Sept. 3, 1935. L. L. DOLLINGER 2,013,038

AIR FILTER

Filed Dec. 31, 1932 2 Sheets-Sheet 1

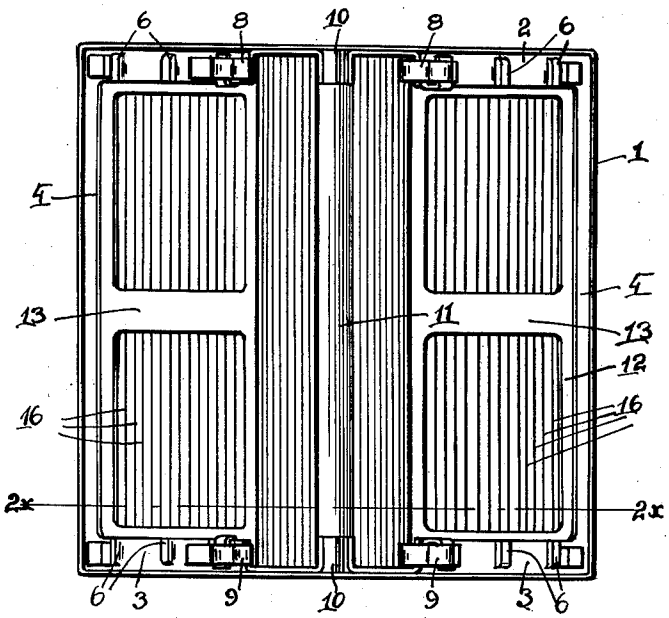


FIG. 1.

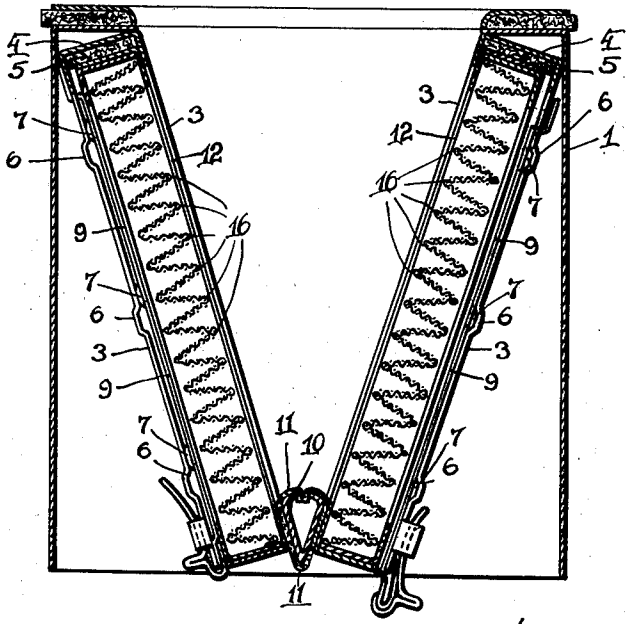


FIG. 2.

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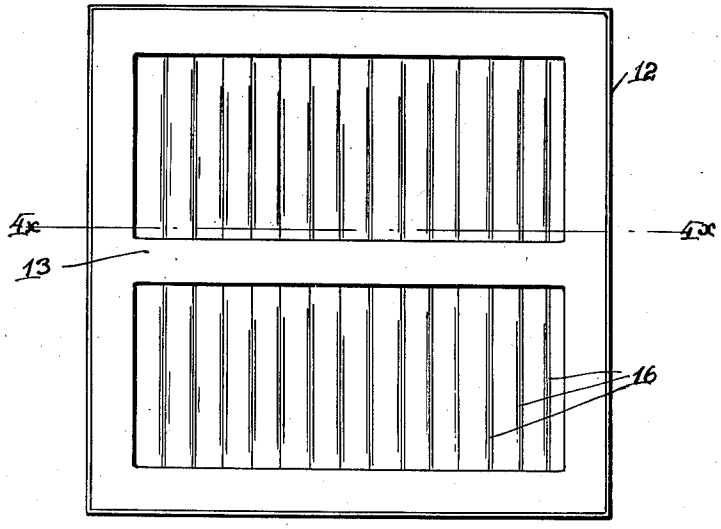


FIG. 3.

