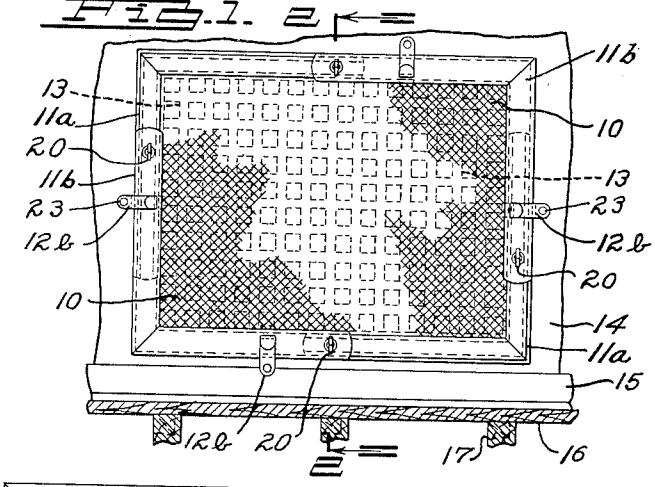
Oct. 10, 1939. C. LICHTMAN 2,175,903

ADJUSTABLE AIR FILTER

Filed Aug. 15, 1938

Fig. 1.



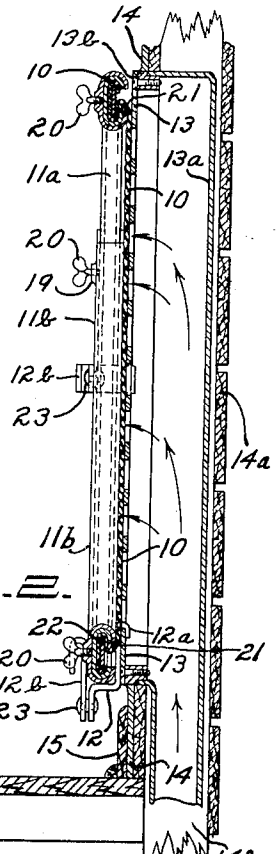




Fig. 2.

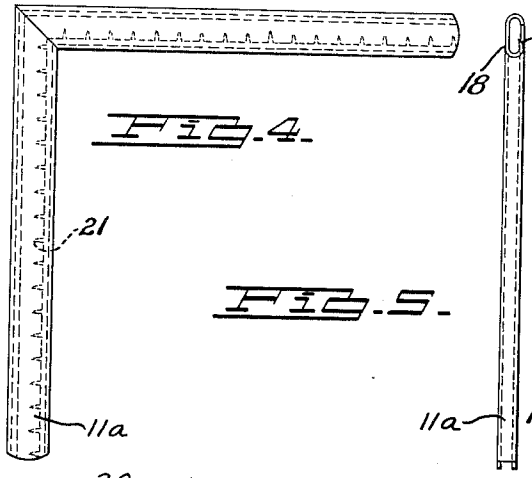



Fig. 4.

Fig. 5.

Fig. 3.

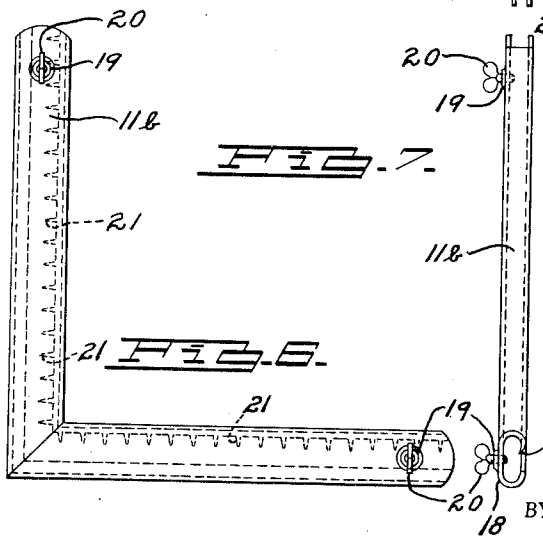
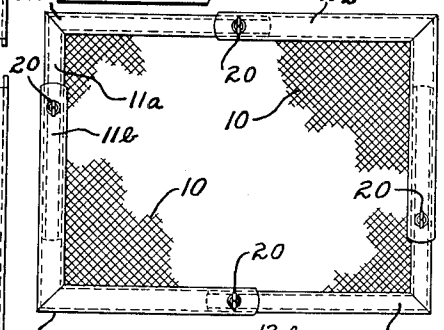



Fig. 7.

Fig. 6.



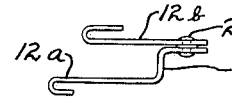




Fig. 8.

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# UNITED STATES PATENT OFFICE

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## ADJUSTABLE AIR FILTER

Camon Lichtman, Detroit, Mich.

