

[54] AIR FILTERING SCREEN
[76] Inventor: Malcolm Stickel, Rt. No. 2, Sedalia,
Mo. 65301
[22] Filed: June 29, 1971
[21] Appl. No.: 157,975
[52] U.S. Cl. 55/481, 55/385, 55/484,
55/509, 55/511, 55/DIG. 31
[51] Int. Cl. B01d 27/08
[58] Field of Search 55/385, 267-269,
55/478-481, 482-484, 491, 496, 504, 507,
509, 511, DIG. 31

[56] References Cited
UNITED STATES PATENTS

487,656	12/1892	Way	160/376
2,175,903	10/1939	Lichtman	55/491
2,728,411	12/1955	Pasturczak	55/268
2,808,124	10/1957	Attwood	55/267
2,966,639	12/1960	Morgan	55/385
3,237,387	3/1966	Haugen et al.	55/DIG. 31
3,626,668	12/1971	Cardiff	55/481
3,630,003	12/1971	Ashton et al.	55/268

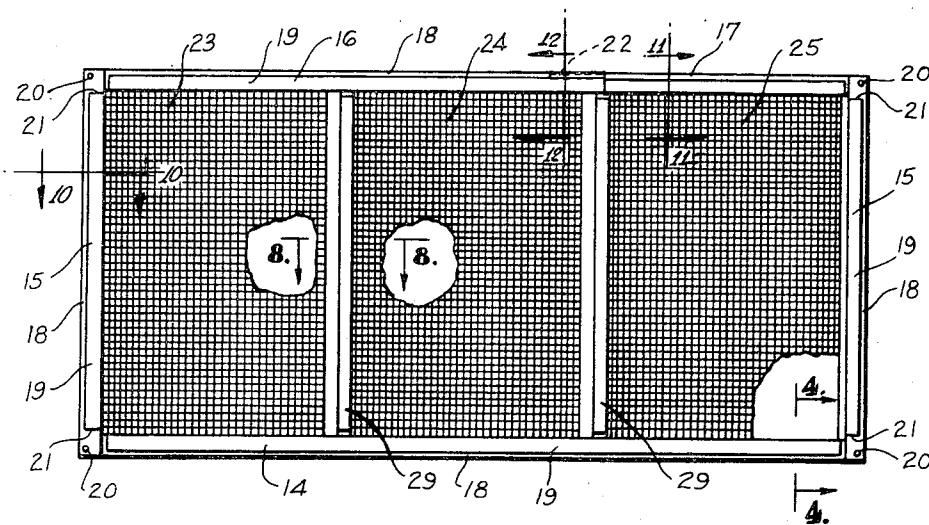
3,668,843 6/1972 Westlin et al. 55/507

Primary Examiner—Bernard Nozick
Attorney—Alfred S. Fuchs

[57] ABSTRACT

A rectangular frame is mounted on a motor vehicle between the grill and cooling system coil, if it has a cooling unit, or between the grill and radiator, if there is no cooling system coil. The frame is made up of upper, lower and side channel members that have the flanges turned inwardly to provide guideways for frames of fine mesh hardware cloth screen sections. The top member of the channel frame has a removable section that provides an opening in the frame through which screen sections are inserted and after insertion, slid sidewise into position adjacent each other within the channel frame. A spring that engages the channel frame to hold the screen section in close engagement is on one of the screen sections. One of the screen sections has a channel for guiding the screen section into proper relationship to the other screen sections and the channel frame.