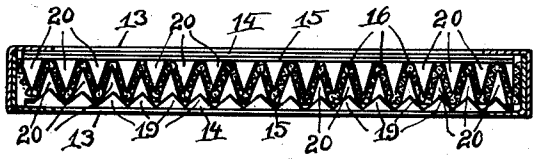


FIG. 4.

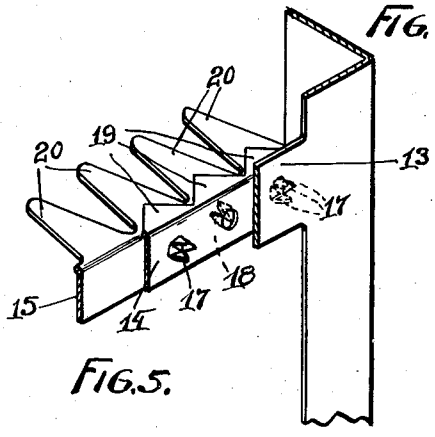


FIG. 5.

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2,013,038

AIR FILTER

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Application December 31, 1932, Serial No. 649,702

6 Claims. (Cl. 183—71)

This invention relates to air filters and has for one of its objects to provide an improved construction for a panel type filter.

Another object of the invention is to mount the individual panel units in such a manner that they are provided with an air seal around the entire perimeter thereof.

These and other objects of this invention will become more readily apparent from the detailed description thereof which follows, reference being had to the accompanying drawings in which

Figure 1 is a front elevation of a filter housing equipped with my improved panel filters.

Figure 2 is a horizontal sectional view of the filter housing and panel filters mounted therein, the section being taken on the line 2*x*—2*x* of Figure 1.

Figure 3 is a detail front elevation of one of the panel filters.

Figure 4 is a horizontal sectional view of the panel filter, the section being taken on the line 4*x*—4*x* of Figure 3.

Figure 5 is an enlarged detailed view of a portion of one of the panel filters illustrating the reinforced construction thereof.

In the several figures of the drawings like reference numerals indicate like parts.

The panel filter housing and the panel filter construction forming the subject matter of my present invention is an improvement of the subject matter illustrated and described in my prior application Serial No. 639,669, filed October 26, 1932. In my present invention the housing 1 is provided at the top and bottom with the angular guide channels 2 and 3 which converge from the open rear of the housing toward the open front thereof. These guide channels are connected at their rear by a vertical connecting channel 4 in which is located a strip of felt 5 or other sealing material against which the ends of the panel filters are held when placed in the guide channels 2 and 3 as will hereinafter be described.

Each of the guide channels 2 and 3 has cam depressions 6, 6 provided on the inside of the outer wall thereof. Adapted to cooperate with these cam depressions are the offsets or cams 7, 7 provided in the locking straps 8 and 9. These locking straps are located on the inside of the guide channels and are adapted to slide back and forth along the inside of the outer wall of the guide channels so as to move the offsets or cams 7, 7 thereof into and out of the cam depressions 6, 6. In doing so the locking straps either rest against or are forced away from the wall of the guide channels. This allows the frames of the panel filter to be readily inserted into the guide channels while the locking straps are located in close contact with the walls thereof with the offsets or cams of the locking straps nested into the cam depressions of the guide channels as illustrated at the right of Figure 3. After the panel filters are properly located in the channels so that their ends rest firmly against the sealing strip 5, the locking straps are moved into the position illustrated at the left in Figure 2 in which these straps are forced against the panel filters by the offsets or cams of the straps in order to force the panels against the opposing wall of the guide channels and thus prevent air from passing around the outside of the panel filters within the guide channels. This action of the locking straps also firmly grips and holds the panel filters in place within the guide channels.

To prevent air from passing between the front of each of the panel filters and the vertical connecting member 10 which joins the front of the guide channels 2 and 3 on the opposing inner sides thereof, a sealing strip 11 is wound around the front and sides of the vertical connecting member and suitably held fast in the open back thereof as illustrated in Figure 2. This sealing strip extends from the lower to the upper guide channels as illustrated in Figure 1 so that when the bottom and top of the panels are forced against the inner wall of the guide channels by the locking straps 8 and 9 a seal is formed between the front of the panels and the vertical connecting member 10 of the housing.

