

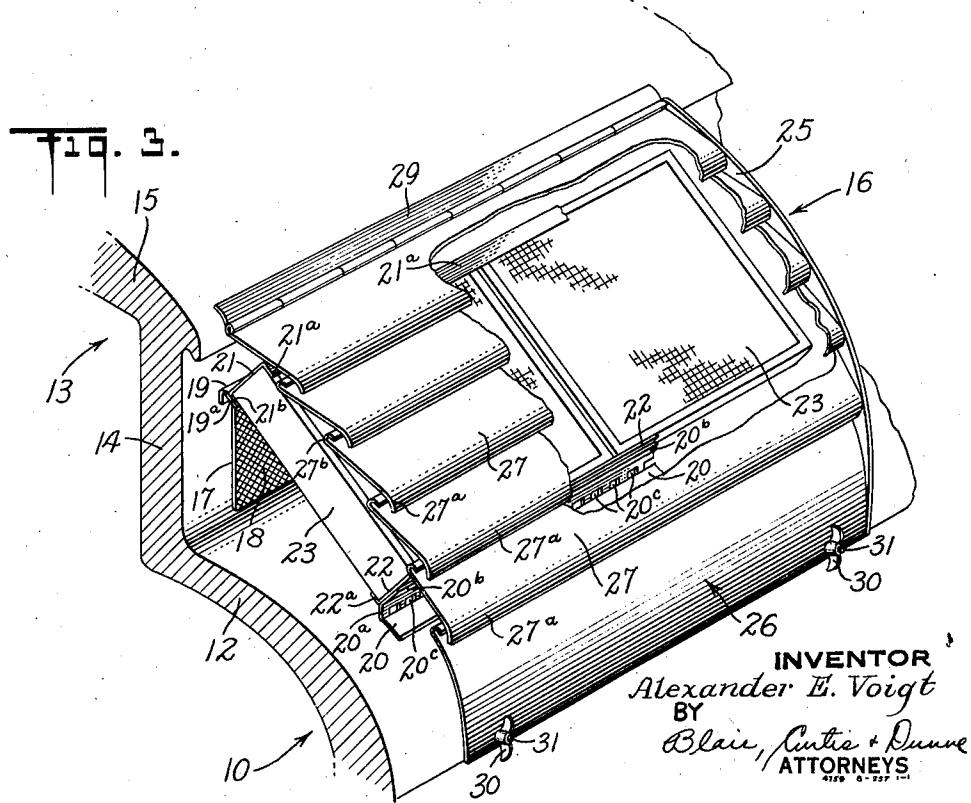
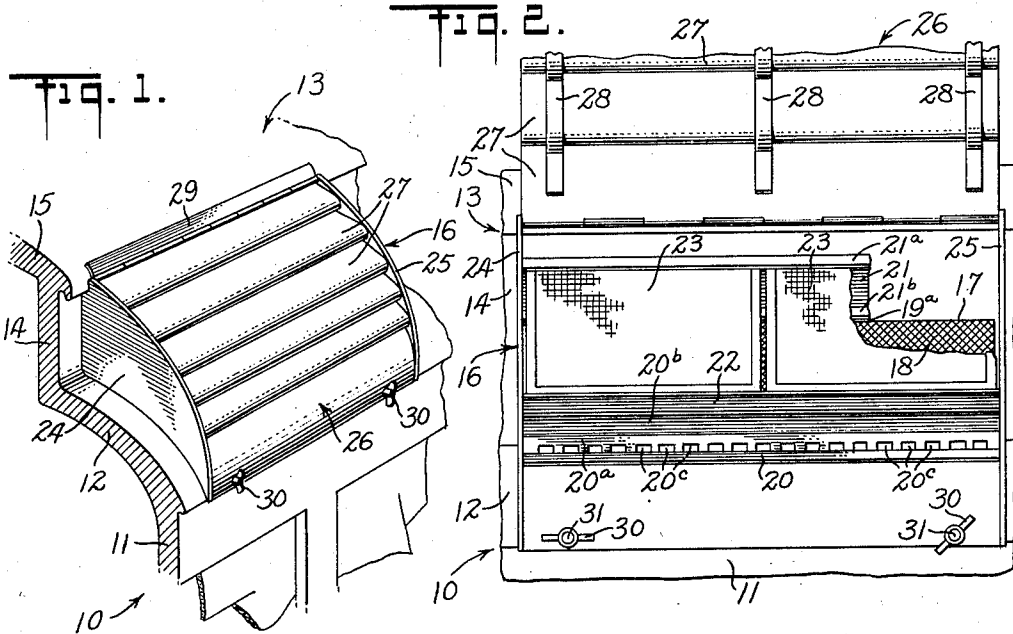
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AIR FILTER FOR RAILROAD CARS