5 Claims, 12 Drawing Figures



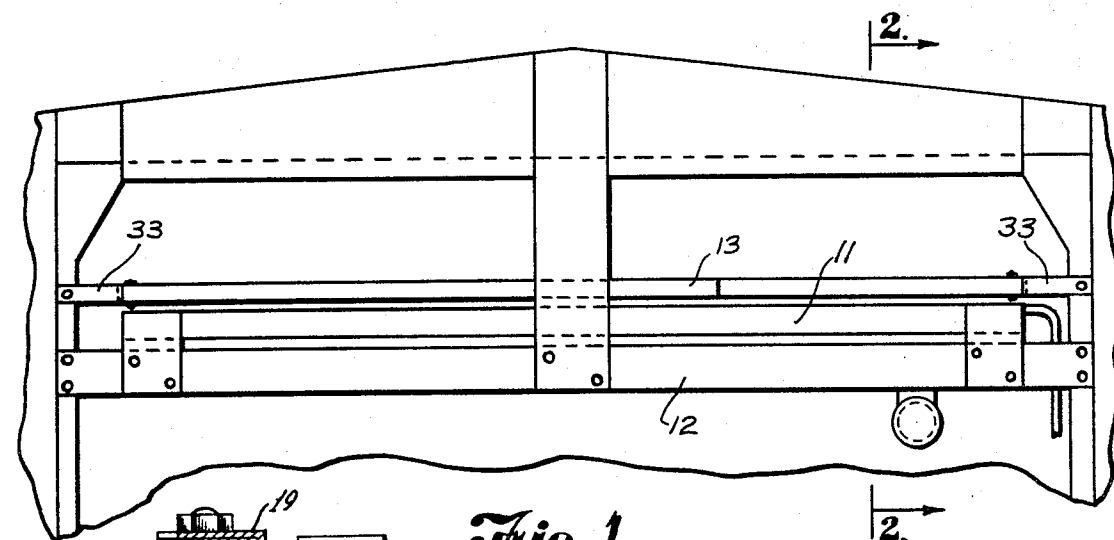
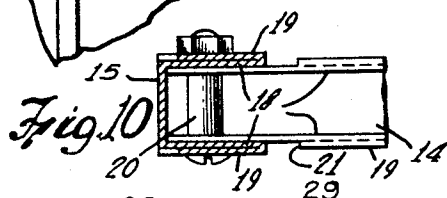


Fig. 1.

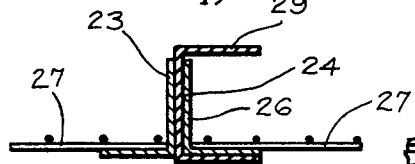


Fig. 8.

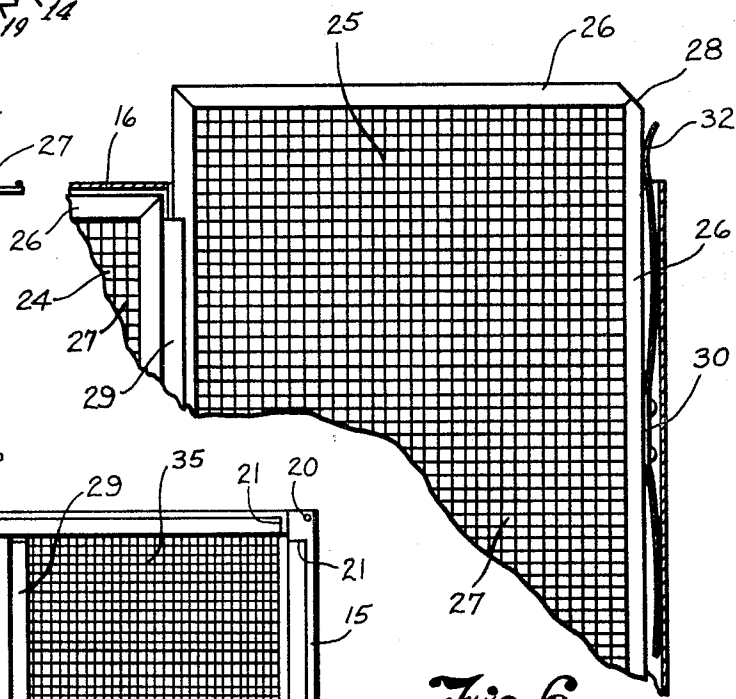


Fig. 6.

