June 28, 1966 L. HONOLD ETAL 3,257,932

ROOF VENT CONSTRUCTION

Original Filed Jan. 24, 1962 4 Sheets-Sheet 1

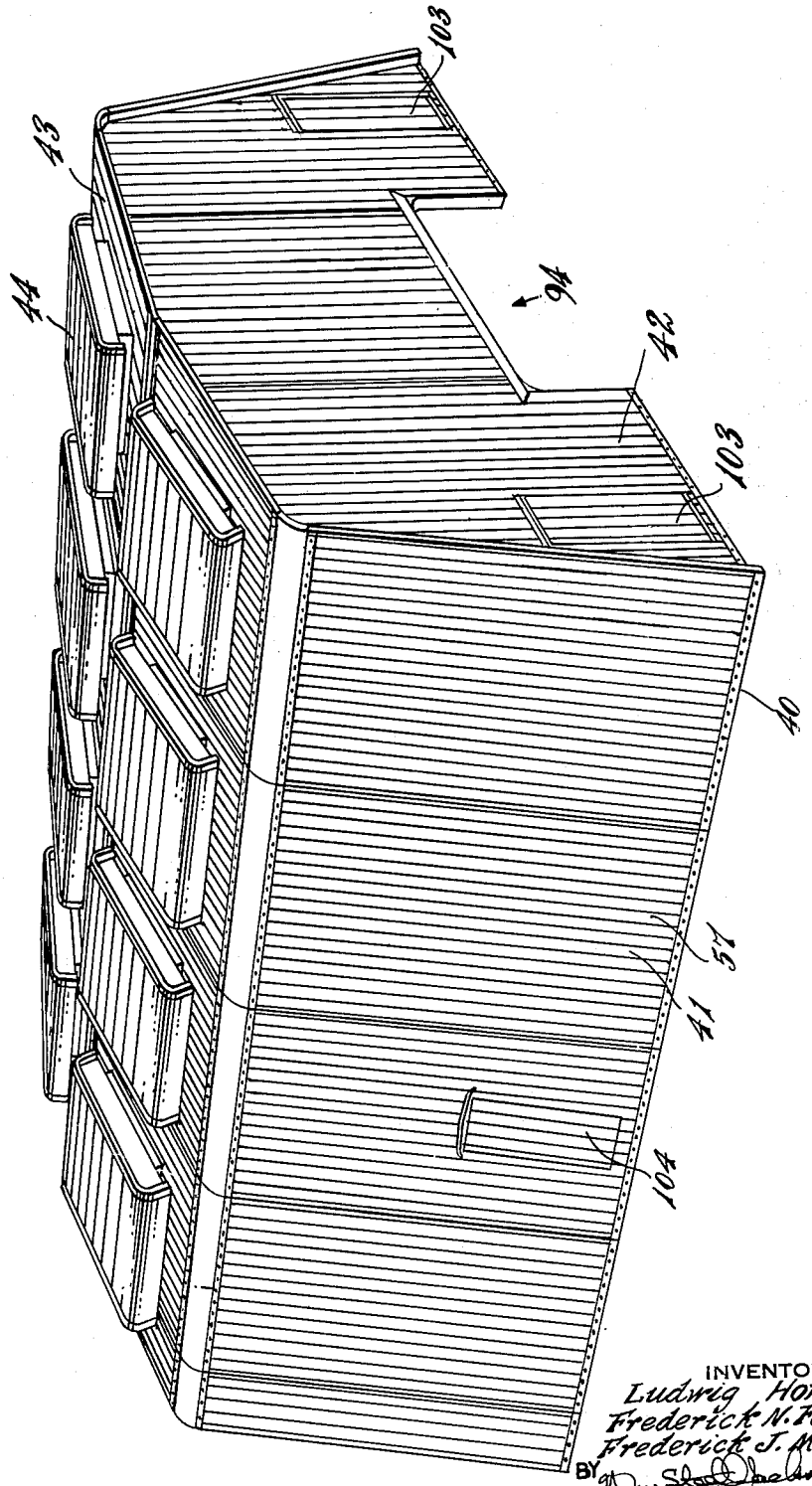


Fig. 1.

INVENTORS
Ludwig Honold
Frederick N. Feer, Jr.
Frederick J. Mack
BY
ATTORNEYS

June 28, 1966 L. HONOLD ETAL 3,257,932

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Fig. 2.

