F. E. AND F. B. SMITH.

AIR FILTER.

APPLICATION FILED DEC. 20, 1920.

1,385,502. Patented July 26, 1921.

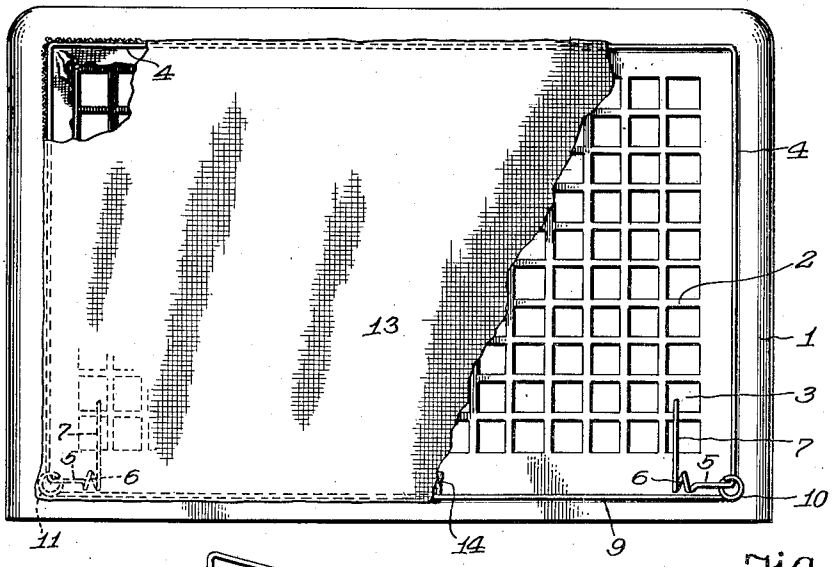

Fig. 1.

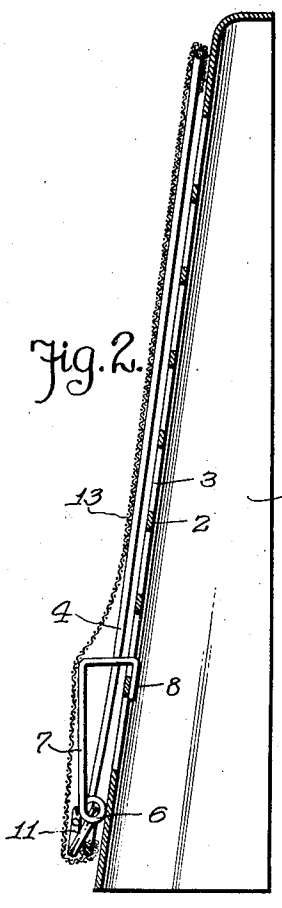

Fig. 2.

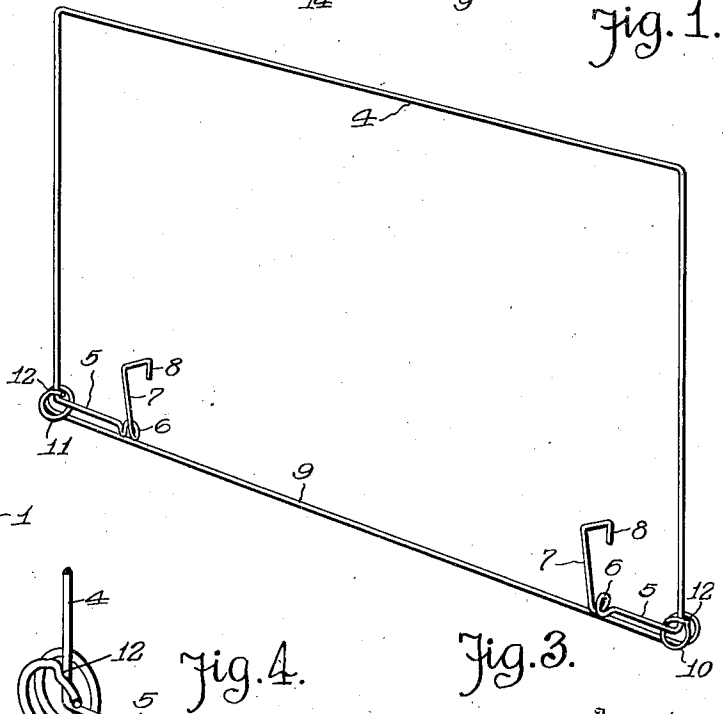

Fig. 3.

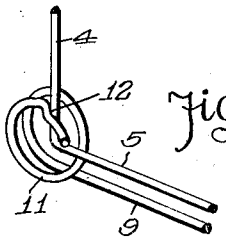

Fig. 4.

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AIR-FILTER.

1,385,502. Specification of Letters Patent. Patented July 26, 1921.

Application filed December 20, 1920. Serial No. 431,861.

To all whom it may concern:

Be it known that we, FLORENCE E. SMITH and FRED B. SMITH, citizens of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Air-Filters, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an air filter or register attachment and has special reference to an attachment applicable to various types and styles of registers for filtering and purifying air emitted by the register, particularly warm air that is laden with dust and other foreign matter.

The primary object of our invention is to provide a novel detachable screen that may be easily and quickly mounted over a register for air to pass through the screen and be filtered and purified thereby, the screen being made of a material which will collect dust and other foreign matter or may be treated to possess such a qualification. In its simple form the screen may be of a fabric which may be washed, from time to time and repeatedly used for dust collecting purposes.