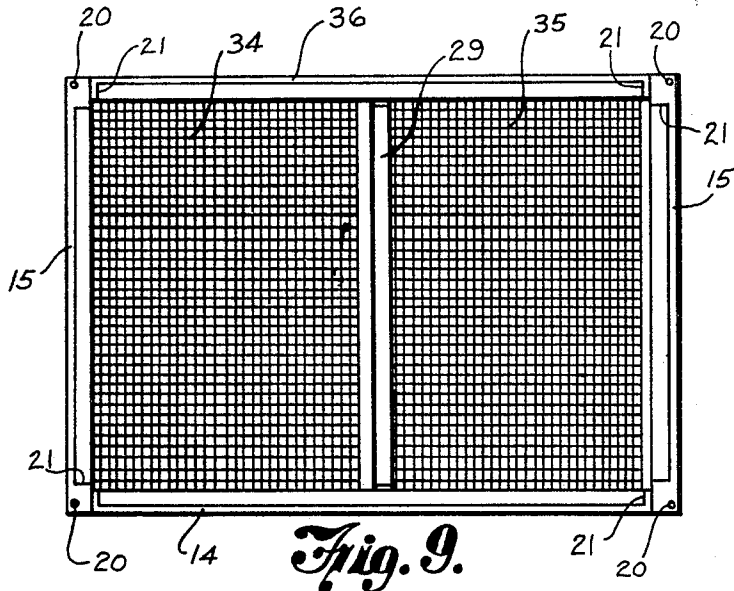
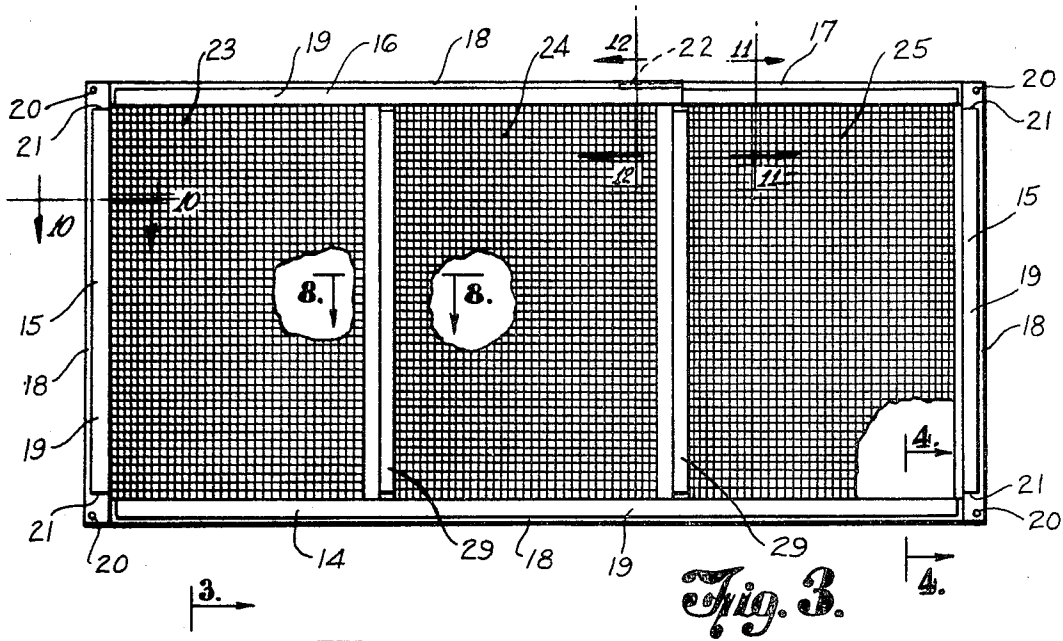
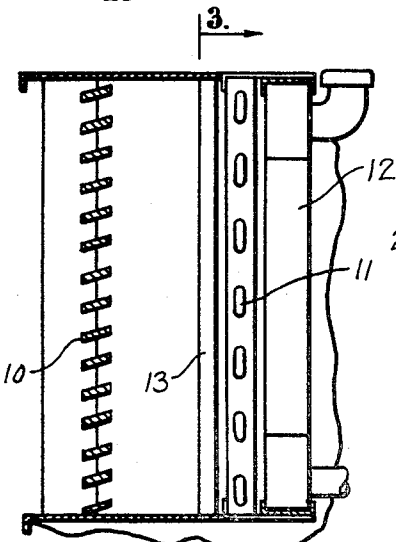
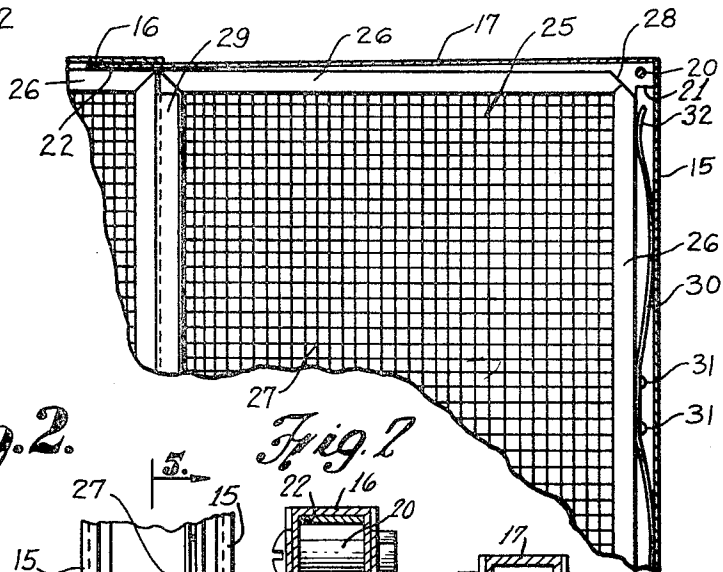
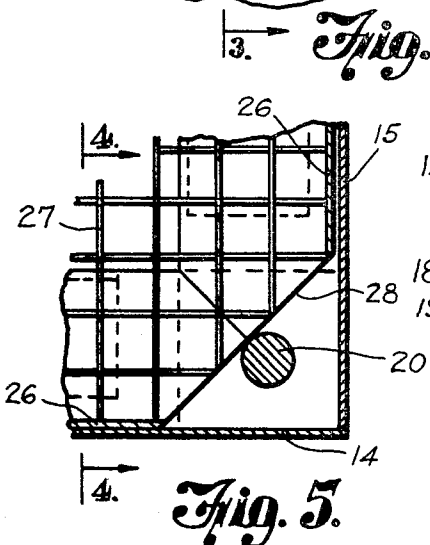
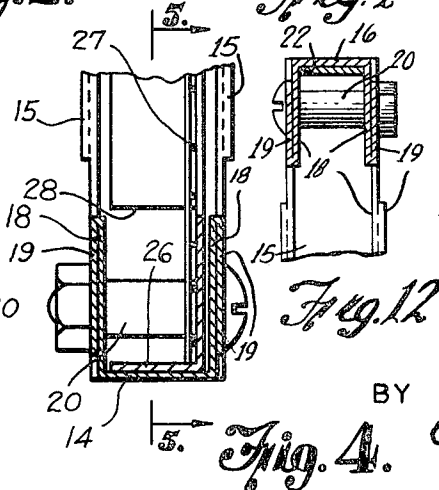
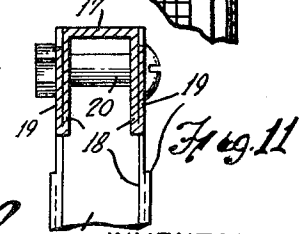