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AIR FILTER FOR RAILROAD CARS

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7 Claims. (Cl. 98—13)

This invention relates to an air filter construction and more particularly to a fresh air inlet filter for railroad cars or the like.

One of the objects of this invention is to provide an air filter construction which is simple, sturdy and durable. Another object is to provide a construction of the above nature which is thoroughly practical and highly efficient in operation. Another object is to provide a construction of the above nature which is inexpensive in manufacture and which can be easily and rapidly installed in railroad cars or the like of standard construction. Another object is to provide a construction of the above nature which readily lends itself to installation on a streamline railroad car or the like. Another object is to provide a construction of the above nature in which the air filter occupies a minimum amount of space and yet is capable of filtering a maximum amount of air. Another object is to provide a construction of the above nature in which the filtering units can be readily removed and replaced. Another object is to provide a construction of the above nature in which the filtering units are adequately protected from the deleterious effects of exposure to rain or snow. Another object is to provide a construction of the above nature which is admirably suited for installation on railroad cars or the like which are equipped with air conditioning plants. Other objects will be in part apparent and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts as will be exemplified in the structure to be hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing in which is shown one of the various possible embodiments of my invention,

Figure 1 is a fragmentary perspective view of my fresh air inlet construction as installed on a railroad car or the like;

Figure 2 is an elevation of the inlet construction, certain of the parts thereof being broken away; and

Figure 3 is a fragmentary perspective view of a construction similar to but larger than Figure 1 and in which certain of the parts thereof are broken away.

Similar reference characters refer to similar parts throughout the several views of the drawing.

As conducive to a clearer understanding of certain aspects of my invention, it should be noted that air filters now on many railroad cars or the

like are inefficient, inadequate, and the cause of considerable unnecessary inconvenience. These deficiencies are generally a result of failure to utilize fully the space available for such filters, this being particularly true of cars in which there is installed an air conditioning plant. As space is at a premium on such cars, these air conditioning plants must be as compact as possible. Accordingly air inlets should be small and yet adequate to care for the needs of the plant. In present constructions of this general nature, only a small area is available for filter units the capacity thereof being inadequate for good results. Further difficulties are encountered in adequately protecting such filters as are provided from the effects of exposure to the weather and to foreign particles such as cinders which may prove damaging to the filtering units. And still further difficulty lies in the fact that the filtering units are difficult to install and remove for replacement. Another object of this invention is to provide an air filter construction in which the above difficulties in addition to many others are overcome and solved in a thoroughly practical and efficient manner.

Referring now to the drawing and more particularly to Figure 1, the top portion of a railroad car or the like generally indicated at 10 includes a side wall 11, a roof portion 12, and a clerestory generally indicated at 13. Clerestory 13 comprises a substantially vertically side wall 14 which extends upwardly from roof 12 and a top 15 extending inwardly from side wall 14. Conveniently positioned on roof 12 adjacent side wall 14, I provide an enclosure generally indicated at 16 containing an air inlet filter as will be more fully described hereinafter.

Car 10 may be provided with an air conditioning plant (not shown) this air conditioning plant being preferably situated at one end of the car and having its inlet port 17, as is best shown in Figures 2 and 3, in side wall 14. A screen 18 or the like is preferably secured over port 17 to act as a supplemental filter. Adjacent the top edge of port 17 and secured to side wall 14 is a bracket 19 (Figure 3) which has an outwardly extending flange portion 19a. Bracket 19 is secured to side wall 14 in any suitable manner as, for example, by spot welding. Another bracket 20 is secured as by spot welding to roof 12, this bracket preferably being coextensive with port 17 and bracket 19. Bracket 20 includes an upwardly extending portion 20a, a support portion 20b and, as is more clearly shown in Figure 2, a suitable number of openings 20c through which water may drain.

which might otherwise be trapped therebehind. A pair of carrying brackets 21 and 22 are respectively secured to brackets 19 and 20, bracket 21 being secured to flange portion 19a and bracket 22 being attached to portion 20b. Carrying bracket 21 includes upper and lower flange portions 21a and 21b and carrying bracket 22 includes a lower flange 22a.