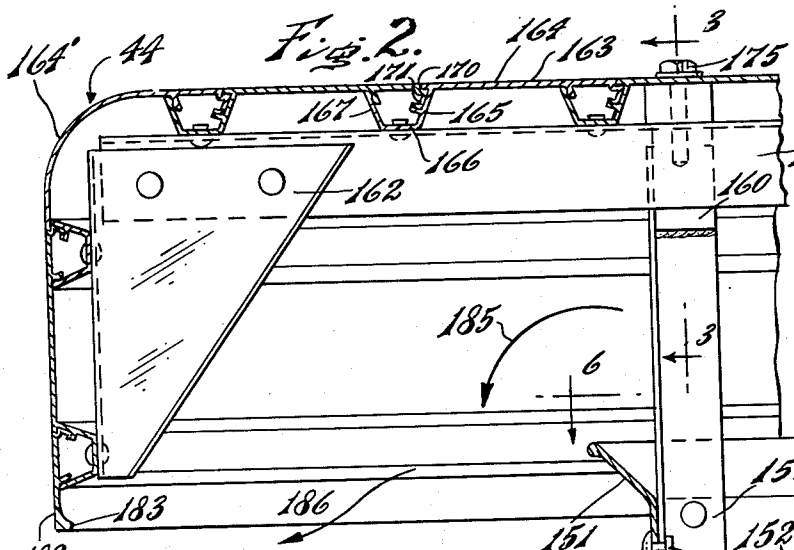


Fig. 3.

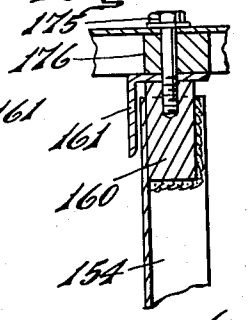


Fig. 4.

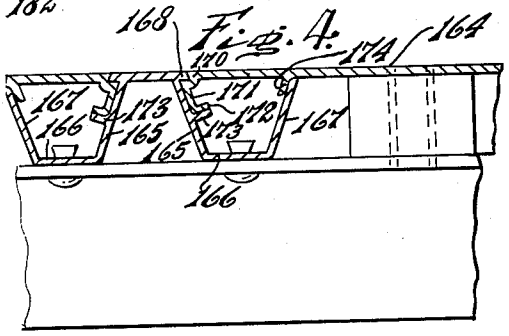


Fig. 5.

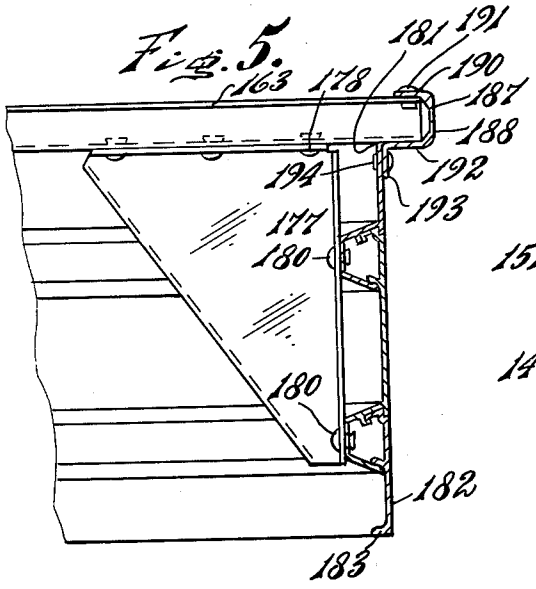
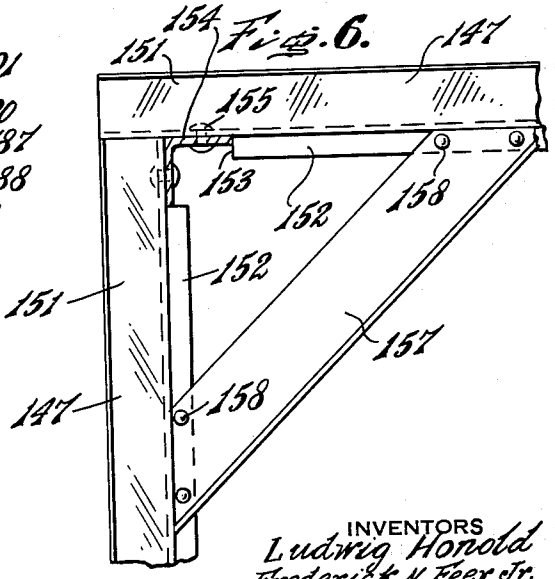


Fig. 6.



