



July 24, 1928.

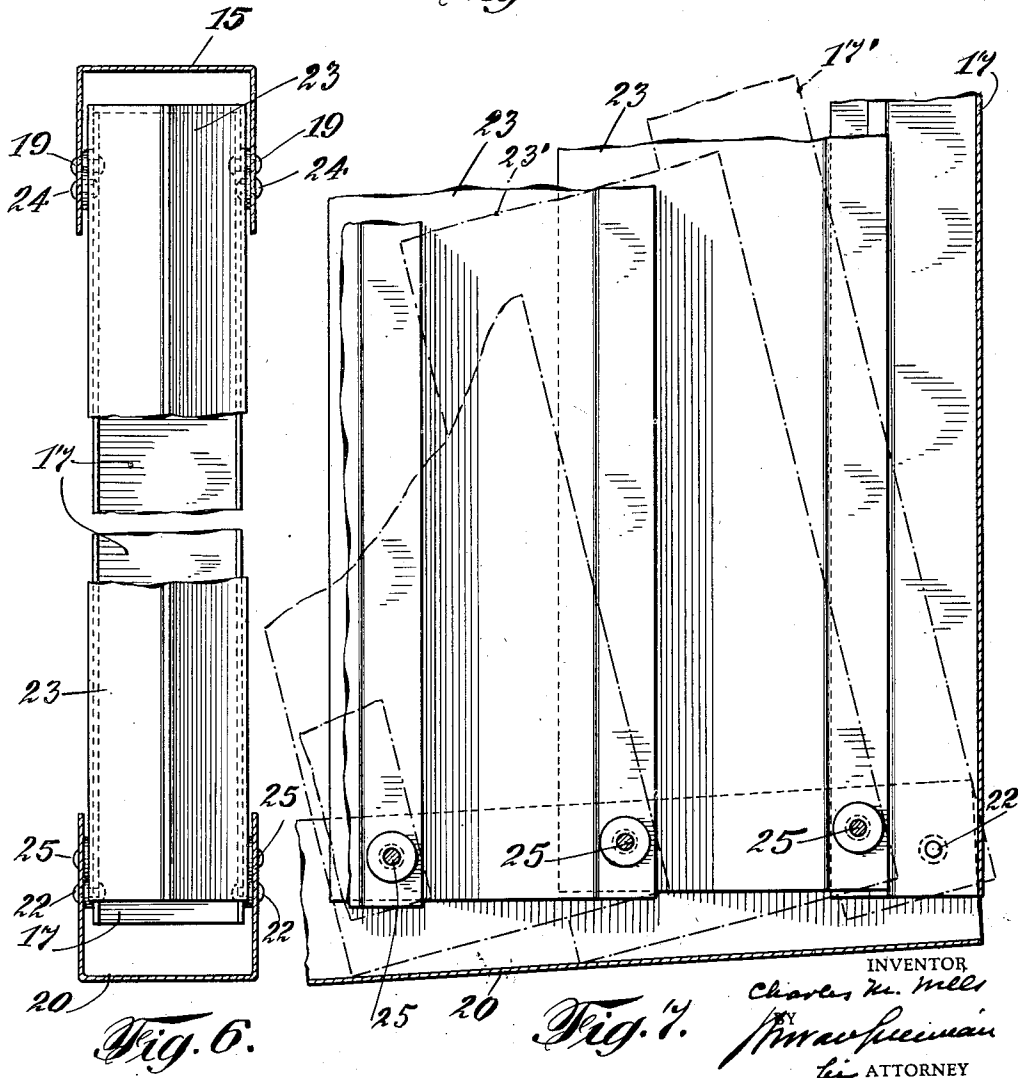
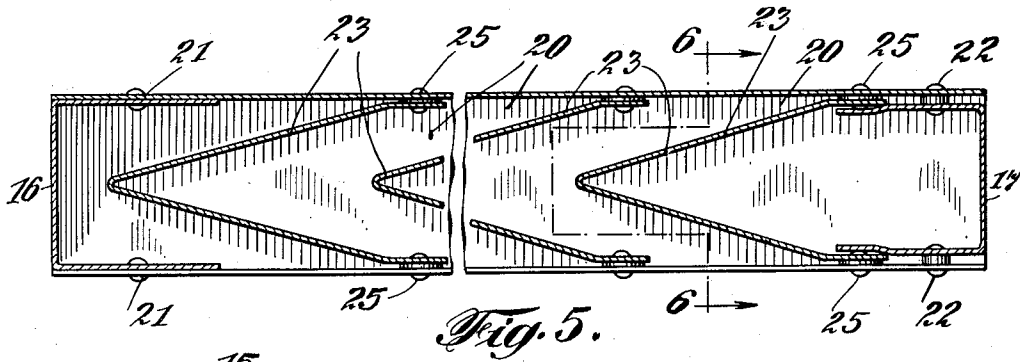
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FLEXIBLE VENTILATOR