For the purpose of increasing the rigidity of the cardboard frames of each of the panel filters, the horizontal cross members 13 in front and back of each of the panels are reinforced by the metal straps 14. These reinforcing metal straps are located between the horizontal cross members 13, which form an integral part of the frames of the panels, and the spacing bars 15 which serve to space the folds of the filtering sheet 16 (see Figure 5). For the purpose of attaching the reinforcing strap 14 to both the horizontal cross member 13 and the spacing bar 15 and at the same time connecting these two members, the strap has the pointed lugs 17 struck out from one side and the lugs 18 struck out from the opposite side thereof. By forcing the reinforcing strap 14 against the outside of the spacing bar 15 the lugs 18 thereof embed themselves into this bar and anchor the reinforcing strap thereto and by forcing the combined spacing bar 15 and reinforcing strap 14 against the inside of the horizontal cross member 13 of the frame of the panel filter, the

lugs 17 of the reinforcing strap embed themselves into the cross member and anchor both the spacing bar and reinforcing strap thereto.

As illustrated in Figures 4 and 5 the reinforcing strap 14 is provided with triangular lugs 19, 19 which are bent over the spacing fingers 20, 20 when the reinforcing strap is fastened to the spacing bar. In this way the spacing fingers 20, 20 are firmly held to project horizontally from their spacing bar.

I claim:

1. In a filter having a removable panel the combination of a pair of spaced parallel guide channels, a connecting channel connecting the ends of said guide channels at the rear thereof, a vertical connecting member connecting the inside wall of each of said guide channels at the front thereof, a sealing strip within said connecting channel adapted to have the inner end of the panel rest against it to form a seal at the rear of the panel and a sealing strip carried by said vertical connecting member to form a seal at the front of the panel.

2. In a filter having a removable panel the combination of a pair of spaced parallel guide channels adapted to have opposing ends of the panel engage therein, a locking strap mounted to move endwise within each of said guide channels and means cooperating with said locking strap to clamp the panel against one side of the guide channels on the endwise movement thereof in one direction and release said panel on the endwise movement in the opposite direction.

3. In a filter having a pair of removable panels the combination of a housing having an open front and back, a pair of guide channels arranged V shaped both at the top and bottom of said housing, a vertical connecting member connecting the inside of said channels at the apex of their V shaped formation at the open front of the housing, a pair of connecting channels connecting the opposite ends of said top and bottom guide channels at the open rear of said housing, a sealing strip in each of said connecting channels, said vertical connecting member carrying a sealing strip, said panels being adapted to slide into said guide channels thru the open front of said housing and make contact with the sealing strip in said connecting channels and said sealing strip carried by said vertical connecting member at the front of said housing, and clamping and releasing means provided in said guide channels to seal and clamp the top and bottom of said panels into said channels and release them for the removal therefrom.

4. In a filter panel comprising a cardboard frame having opposed open sides with a filtering sheet having parallel folds provided therein supported by said frame between the opposed open sides, the combination of a cross member bridging the open front and back of said cardboard frame, a metal reinforcing strap fastened to the back of each of said cross members and a spacing bar fastened to the inside of said reinforcing strap so as to make contact with and brace said filtering sheet between the opposed open sides of said frame.

5. In a filter panel comprising a cardboard frame having an open front and back with a filtering sheet having parallel folds provided therein supported by said frame between the open front and back thereof, the combination of a cross member bridging the open front and back of said cardboard frame, a metal reinforcing strap fastened to the back of said cross member and a spacing bar fastened to the inside of said reinforcing member so as to make contact with and brace said filtering sheet between the open front and back of said frame, spacing fingers on said spacing bar adapted to engage between the folds of said filtering sheet and lugs carried by said metal reinforcing strap and overlapping a portion of said spacing fingers to hold said fingers in a predetermined angular position within said folds of said filtering sheet.

6. In a filter panel comprising a cardboard frame having opposed open sides with a filtering sheet supported by said frame between the open sides, the combination of cross members integral with the cardboard frame and bridging the opposed open sides thereof, a metal reinforcing member fastened to the back of each of said cross members to keep said cross members from collapsing against the filtering sheet on one side of the frame and brace the filtering sheet at the opposite side of the frame and spacing means projecting inwardly from each of said metal reinforcing members and contacting said filtering sheet.

LEWIS L. DOLLINGER.