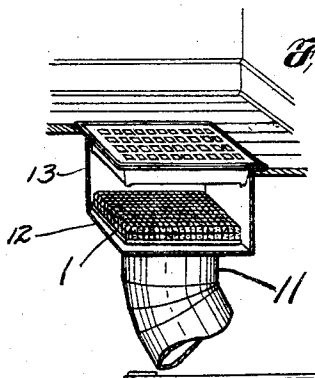
Feb. 7, 1933. H. J. CROSS 1,896,700

DUST COLLECTOR

Filed Sept. 10, 1928

Fig. 1.



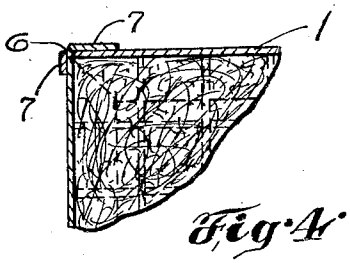
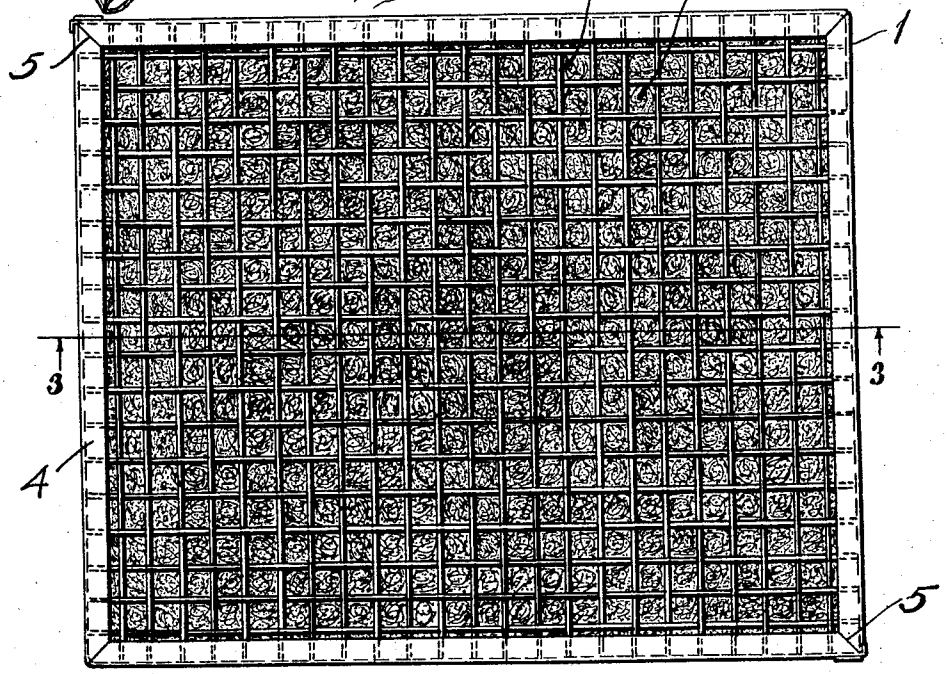


Fig. 4.

Fig. 2.



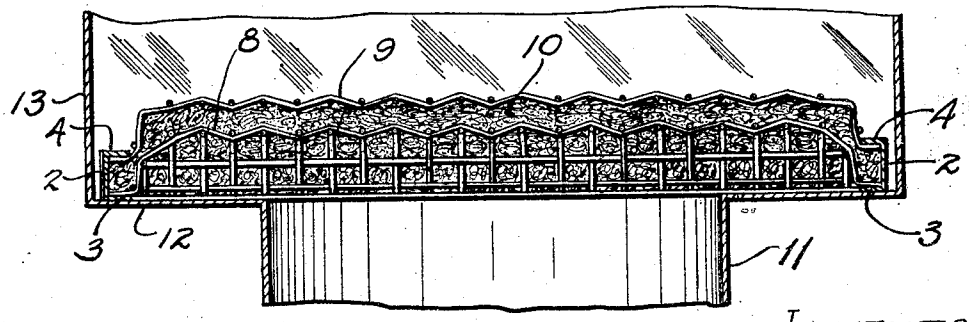


Fig. 3.

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UNITED STATES PATENT OFFICE

HERMAN J. CROSS, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO TUTTLE REGISTER DUST CATCHER COMPANY, OF LOUISVILLE, KENTUCKY, A CORPORATION OF KENTUCKY

DUST COLLECTOR

Application filed September 10, 1928. Serial No. 304,391.

My invention relates to filtering of air discharged from hot air furnaces and consists in a new dust catcher adapted to be applied to hot air registers of different types.