A suitable number of filter units 23 are preferably supported by brackets 21 and 22. More specifically filter units 23 rest upon flanges 22a and 21b of the respective brackets and thus are desirably installed in operative position by first inserting the upper ends thereof between flanges 21a and 21b of carrying bracket 21 and then dropping the lower end on flange 22a. The filtering units are thus held securely in place, rattling thereof being effectively prevented by top flange 21a which preferably fits snugly against the top of the filters; however, the units may be easily removed, as will be explained hereinafter. Filter units 23 may be of any suitable type or construction and are preferably suitably filled to remove foreign particles and moisture from the air flowing therethrough.

It may now be seen that by placing filter units 23 in an angular position with respect to side wall 14 and roof 12 (Figure 3) larger filter units may be utilized in a relatively small space, and a large filtering area is accordingly available. By thus providing maximum filtering area in a relatively small space, inlet port 17 is supplied with an amount of air always adequate for its capacity.

As pointed out above, the filter units are preferably enclosed in enclosure 16 which, as is more clearly shown in Figure 1, comprises a pair of side plates 24 and 25 and a closure generally indicated at 26. Side plates 24 and 25 (Figure 2) are preferably secured to roof 12 and side wall 14 immediately adjacent the opposite ends of port 17 and accordingly about the opposite ends of support brackets 19, 20, 21 and 22. Preferably the upper edges of side plates 24 and 25 are curved and are above filter units 23.

Referring to Figure 3, closure 26 consists of a suitable number of louvers 27 or the like spaced from one another to provide interstices therebetween. Louvers 27 are secured together in a unit in any suitable manner as, for example, by strips 28 (Figure 2) extending crosswise thereof. As best seen in Figure 3, the lower edges 27a of louvers 27 are preferably bent downwardly and their upper edges 27b are preferably looped upwardly, thus impeding, as much as possible, the entrance of rain, snow, or foreign particles such as cinders and helping to keep filter units 23 clean. Furthermore by bending downwardly the lower edges 27a of louvers 27 the appearance of the entire unit is considerably enhanced, this being particularly true when my filter is installed on a streamline car.

Still referring to Figure 3, a hinge bracket 29 is secured to clerestory top 15 in any suitable manner, closure 26 being suitably hinged thereto so that it may be opened by raising upwardly (as shown in Figure 2) to permit access to the interior of enclosure 16. Closure 26 (Figure 3) is desirably retained in a closed position by a pair of wing nuts 30 which are threaded onto screws 31 extending outwardly from roof 12 and preferably passing through slots (not shown) in closure 26. Accordingly as best shown in Figure 1, closure 26 extends from side plate 24 to side plate 25 and fits snugly therebetween thus ef-

fectively restricting admission of air to the interstices between louvers 27. However, the closure may be opened for insertion or removal of filter units 23 with ease. For example, when the closure is opened, the units 23 may be taken out by grasping the lower sides thereof and raising them upwardly to slip them away from flanges 21a and 21b of bracket piece 21. Units 23 may be installed in a like manner, thus making quick and easy replacement possible.

It can now be seen that in operation, assuming that an air conditioning plant is drawing fresh air into the car, the air enters through the interstices between louvers 27 and thence passes through filter units 23 (Figure 3) before reaching inlet port 17. Moisture removed from the air by filter units 23 drops to the top of roof 12 and drains therefrom through holes 20c and support bracket 20. If it is desired to replace filter units 23, this is readily accomplished by loosening wing nuts 30, swinging enclosure 26 open, and lifting the units from their operative position with a minimum amount of trouble. It should be noted also that, if desired, side plates 24 and 25 and closure 26 may all be secured together as a unit thus making the filter units more accessible.