Application August 15, 1938, Serial No. 224,910

5 Claims. (Cl. 183—74)

This invention relates to air filters and has particular reference to a filter which may be readily attached to the register of a hot air heating plant.

An object of the invention is to provide an air filter, which may be readily adjusted as to size and attached to the various types of hot air registers, now employed in homes, offices and other buildings.

A further object of the invention is the provision of a device of the character referred to, which is simple in construction, economical to manufacture, and one which may be readily assembled and installed by a layman, without the necessity of using special tools.

Another object of the invention is the provision of a device for filtering the air of a warm air heating system, which is so constructed and arranged, that the filtering element may be readily removed for cleaning or replacement.

Further objects of the invention will appear as the description proceeds, reference being made to the accompanying drawing, which forms a part of this disclosure, in which drawing:

Fig. 1 is a front elevation of the device embodying my invention, showing it in position on and attached to a conventional hot air register.

Fig. 2 is a vertical section, taken on the line 2—2 of Fig. 1.

Fig. 3 is a front elevation of my improved air filter, before it is attached to the register.

Fig. 4 is a front view of one of the sections comprising my air filter frame.

Fig. 5 is an end view of the section illustrated in Fig. 4.

Fig. 6 is a front view of another section of the filter frame.

Fig. 7 is an end view of the section illustrated in Fig. 6.

Fig. 8 is an enlarged detail of one of the hooks used to attach my device to the radiator.

Referring now more particularly to the drawing, it will be understood that the device embodying my invention consists generally of the filter element 10, frame 11, and securing hooks 12, as will be more particularly described hereinafter.

In Figs. 1 and 2, I illustrate the device embodying my invention, mounted in position on a conventional hot air register 13, the latter being secured at the end of a conventional hot air duct, 13*a*, by means of screws 13*b*, the whole assembly being shown in position in a building, wherein 14 indicates the inside wall, 14*a* the outside wall, 14*b* the wall studding, 15 the footboard, 16 the floor and 17 the floor joist.

The filtering element 10, may be of any suitable material that will efficiently remove particles of dust, dirt and other foreign substances from the air as it is passed through the filter. The frame 11 is preferably made of four L shaped sections, 11*a* and 11*b*. These sections are preferably formed as channel members as illustrated at 18, Figs. 5 and 7. The section 11*a* is made with a smaller diameter, so that it may readily telescope the channel of section 11*b*. The frame is completed by two additional sections, which are assembled in the same manner. The sections 11*b* are provided with threaded bosses 19, which are arranged to engage the wing screws 20, the latter being adapted to serve as set screws to hold the telescoping sections in predetermined position. All of the sections comprising the frame 11 are provided with barbs 21, which are formed along the inner edges of the backs of the several sections. The barbs 21 are intended to permit the filter element 10 to be impaled thereon. After the filter element is impaled on the barbs 21, I prefer to place locking strips 22 (Fig. 2) in the channels. The locking strips 22 may be made of cardboard or other suitable material and serve to prevent the free edges of the filter element 10 from being displaced from the barbs 21.

The frame 11 is made adjustable by means of the telescoping sections, so that the frame may be readily adapted to hot air registers of different size.

After the device is assembled as hereinabove described, it is secured to the hot air register 13, by means of the hooks 12 (Fig. 8). The hooks 12 are formed with an angular shank 12*a* and a straight shank 12*b*, which shanks are pivoted as at 23 so that the components may be swung into different positions. To secure the frame 11 to the register 13 the hook 12 is placed so that the hook component 12*a* engages the back of the register 13 as shown in Fig. 2. The component 12*b* is then swung in position, as shown in Fig. 2, to lock the frame 11 in place.

From the foregoing it will be seen that I have disclosed a device, which may be readily secured to the outlets of hot air heating plants, whereby the air may be kept reasonably free from dirt and foreign substances.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. A filter frame comprising a plurality of L shaped channels, said channels having barbs

formed along one edge thereof, said barbs being adapted to impale a filter element arranged across the frame.

2. A device of the character described, comprising the combination of a plurality of L shaped sections, arranged to telescope one another, each of said sections being formed with a longitudinal channel, said channels having a multiplicity of barbs formed along one edge thereof.

3. The combination as defined in claim 2, there being a filter element impaled on said barbs and locking strips in said channels, to secure said filter element on said barbs.

4. A device of the character described, comprising the combination of four L shaped sections, the legs of the respective sections telescoping one another, to form a parallelogram, there being a longitudinal channel formed in each section, the inner edge of each channel having a multiplicity of barbs adapted to impale a filter element, a filter element extending between said sections and impaled upon said barbs, the ends of said filter element extending into said channels, and locking strips arranged in said channels, said locking strips being adapted to hold the edges of said filter element in said channels.

5. The combination as defined in claim 4, there being adjustable means on each of said sections, adapted to hold the sections in predetermined relation to one another.

CAMON LICHTMAN.