Fig. 9.

INVENTOR
MALCOLM STICKEL
BY
Alfred R. Fuchs
ATTORNEY



INVENTOR
MALCOLM STICKEL

BY

Alfred R. Fuchs
ATTORNEY

AIR FILTERING SCREEN

While wire screens have been provided on automobiles and other motor vehicles for preventing bugs, leaves and other objects from collecting on the radiator of the vehicle, these screens have usually been in an exposed position, where they detracted from the appearance of the vehicle and where they were easily damaged, or were so made that considerable difficulty was encountered in putting them on the vehicle. This difficulty has been increased by the provision of grills at the front ends of the vehicle bodies in front of the radiator, or, in case a cooling system coil is provided for air conditioning the vehicle, in front of the cooling system coil.

This difficulty exists largely because of the limited space provided for insertion of any screen or similar device back of the grill and thus between the grill and radiator or other apparatus such as a cooling system coil located between the grill and radiator.

It is one of the purposes of my invention to provide a mounting for an air filtering screen, which is of such a character that it is less difficult to insert a screen in a position back of the grill in the limited space provided therefor, which mounting comprises a channel frame, which is provided with an opening that is closed by means of a removable portion of the frame through which opening screen sections are inserted and slidably mounted in the channel frame, the screen sections all being inserted from the top of the structure where access can be had to the frame for insertion of the screen sections therein.

It is a further purpose of my invention to provide an air filtering screen for a vehicle of the above mentioned character, which is provided with yielding means, in the form of a spring, engaging the channel frame at one of the vertical side members thereof and mounted on the frame of one of the screen sections for holding the screen sections in close side by side engagement and in close engagement with the channel frame.

It is another purpose of my invention to provide guiding means in the form of a guide channel on one of the screen sections for directing the screen section, that is being inserted through the above referred to opening, into proper alignment with a previously inserted screen section, and with the channel frame, so that it can be more easily inserted into position through the opening in the channel frame.

Other objects and advantages of my invention will appear as the description of the drawings proceeds. I desire to have it understood, however, that I do not intend to limit myself to the particular details shown or described except as defined in the claims.

In the drawings:

FIG. 1 is a fragmentary plan view of the forward end portion of an automobile showing the invention applied thereto, the hood being omitted.

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

FIG. 3 is a section taken on the line 3—3 of FIG. 2 partly broken away.

FIG. 4 is a section taken on the line 4—4 of FIG. 3 on an enlarged scale.