Another object of our invention is to provide a novel frame that may be easily and quickly clamped on a register to support a filtering screen, the frame being constructed to maintain the screen taut against accidental displacement and without marring or detracting from the general appearance of the register. A simple form of the frame is made of wire shaped so that the screen will be firmly held against the draft of warm air emitted by the register.

A further object of our invention is to provide a simple durable and inexpensive register attachment that may be readily finished to harmonize with the finish of the register or adjacent structures, and the construction entering into the attachment will be hereinafter described and then claimed.

Reference will now be had to the drawing wherein—

Figure 1 is a front elevation of the register attachment, showing the screen partly broken away and partly in section;

Fig. 2 is an enlarged vertical section of the same;

Fig. 3 is a perspective view of the screen frame, and

Fig. 4 is a perspective view of a portion of the frame.

The reference numeral 1 denotes a support or conventional form of warm air register having a grate or lattice work 2 affording the usual warm air outlet openings 3, and in some instances the register has dampers or deflectors so that the exhaust of warm air may be regulated.

The reference numeral 4 denotes an inverted U-shape wire frame having its lower ends provided with inwardly projecting lateral portions 5 which are coiled, as at 6, and terminate in hooks 7 provided with bills 8. The hooks 7 are upstanding and when bent relative to the lateral portions 5 of the frame 4 the hooks 8 are placed in a plane in the rear of the frame 4 while the greater part of each hook remains in a plane in front of the frame 4. The frame 4 is made of a size to surround the top and side edges of the lattice work 2 so that said frame may be fitted against the front wall of the register, as shown in Fig. 1. The frame 4 is adapted to be held against the front wall of the register by the hooks 7 extending into the openings 3 and the bills 8 of said hooks engaging behind the lattice work 2. With the hooks 7 made of wire the coiled portions 6 at the base of said hooks, will be sufficiently sprung to bear against the front wall of the register 1 and thus cause the frame 4 to be clamped and frictionally held against the front wall of the register. The manner in which the frame is held does not prohibit said frame from being sprung outwardly from the register, especially when placing a screen in engagement therewith, and in some instances the coiled portions 6 may be dispensed with so that the lateral portions 5 of the frame will merge directly into the hooks.

Attached to the frame 4 is a screen holding rod 9 which is also made of wire and one end of the rod is coiled to provide an eye 10 for one of the lateral portions 5 of the screen, so that the rod may be pivotally or loosely held by the screen. The opposite end of the rod 9 is coiled to provide a keeper 11 which may be pressed on to the lateral portion 5 at the opposite side of the screen with the lateral portion 5 extending between convolutions of the coiled keeper, and one of the convolutions of said keeper may have an offset portion 12 serving as a snap catch

so that besides friction the end of the rod 9 will be held by the frame against accidental displacement.

13 denotes a screen of greater area than the frame 4 and made of cheesecloth or some pervious fabric which will serve as an air filter and collect dust and other foreign matter from air forcibly projected against or drawn through the screen. In some instances the screen may be impregnated or otherwise treated with a dust collecting substance, and with the screen made of fabric it is obvious that the same may be cleaned from time to time and a colored piece of fabric used that will harmonize with the finish of the register 1.

The screen 13 has its lower edge provided with a casing 14 to receive the rod 9 and said casing may be made of a size to be threaded or sleeved onto the rod 9 with the casing providing sufficient clearance for the eye 10 and the keeper 11. Then again, the casing may be small and stitched or otherwise mounted about the rod 9. In either instance, the lower edge of the screen will be held relative to the rectangular wire frame and the other edges of the screen may be tucked or gathered between the frame 4 and the register 1 so that the yieldable clamping action of the frame 4 against the register will hold the edges of the screen with the screen taut in front of the register, thus preventing air from escaping from the register without passing through the screen. The edges of the screen are also held so that any blast of air against the screen will not dislodge the same and with the screen properly positioned it is practically impossible for dust and other foreign matter to enter a compartment supplied from a register equipped with our attachment.

We attach considerable importance to the construction of the frame 4 when properly bent and shaped as it then possesses an inherent tendency to not only hold the hooks 7 in place but retain the frame clamped against the front of the register and yet permit of said frame and its screen being bodily removed when the register is not in use. It is obvious that the screen may be provided with a suitable aperture to permit of any damper or other air regulating device being operated without removing the attachment.

While in the drawing there is illustrated a preferred embodiment of our invention, it is to be understood that the structural elements are susceptible to such changes in size, shape and manner of assemblage as fall within the scope of the appended claims.

What we claim is:—

1. A filter adapted for attachment to a support, said filter comprising an inverted U shaped frame having hook shaped ends which may be sprung into engagement with the support to stress the frame and cause said frame to frictionally engage the support, a rod having coiled ends with one end of the rod pivotally held at one end of said frame, and the other rod end detachably held at the opposite end of said frame, and a fabric screen having a casing through which said rod extends, said screen being of larger area than said frame so that the edges of said screen may be placed under said frame.

2. A filter comprising a frame made of a single piece of wire having its ends bent to provide hooks adapted to engage a support, a pivoted rod carried by one end of said frame and adapted to be held by the opposite end of said frame, and a screen on said rod and adapted to have its edges held between said frame and said support.

3. An air filter adapted for attachment to a support, said filter comprising a frame solely supported by the support, said frame having a lower support engaging portion which is sprung by engagement with the support to stress said frame and produce a clamping action against the support, and a fabric screen held by the lower portion of said frame and having its edges clamped between said frame and the support.

In testimony whereof we affix our signatures in presence of two witnesses.

FLORENCE E. SMITH.
FRED B. SMITH.

Witnesses:
ANNA M. DORR,
KARL H. BUTLER.