Filed Feb. 19, 1927

3 Sheets-Sheet 2



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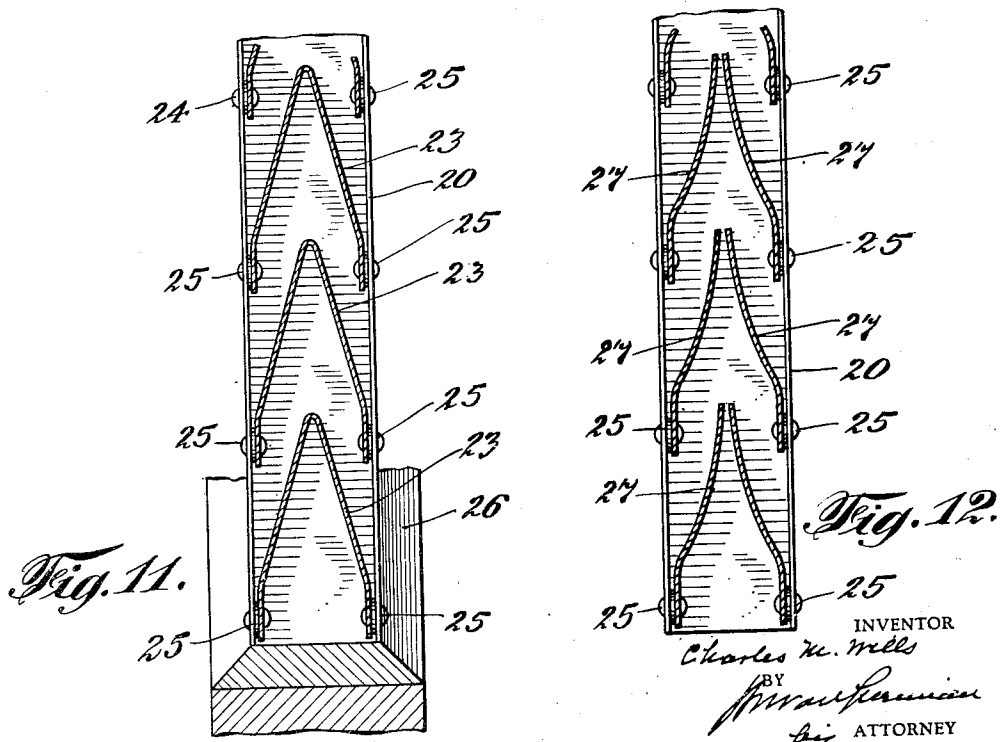
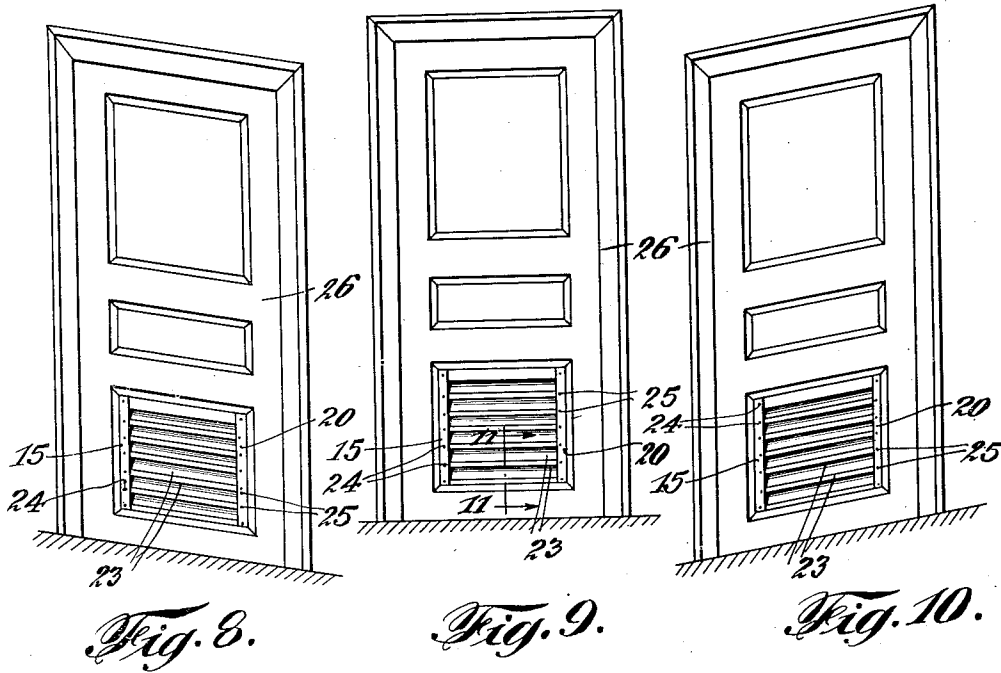
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3 Sheets-Sheet 3