INVENTORS
Ludwig Honold
Frederick N. Feer, Jr.
Frederick J. Mack
BY Jackson and Jackson
ATTORNEYS

June 28, 1966 L. HONOLD ETAL 3,257,932

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Fig. 7.

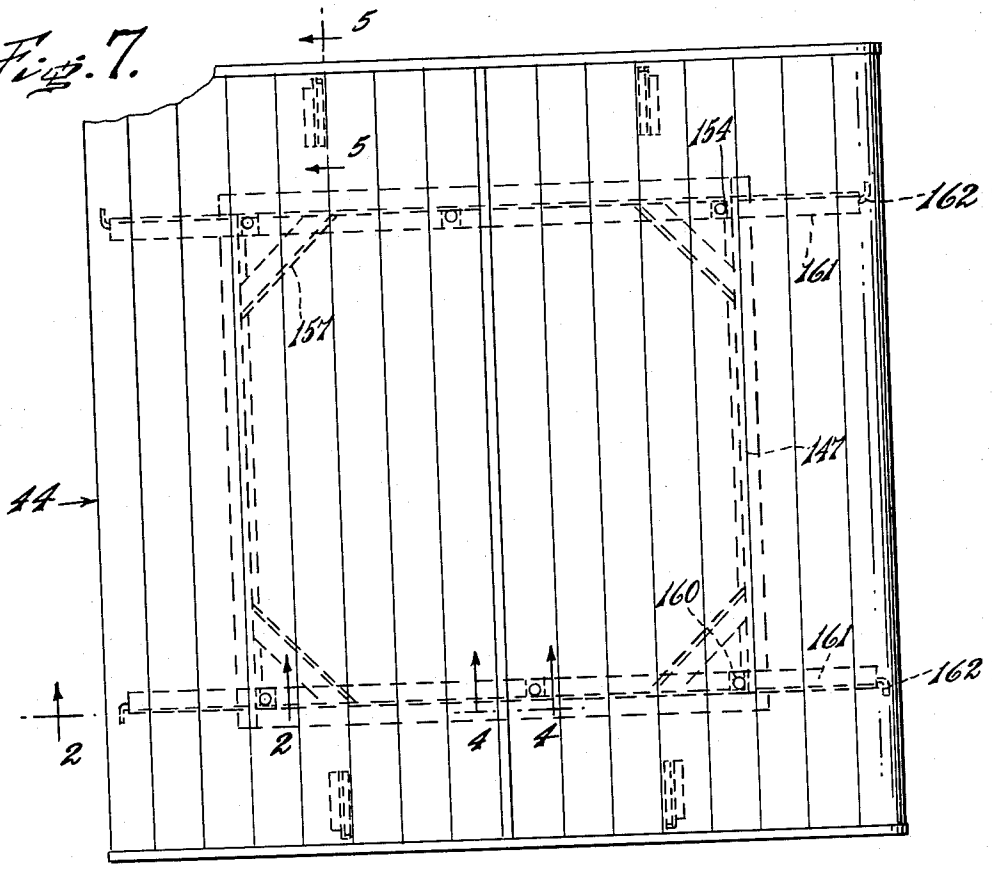


Fig. 8.