FIG. 5 is a section taken on the line 5—5 of FIG. 4.

FIG. 6 is a fragmentary view partly in section, on an enlarged scale, showing the last screen section being put in position and the spring carried thereby compressed.

FIG. 7 is a view similar to FIG. 6 showing the screen sections with the spring expanded and the screen sections in their final position.

FIG. 8 is a fragmentary section on an enlarged scale taken on the line 8—8 of FIG. 3,

FIG. 9 is a face view of a modification.

FIG. 10 is a fragmentary sectional view taken substantially on the line 10—10 of FIG. 3 with the screen section omitted.

FIG. 11 is a fragmentary sectional view taken substantially on the line 11—11 of FIG. 3 with the screen section omitted, and

FIG. 12 is a fragmentary sectional view taken substantially on the line 12—12 of FIG. 3 with the screen section omitted.

Referring in detail to the drawings, in FIGS. 1 and 2 a fragmentary portion of a vehicle is shown having the grill 10, cooling system coil 11 and radiator 12, with my air filtering means 13 mounted on the vehicle between the grill 10 and the cooling system coil 11.

The air filtering means comprises a rectangular channel frame made up of members that are channel shaped in cross section comprising a bottom horizontally extending frame member 14, a pair of vertical side frame members 15 and a top frame member, which, in FIGS. 2, 6 and 7, is shown as comprising a fixed section 16 and a removable section 17. Each of said frame members has a pair of side flanges, such as shown for the bottom frame member 14 in FIG. 4, which are doubled back on themselves so as to provide an inner ply 18 and an outer ply 19 to stiffen the same. Said flanges are inwardly directed so as to provide a guideway between the same.

The horizontally extending and vertically extending frame members are inter-fitted at the corners of the rectangular frame thus provided. Preferably the channel members 14, 16 and 17 are made with the flanges thereof slightly closer together than the flanges of the channel members 15 so that the channel members 14, 16 and 17 fit within the channel members 15 at the corners of the frame, said interfitted channel members being secured together detachably by means of fastening elements, such as the headed screwthreaded fastening elements 20, shown more in detail in FIGS. 4 and 5. The channel members 14 and 15 are secured together at opposite ends of the channel member 14 by one of the fastening elements 20, as shown in FIG. 3 and 9. The channel members 15 and 16 are secured together by one of the fastening elements 20, and the channel frames 15 and 17 are secured together by one of the fastening elements 20, as shown in FIG. 3. The outer ply 19 of the doubled portion of each of the channel members ends short of the inter-fitted corner portions of the frame, as indicated at 21, see FIGS. 3, 7 and 9.

The removable section 17 has the side flanges thereof cut away at one end thereof to provide a tongue 22 thereon which is adapted to fit closely between the side flanges of the fixed section 16 when the section 17 is in place, to complete the rectangular channel frame.

Screen sections 23, 24 and 25 are shown as being mounted within the rectangular channel frame, each of said screen sections having a metal frame 26 which is angular in cross section, as shown in FIGS. 4 and 8, to which is secured a screen 27 of fine mesh hardware cloth. The corner portions of the screen frame are cut away as shown at 28, to provide for the passage of the

fastening elements 20 through the interfitted corner portions of the channel frame.

The screen sections 23 and 24 are shown as each provided with a guide channel 29 along one of the vertical side edges thereof to aid in placing the adjacent screen section in position relative thereto and in the channel frame, said guide channel 29 receiving a vertical side member of the angle frame 26 of the next adjacent screen section. In assembling the screen sections 23, 24 and 25 with the rectangular angle frame, the upper frame section 17 is removed and the sections 23, 24 and 25 are inserted through the opening thus provided in the rectangular channel frame and the sections 23 and 24 slid sidewise along the guideways that are provided by means of the frame members 14 and 16. The screen section 23 having been moved over to the left toward the left side member 15, the next section 24 is slid vertically down into position with the vertical side member of angle frame 26 engaging with the guide channel 29 on the section 23. After having reached its lowermost position the two sections 23 and 24 are moved further to the left, being guided by the frame member 14 and section 16, until the section 23 comes into position in engagement with the left vertical frame member 15, as viewed in FIG. 3.