# UNITED STATES PATENT OFFICE.

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## FLEXIBLE VENTILATOR.

Application filed February 19, 1927. Serial No. 169,526.

My invention relates to ventilators and refers particularly to devices of this character which are capable of insertion within door recesses of varying angular construction.

Rectangular ventilators are known, but my invention relates to ventilators which can be fitted into openings which are not rectangular and which possess highly advantageous property of having their contours changed to suit the particular angular shape of the opening into which it is desired to place them.

While the devices of my invention have many uses, they are particularly adaptable for insertion in ship cabin doors and door frames and special reference will be made to this application.

As is well known the floors, or decks, of ships are not perfectly level, but rise gradually from amid ship toward the bow and stern, thus forming an arc of a circle, the lower portion being at the middle of the ship.

The side frames of ships' doors are perpendicular, in order to allow of proper swing of the door, while the lower sill and the top frame follow the shape, or angle, of the deck. The door frame therefore is not of rectangular shape, but has acute and obtuse angles.

The insertion of a rectangular ventilator in doors of this character is highly objectionable as the sides of the ventilator will not be parallel to the corresponding sides of the door frame, thus producing an untasteful and disagreeable appearance.

It is evident from a consideration of the arc shaped deck, or floor, and the perpendicular door frame sides, that the angular construction of the door frame will gradually change from amidship to the bow and stern, and that therefore, the angular construction of the ventilators must vary from door to door.

It will thus be seen that ventilators of fixed angular construction cannot be employed upon all of the doors, and that a ventilator of particular angular construction must be made for each door.

As the pitch of the deck varies in different ships due to their different lengths and other considerations, the production of suitable ventilators has been difficult and expensive.

The device of my invention overcomes all of the above mentioned objections and difficulties and presents a ventilator capable of fitment into door frames irrespective of their angular construction.

My ventilator is of such formation and construction that it may be employed with any door or door frame without respect to the angular construction of the door and frame, the sides of my ventilator always being parallel to the sides of the door and the door frame.

It will thus be seen that my ventilators may be made in quantities irrespective of the particular angular construction of the door with which they are to be employed, and that the builders of such doors may take my ventilator and fit it into any and all doors without regard to this angular construction, and that when so fitted my ventilators will meet the requirements of parallelism.

Another valuable feature of my ventilators is that their construction is of such a character that while admitting the passage of air therethrough, they prevent the passage of light and vision, these valuable attributes being possessed by my devices irrespective of their angular position while in use.