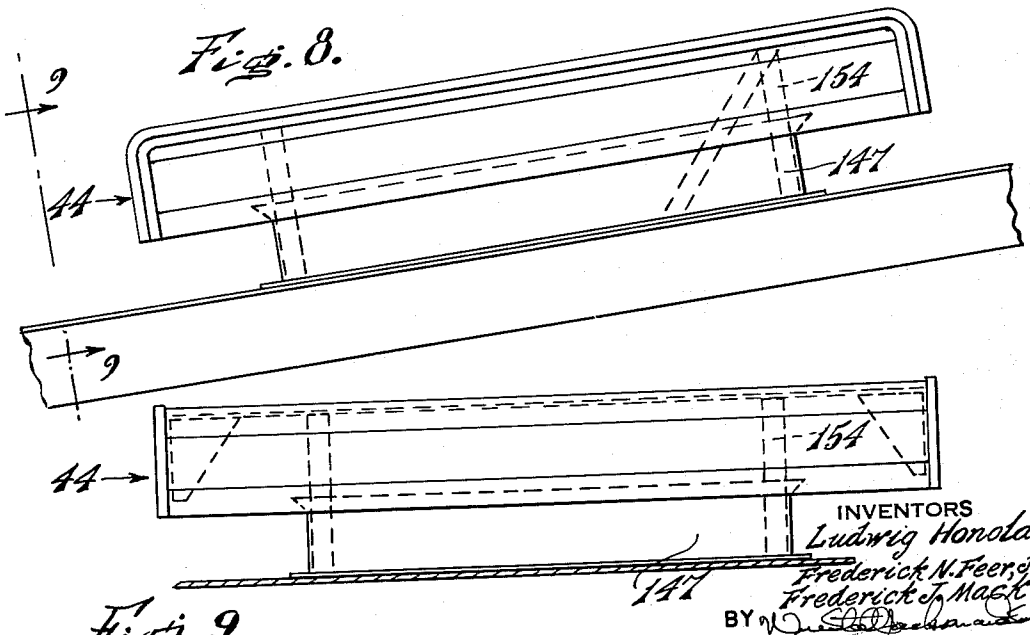


Fig. 9.

INVENTORS
Ludwig Honold
Frederick N. Feer, Jr.
Frederick J. Mack
BY
ATTORNEYS

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Fig. 10.

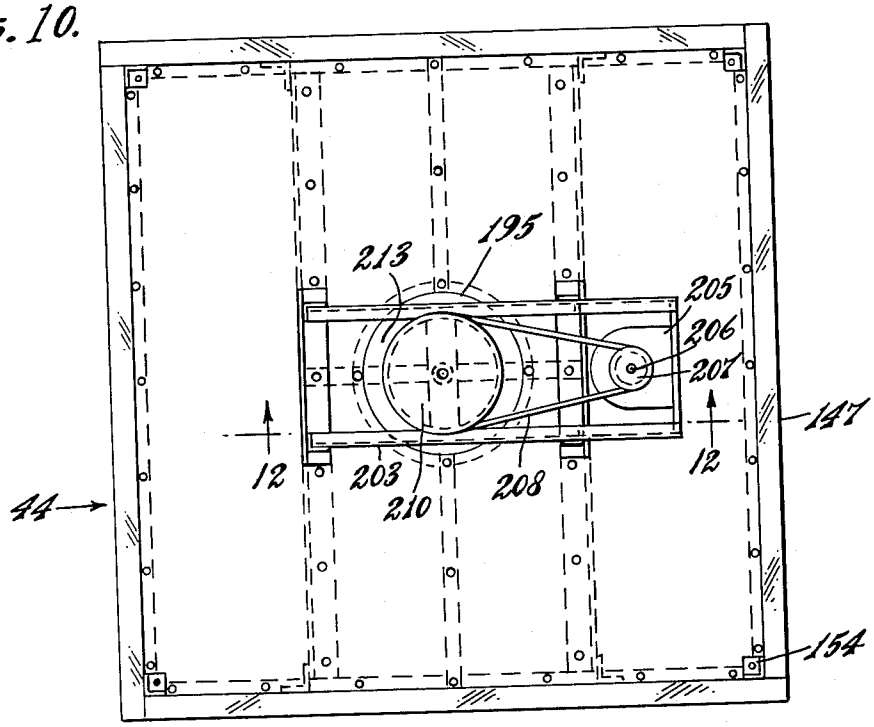


Fig. 11.