The main object of my invention is to provide a dust catcher which will present an area of filtering material to the stream of air which will not unduly obstruct the free passage of the air through the hot air pipe and the register.

Another object of my invention is to provide a dust catcher which may be applied to different types of registers or may be mounted upon the outside of a register, if desired.

In the accompanying drawing which illustrates a selected embodiment of my invention—

Figure 1 is an elevation and section of a room floor hot air pipe and register with my collector applied thereto.

Figure 2 is a top view of my improved dust catcher.

Figure 3 is a section through the dust catcher taken on line 3—3 of Figure 2 and also showing in section the hot air pipe and register casing.

Figure 4 is a fragmentary horizontal section through one corner of the dust catcher.

The dust catcher includes a frame 1 formed of a sheet metal channel section having an upright web 2 and inturned flanges 3 and 4, the flanges being mitred at the corners, as indicated at 5, and the webs being slotted and tongued, as indicated at 6 and 7, respectively, to form a joint.

A suitable sheet 8 of wire mesh, such as hardware cloth, has its edges located between the flanges 3 and 4 of the frame and resting on the lower flange. The body of the same is bulged upwardly adjacent to the inside of the frame to a level spaced substantially from the bottom of the frame and preferably extends parallel with the plane of the frame from side to side of the latter. A second sheet 9 of similar material has its edges fitting between the upper and lower flanges of the frame and is held against the upper flange by a layer 10 of loose fibrous material, such as steel wool, the same being confined between sheets 8 and 9 and forming a filter for the air passing through the register. The mass of filtering material may be sprayed with a preservative coating which at the same time will increase the adhesiveness of the material for dust collecting purposes. Paraffin, oil paint, lacquer, enamel or metallic paint such as aluminum and bronze may well be used for this purpose according to the class of service and appearance desired. It is not necessary however to treat the filter material, as plain steel wool serves very well in itself. If desired, an antiseptic solution may be applied to the filter mass.

A common application of the dust collector to a register is indicated in Figure 3 and illustrates the advantages of my device. The end of the hot air pipe or the outlet therefrom is indicated at 11 and the register casing therefor is shown with a back or bottom wall 12 and a side wall 13. The bottom wall 12 extends outwardly from the pipe outlet for a substantial distance and the frame 1 of the dust catcher rests upon wall 12 at points spaced substantially from the pipe outlet 11. This arrangement, together with the bulged form of the dust catcher, permits the air flowing from the pipe to spread outwardly and pass through a layer of filter material presenting an area much larger than the area of the closed figure formed by the frame or the cross sectional area of the outlet 11 and this greatly reduces the impedance to the flow of air over devices previously used in which the dust catcher frame and filter material were formed in a common plane and laid flat against the back wall of the register.

It will be understood that the device illustrated may also be made circular and may be applied to the casing of an upright register or may be mounted upon the exterior face of a register, if preferred. It is not essential to my invention that the particular form of frame illustrated and described be used or that the filter material be steel wool or be confined by the specific mesh shown. Various changes in the details of construction may be made without departing from the spirit of my invention and I contemplate the exclu-

sive use of such modifications as come within the scope of my claims.

I claim:

1. In a dust collector for a hot air furnace register, a frame comprising a channel section forming a closed figure with the flanges of the channel turned inwardly, a sheet of wire mesh with its edge portions extending between the flanges of said frame and resting against the lower of said flanges, a second sheet of wire mesh with its edge portion extending between said flanges and resting against the upper of said flanges, said sheets being spaced apart by a mass of loose fibrous compressible material between and confined by said sheets and forming an air filter, a portion of said sheets and material being offset to bring the lower sheet of wire mesh above the level of the upper flange of said frame.

2. In a dust collector for a hot air furnace register, a shallow rectangular frame forming a closed figure, an air filtering member comprising superimposed sheets of wire mesh of the same general outline as said frame and having their edge portions secured to said frame and having their remaining portions bulged outwardly from the level of said frame and spaced apart, and a relatively thick mass of loose fibrous filtering material such as steel wool positioned between and confined by said sheets.

3. In a dust collector for a hot air furnace register, a shallow frame forming a closed figure, an air filter member comprising sheets of wire mesh spaced apart and having their edge portions of the same general outline as said frame and seated therein and having their remaining portions bulged outwardly from the general plane of said frame, and a relatively thick layer of substantial thickness of loose, fibrous filtering material such as steel wool positioned between and confined by said sheets.

In testimony whereof I hereunto affix my signature this fourth day of Sept., 1928.

HERMAN J. CROSS.