In the accompanying drawings illustrating modifications of the ventilators of my invention, similar parts are designated by similar numerals.

Figure 1 illustrates my device inserted in the upper portion of the door as employed in the approximate central portion of a ship.

Figure 2 illustrates my device inserted in the upper portion of a door of irregular angular construction as employed in that portion of a ship towards its bow.

Figure 3 illustrates my device inserted in the upper portion of a door of irregular angular construction as employed in that portion of a ship towards its stern.

Figure 4 is a front view of my device in one irregular angular position.

Figure 5 is a broken cross-section through the line 5-5 of Figure 4.

Figure 6 is a cross-section through the line 6-6 of Figure 5.

Figure 7 is a front view showing my device in several angular positions.

Figure 8 illustrates my device inserted in

the lower portion of a door of irregular angular construction as employed in that portion of a ship towards its bow.

Figure 9 illustrates my device inserted in the lower portion of a door of rectangular construction as employed in the central portion of a ship.

Figure 10 illustrates my device inserted in the lower portion of door of irregular angular construction as employed in that portion of a ship towards its stern.

Figure 11 is a cross-section through the line 11—11 of Figure 9.

Figure 12 is a vertical cross-section of my device showing a modified form of the light-preventing shutters.

The particular form of the device of my invention shown in the accompanying Figures 1 to 7 inclusive comprises a channel-shaped top 15 pivotally attached to the channel-shaped ends 16 and 17 at 18, 18 and 19, 19 respectively and a channel-shaped bottom 20 pivotally attached to the ends 16 and 17 at 21, 21 and 22, 22 respectively.

Within the sides of the top 15 and the bottom 20 there are a plurality of wedge-shaped shutters, or leaves, 23, 23, each leaf 23, being pivotally attached to sides of the top 15 at 24, 24 and pivotally attached to the sides of the bottom 20 at 25, 25. The leaves 23, 23 are so positioned with respect to each other that while air may pass through the device, the passage of light and vision are interrupted.

It is evident, therefore, that the casing formed by the top 15, the ends 16 and 17 and the bottom 20 may be pivotally moved from a rectangle to a plurality of positions forming a parallelogram having angles other than right angles, and that during this movement the leaves 23, 23 will likewise move pivotally and that in all of these positions the passage of air will be possible and the passage of light and vision will be impossible.

Figure 7 illustrates such movement, the prime numerals indicating the several elements in their moved positions from rectangular formation.

It is to be further noticed that in each of these positions the top 15 and the bottom 20 are parallel to each other and that the ends 16 and 17 are parallel to each other.

In Figures 8 to 12, inclusive, my device is shown as inserted within the lower portion of a door 26, and when so employed, I prefer to position the device so that the leaves 23, 23 point upwardly in order that any water which may be splashed therein will flow downwardly and out of the device.

In the modification shown in Figure 12 the leaves 27, 27 consist of pairs instead of a single element as shown in the other drawings.

It will thus be seen that the contour, or shape, of my device may be pivotally moved to accommodate itself to any particular angular formation required for proper insertion within a door, or door frame, for the purposes described and that in all such positions the passage of air is permitted and the passage of light and vision prevented.

I do not limit myself to the particular size, shape, number or arrangement of parts as shown and described, as these are given simply as a means for clearly describing the device of my invention.

What I claim is:—

1. In a ventilator, in combination, a casing the top and bottom of which are pivotally attached to the ends thereof, and a plurality of overlapping leaves pivotally attached to the top and the bottom of the casing.

2. In a ventilator, in combination, a casing the top and bottom of which are pivotally attached to the ends thereof and a plurality of leaves within the casing so positioned as to allow the passage of air therethrough while preventing the passage of light and vision therethrough in all pivotal positions of the casing.

3. In a ventilator, in combination, a casing the top and bottom of which are pivotally attached to the ends thereof and a plurality of pivotally attached leaves within the casing so positioned as to allow the passage of air therethrough while preventing the passage of light and vision therethrough in all pivotal positions of the casing.

Signed at Philadelphia in the county of Philadelphia and State of Pennsylvania this 14th day of February, 1927.

CHARLES M. WILLS.