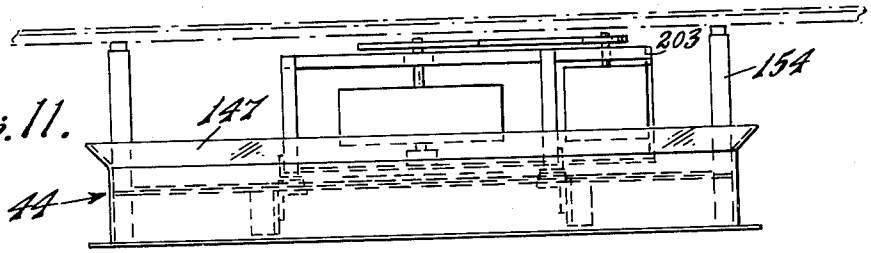
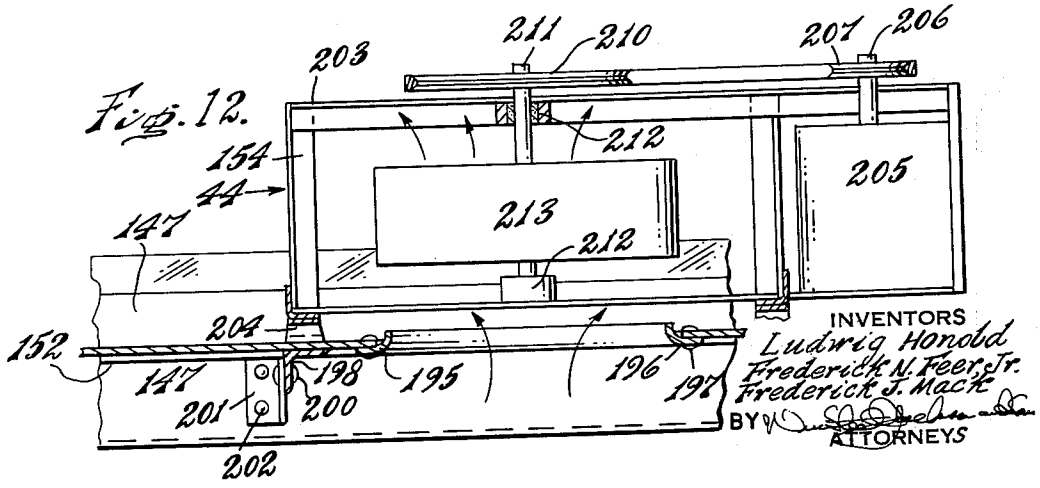


Fig. 12.



INVENTORS
Ludwig Honold
Frederick N. Feers Jr.
Frederick J. Mack
BY
ATTORNEYS

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3,257,932

ROOF VENT CONSTRUCTION

Ludwig Honold, Concordville, and Frederick N. Feer, Jr., and Frederick J. Mack, Media, Pa., assignors to Ludwig Manufacturing Company, Folcroft, Pa., a corporation of Pennsylvania

Original application Jan. 24, 1962, Ser. No. 168,376. Divided and this application Feb. 1, 1965, Ser. No. 429,549

5 Claims. (Cl. 98—42)

The present invention relates to roof vent construction for housings, especially of the character which are suitable to house machinery or equipment, but permissibly also to housings which are intended to provide special buildings, huts or the like.

The present application is a division of our copending application Serial No. 168,376, filed January 24, 1962, for Housing and copending application Serial No. 429,550, filed February 1, 1965, for Building Structure.

A purpose of the invention is to produce a roof vent for a housing which can be very readily transferred in compact form to a site for erection.

A further purpose is to improve the structure for ventilating the housing.

A further purpose of this invention is to provide a roof vent construction of increased structural strength with resistance to windage and corrosion.

Further purposes appear in the specification and in the claims.

In the drawings we have chosen to illustrate a few only of the numerous embodiments in which our invention may appear, selecting the forms shown from the standpoints of convenience in illustration, satisfactory operation and clear demonstration of the principles involved.

FIGURE 1 is a perspective of the completed housing of the invention.

FIGURE 2 is a vertical section of one form of the ventilating assembly, partially broken away, the section being taken on the line 2—2 of FIGURE 7.

FIGURE 3 is a fragmentary section on the line 3—3 of FIGURE 2.

FIGURE 4 is a vertical section of the ventilator cover at the point where the cross over occurs between left and right end extrusions, the section being taken on the line 4—4 of FIGURE 7.

FIGURE 5 is a vertical section of the ventilator assembly, the section being taken on the line 5—5 of FIGURE 7.

FIGURE 6 is a fragmentary plan section of the ventilator assembly, the section being taken on the line 6—6 of FIGURE 2.

FIGURE 7 is a fragmentary top plan view of the ventilator assembly to reduced scale as compared with FIGURES 2 and 6.

FIGURE 8 is a side elevation of the ventilator assembly of FIGURE 7.

FIGURE 9 is an end elevation of the ventilator assembly taken on the line 9—9 of FIGURE 8.

FIGURES 10 to 12 show a variation in the ventilator assembly.

FIGURE 10 is a top plan view eliminating the ventilator cover, showing the modified ventilator assembly.