The frame section 25 is then inserted, in a similar manner, into position within the rectangular channel frame by engaging the screen frame 26 thereof with the channel member 29 on the section 24 to guide the section 25 into its position shown in FIG. 3, into engagement with bottom frame member 14. In order to provide against any rattle of the screen sections within the channel frame, the spring 30, which is curved substantially as shown in FIG. 7, is secured adjacent the middle thereof to the one vertical side member of the frame of the screen section 25, as at 31, having bowed out portions, that engage with the right hand vertical frame member 15, and inwardly curved end portions 32 that bear against said vertical frame member of the screen section 25.

As the screen section 25 is being inserted in the channel frame, the spring 30 is distorted, as shown in FIG. 6, so as to exert considerable pressure acting toward the left in FIG. 6 on the screen sections. However, the guide channel 29 on the section 24 will receive the vertical member of the frame 26 of said screen section 25 so as to guide it in its movement downwardly into final position after which the spring will expand, as shown in FIG. 7, so as to force the sections 23, 24 and 25 into snug side by side engagement with each other and with the left vertical frame member 15. After the screen sections are all in place the frame section 17 is moved into the position shown in FIG. 3 so as to close the opening in the top of the channel frame and the fastening element 20 put in position to hold the section 17 in closing position, the tongue 22 fitting closely between the flanges of the section 16 to aid in this.

The channel frame, comprising the members 14, 15, 16 and 17 is mounted on the vehicle in the position shown in any suitable manner, the means for mounting the same shown in the drawing being in the form of brackets 33 secured to the vehicle body and to the channel frame to rigidly connect the rectangular mounting frame with said vehicle body. While three screen sections 23, 24 and 25 are shown in FIG. 3 of the drawings, the number of sections can be varied as may be found desirable, the important thing being that

the removable section 17 provides an opening slightly wider than the width of each of the screen sections so that the screen sections can be readily passed through the opening in the rectangular channel frame into position therein.

While the rectangular channel frame structure shown in FIGS. 3 and 7 is preferred, a modification is shown in FIG. 9 in which a pair of screen sections 34 and 35 is provided within the channel frame, which has the bottom horizontal member 14, as well as the vertical side member 15, made the same and connected together in the same manner as previously described by a single top horizontal member 36, which is the same in cross section as the frame member 16, but is continuous across the top of the frame, and is detachably mounted in position by the fastening elements 20. The entire top channel frame 36 shown in FIG. 9 can be removed and the screen sections 34 and 35 moved downwardly into position through the opening thus provided. A single screen, extending entirely across the channel frame can be used in the frame shown in FIG. 9. One of the screen sections shown in FIG. 9 would preferably be provided with resilient means, such as shown for the section 25 in FIGS. 6 and 7 to prevent any rattling.

I claim:

1. Air filtering means comprising a rectangular channel frame having a pair of vertical side members channel shaped in cross section, a bottom member channel shaped in cross section extending between and secured to said side members and a top member extending between said side members, said top member comprising a fixed section channel shaped in cross section secured at one end thereof to one of said side members and a removable section channel shaped in cross section detachably secured at one end thereof to the other of said side members, said removable section having a reduced extension on the end thereof remote from said other side member engaging the fixed section adjacent the other end thereof to detachably engage said removable section therewith, all the channel frame members having inwardly directed flanges to provide guideways on the inner sides of said frame members, and a plurality of framed screen sections of the same predetermined uniform length and width engaging in said guideways to mount said screen sections detachably in said rectangular frame in side by side adjacency, said removable section of said channel frame, upon detachment from said fixed section of said channel frame, providing an opening slightly wider than one of said screen sections to provide a passage through said rectangular frame for movement of said screen sections into and out of said rectangular frame.

2. The air filtering means claimed in claim 1 in which means is provided for holding the adjacent sides of adjacent screen sections in snug side by side engagement comprising distortable resilient means mounted on one of said screen sections and engaging one of the side members of said channel frame and exerting spring pressure on said screen sections transversely thereof upon distortion of said resilient means between said one screen section and said side member of said channel frame.

3. The air filtering means claimed in claim 1 in which one of said screen sections is provided with guiding means for an adjacent screen section along one of the sides thereof.

5

6

4. The air filtering means claimed in claim 1 in which the reduced extension on said removable section is a tongue projecting endwise from said removable section fitting closely between the inwardly directed flanges of the fixed section.

5. The air filtering means claimed in claim 1 in which said screen sections have frames having vertical side

members, one of said screen sections is provided with a guide channel along one of the side members receiving the vertical side member of the frame of the next adjacent screen section to guide said adjacent screen section into position with respect to said one screen section.

* * * * *

10

15

20

25

30

35

40

45

50

55

60

65