Accordingly, it will now be seen that I have provided a fresh air inlet filter which is thoroughly practical and efficient in operation and which achieves the purposes hereinbefore set forth in addition to many others.

As many possible embodiments may be made of the above invention and as many changes might be made in the embodiments above set forth, it is to be understood that all matter hereinbefore set forth, or shown in the accompanying drawing, is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. In railroad car construction, in combination, a car having a roof, a clerestory extending from said roof, said clerestory including a top portion and substantially vertical side walls, one of said side walls having a port extending therethrough to permit the flow of air into said car, mounting means secured to said side wall substantially adjacent said port and spaced from said clerestory top, second mounting means secured to said car roof and spaced from said port, air filter means secured to both of said mounting means and bridging the angle formed by said side wall and said car roof, and means forming a ventilated enclosure for said filter means.

2. In railroad car construction, in combination, a car having a roof, a clerestory extending from said roof, said clerestory including a top portion and substantially vertical side walls, one of said side walls having a port extending therethrough to permit the flow of air into said car, a bracket member secured to said side wall substantially adjacent said port and spaced from said clerestory top, a second bracket member secured to said car roof and spaced from said port, air filter means secured to said bracket members and bridging the angle formed by said side wall and said car roof, and means forming a ventilated enclosure for said filter means, said means including a closure member hingedly secured to said clerestory to permit access to said filter means.

3. In railroad car construction, in combination, a car having a roof, a clerestory extending from said roof, said clerestory including vertical side walls, one of said side walls having a port ex-

tending therethrough to permit the flow of air into said car, a bracket member secured to said side wall substantially adjacent said port and spaced from said roof, a second bracket member secured to said car roof and spaced from said port, air filter means secured to said bracket members and bridging the angle formed by said side wall and said car roof, means forming a ventilated enclosure for said filter means, said means including a closure member hingedly secured to said clerestory and openable to permit access to said filter means, and means detachably securing said closure member in closed position.

4. In railroad car construction, in combination, a car having a clerestory and a roof, means forming a fresh air inlet port into said clerestory whereby fresh air may be introduced into said car, filtering means associated with said first-mentioned means, mounting means including a pair of spaced plates secured to the roof and clerestory of said car, said filtering means being disposed between said plates on said mounting means and adapted to filter air entering said port, a ventilated closure between said plates and over said filtering means, and means hingedly securing one end of said closure to the top of said clerestory.

5. In railroad car construction, in combination, a car having a clerestory and a roof, means forming a fresh air inlet port into said clerestory whereby fresh air may be introduced into said car, filtering means associated with said first-mentioned means, a pair of spaced plates secured to the roof and clerestory of said car, said filtering means being disposed between said plates, a ventilated closure between said plates and over said filtering means, means hingedly securing one end of said closure to the top of said clerestory, and means releasably securing said closure in a closed position.

6. In railroad car construction, in combination,

a car having a roof, a clerestory having a wall extending from said roof, means forming an air inlet port in one wall of said clerestory, an air filtering unit engaging said roof and said clerestory wall, and means maintaining said unit in position whereby it bridges the angle formed by said wall and roof, said filtering unit being so disposed in relation to said air inlet port as to filter substantially all air drawn through said port, and means forming a ventilated enclosure for said filtering unit, said means including a closure member hingedly secured to said clerestory and openable to permit access to said filtering unit.

7. In railroad car construction, in combination, a car having an upper structure including a substantially vertical wall portion and a generally horizontal portion extending laterally outwardly from said vertical wall portion, the underside of said horizontal portion forming a portion of the ceiling of the car, means forming an air inlet port in said vertical wall portion, a wall at each end of said air inlet port secured to said vertical wall portion and extending laterally outwardly therefrom, the bottom edges of said outwardly extending walls resting on said horizontal portion, a ventilated closure bridging the space between the upper edges of said laterally extending walls and forming therewith an enclosure about the exterior side of said air inlet port with respect to said car, an air filtering unit within said enclosure and resting against said vertical and horizontal portions in an inclined position, and means maintaining said unit in said inclined position whereby it bridges the angle formed by said vertical and horizontal portions, the ends of said filtering unit being substantially adjacent said outwardly extending walls whereby the air drawn through said inlet port is first filtered by said filtering unit.

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