FIGURE 11 is a side elevation of the modified ventilator assembly of FIGURE 10, showing the ventilator cover in dot-and-dash lines.

FIGURE 12 is an enlarged fragmentary section on the line 12—12 of FIGURE 10.

Describing in illustration but not in limitation and referring to the drawings:

There is considerable need for a housing which can

be shipped in folded or knocked down condition to any part of the world, including the Arctic, or Antarctic and also including remote and inaccessible locations, for covering and protecting machinery and equipment such as turbines, engines, generators, radar equipment, scientific measuring equipment and the like. The housing lends itself to such service, both in cases of military installations; also for scientific expeditions, and in some cases for normal civilian uses. This invention relates to a ventilator construction for such housings.

One of the great advantages of the ventilator of the invention is that the elements of the ventilator are themselves relatively light, and also are not bulky. They can be shipped or transferred or hand carried to the site and installed readily with a minimum of tools.

The structure is primarily of aluminum alloy, and is designed to resist the elements and has very high resistance to corrosion in various environments. The structure also is designed to withstand adverse conditions, which may be encountered, for example, in the Arctic and Antarctic, such as winds of 135 miles per hour, and various atmospheric conditions, such as snow, sleet, ice and hail.

Provision has been made for excellent ventilation, to carry off any gases generated by the machinery or equipment, and to provide comfortable working conditions for personnel.

The ventilator housing is essentially constructed out of a plurality of snap-in metallic extrusions with appropriate supporting means. For further discussion on the construction of these metallic extrusions, reference is made to our above-identified copending application for Housing.

Referring now to the drawings in detail, the housing consists of footings **40** on which are supported side walls **41**, end walls **42**, a roof **43**, and ventilating assemblies **44**, which are described more in detail later.

As best seen in FIGURE 1, each end of the housing has an access opening **94**, which may be closed by a suitable door if desired.

At intervals suitably on either side of the end walls **42**, there are provided doors **103** and at suitable places in the side walls there are provided doors **104**.

At a central point in each of the oppositely sloping roof panels of a pair, it is desirable to locate a ventilator. Openings **146** are suitably punched in the webs of the extrusions **57** forming the roof beneath the ventilator as best seen in FIGURE 2. Centrally located at each ventilator is placed a suitable rectangular collar **147** which consists of a web **148** desirably thickened toward the bottom, a transverse bottom flange **150** and an outwardly flaring top flange **151**. There is an inwardly extending intermediate rib **152** from the web. The sections of the extrusion **147** are mitered at the corners and the rib **152** is cut away at **153** near the corners to receive an upwardly extending angle **154** best seen in FIGURES 2 and 6 which is secured to the collar **147** as by rivets **155**. The collar **147** is fastened to the roof panel by bolts **156** with caulking if desired.

The collar **147** is desirably braced by cross braces **157** secured to the ribs **152** as by rivets **158**, best been in FIGURE 16. The angle uprights **154** extend considerably above the top of the collar and at the top there are suitably mounted, as by welding, nuts **160** best seen in FIGURES 2 and 3. The cap or cover for the ventilator **44** consists of supporting angles **161** extending transverse to the ridge of the roof, resting on the nuts **160**, and secured at the ends as by welding to brackets **162**. The top and the two sides of the cover consist of suitable aluminum snap-in extrusions **163** best seen in FIGURES 2 and 4 and consisting of webs **164** which have at one edge female socket sections including flanges **165**, **166** and **167**, which

are generally in the shape of an inverted trapezium. Near the edge toward the web **164** there is a projection **168** which fits into an interlock recess **170** at the opposite end of the web **164**. Adjoining the interlock recess **170** on the end of the web is a projection **171** following the inside of the trapezium shape of the flange **165** and having an angularly bent rib **172** at the end which interlocks within a rib **173** on the trapezium flange **165**.

A rib **174** from the web fits immediately inside the trapezium flange **167** of the next extrusion, so that by deflecting the extrusions they can be snapped together as shown in FIGURE 2.

At front and back corners an extrusion is provided which resembles the others but has a curved web **164'** as best seen in FIGURE 2.

The corresponding extrusions **163** and the angles **161** are bolted to the nuts **160** at the uprights **154** by bolts **175** extending through the extrusions and through spacers **176** and then through the angle **161** and into nut **160**.

At the ends of the extrusions **163** brackets **177** are secured to the extrusions as by rivets **178**, and the brackets support extrusions on the sides of the cover which are connected to the brackets by rivets **180**. At the top of the sides the webs are suitably cut off at **181** and at the bottom special cooperating snap-in extrusions **182** are suitably used having ribs **183** at the extreme bottom edges. The same is true of the bottoms of the front and back portions as shown in FIGURE 2.

At the center of the roof panel, as best shown in FIGURE 4, there is a metallic extrusion having female socket sections at both ends. This permits reversal of the order of the extrusions so that the special bottom snap-in extrusion **182** can be secured to both ends of the side panels.

As best seen in the FIGURE 2, the bottom of the cover terminates just below the outer flaring portion **151** of the collar but at a considerable distance outwardly thereof so that gas flowing upwardly as shown by the arrows **184** will pass through the openings **146** and through the space within the collar **147** and then will pass downwardly in the space between the bottom edge of the cover and the roof as suggested by arrows **185** and **186**.

The ends of the extrusions forming the top of the cover are suitably connected to the extrusions at the sides by an extrusion **187** which has a web **188** running along the ends of the extrusions at the top and a flange **190** joined to the extrusions at the top by rivets **191**, and a flange **192** extending under the extrusions **163** and then an angle flange **193** joined to the top-most side extrusion by rivets **194**.

In some cases it is not sufficient to rely on natural ventilation and in FIGURES 10 to 12 we illustrate a modified ventilating assembly.

In this case an opening **195** suitably of circular form is cut in the cover extrusions **57**, and a rim **196** is secured by rivets **197** to finish the inner edge of the opening. The collar **147** is constructed as before and provides the uprights **154** at the corners which are to connect to the cover.

Secured to the roof extrusions for bracing purposes on the sides are angles **198** anchored by rivets **200** to brackets **201** secured by rivets **202** to the extrusions **163**.

On top of the roof but under the cover is provided a frame **203** which is secured to the roof extrusions **57** at **204** and which has mounted thereon an electric motor **205** provided with a shaft **206** and pulley **207** which connects by a belt **208** with a pulley **210** on shaft **211** journalled on bearings **212** in the frame carrying an exhaust fan impeller **213**.

It will be evident that the fan will draw air through the opening in the roof and discharge it in the space between the ventilator cover and the roof.

In view of our invention and disclosure variations and modifications to meet individual whim or particular need will doubtless become evident to others skilled in the art, to obtain all or part of the benefits of our invention without copying the structure shown, and we, therefore, claim all such insofar as they fall within the reasonable spirit and scope of our claims.

Having thus described our invention what we claim as new and desire to secure by Letters Patent is:

1. In a building construction, having a roof with an opening therein through which ventilation can take place, a ventilator collar secured to the roof around the opening extending upwardly and having corners, posts secured at the corners of the collar extending up above the collar, a ventilator cover comprising a roof panel extending over the space within the collar and outwardly therefrom, said roof panel comprising a plurality of metallic extrusions arranged side by side and having snap-in interlock connections to one another with one side having webs forming a continuous surface for the outside of the panel and the other side having flanges thereon, support brackets secured to the flanges of the extrusions extending transverse to the length of the extrusions, said brackets being secured to the top of the collar posts for support of the roof panel, said ventilator cover including side panels extending downwardly from the ends of the roof panel to a level below the upper level of the ventilator collar, wherein two opposite side panels of the ventilator cover consist of snap-in metallic extrusions interconnected with the extrusions of the roof panel.

2. In a building construction according to claim **1**, in which the collar is an extrusion which is relatively thick at the bottom, thinner toward the top, and outwardly flared at the top.

3. In a building construction according to claim **1**, comprising four side panels, each consisting of snap-in metallic extrusions, two of which, opposite each other, are interconnected with the extrusions of the roof panel, the other two being secured transverse to the length of the extrusions of the roof panel.

4. In a building construction according to claim **1**, including a snap-in metallic extrusion having a curved web for interconnecting the two side panels of the ventilator cover to the roof panel.

5. In a building construction according to claim **1**, wherein said snap-in extrusions of the roof panel have female snap-in connections at one end and male snap-in connections at the opposite end, in combination with an adapter connection having snap-in of the same kind at both ends interposed in the panel permitting reversal so that the snap-in connections of the same type will be on opposite ends of the roof panel.

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JOHN O'CONNOR, *Primary Examiner.*