

Jan. 1, 1952

G. H. KOCH
WALL BOX FAN

2,580,797

Filed June 5, 1948

2 SHEETS—SHEET 1

Fig. 1.

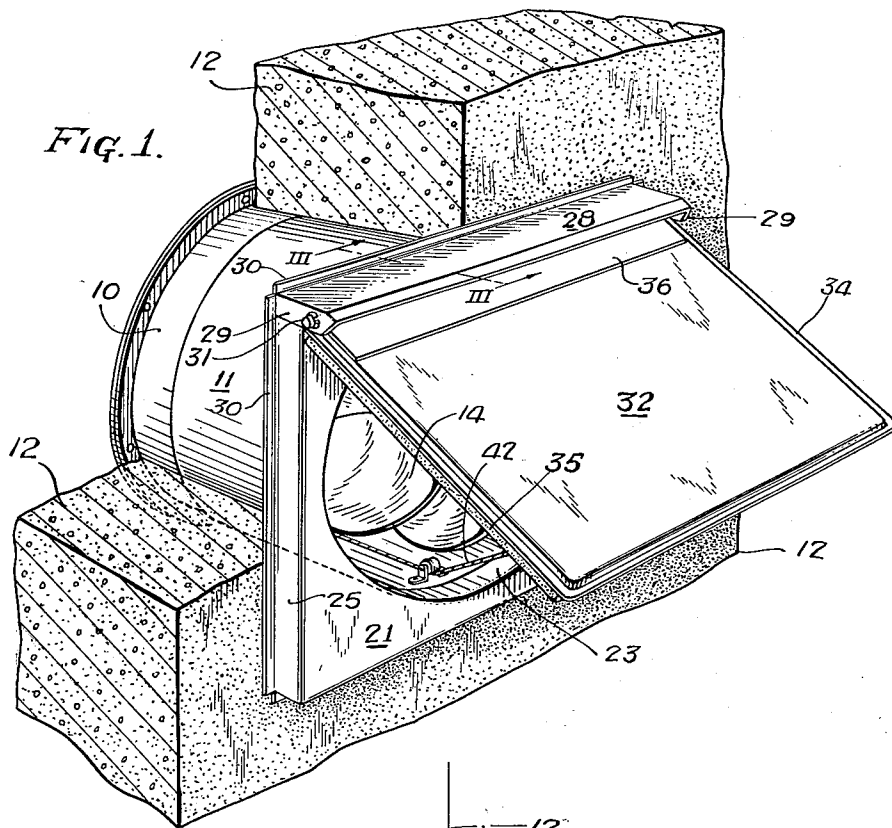


Fig. 2.

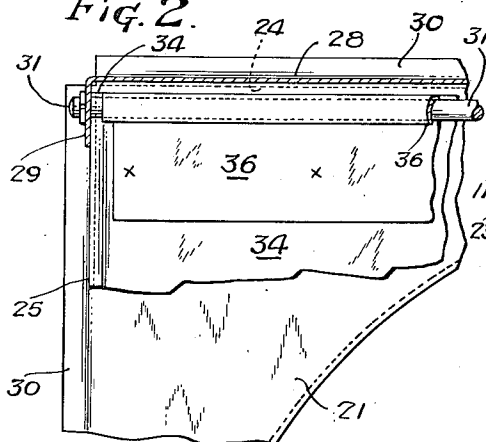
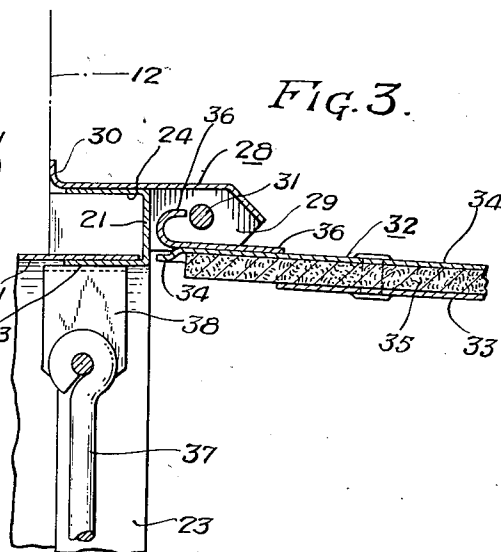


Fig. 3.



WITNESSES:

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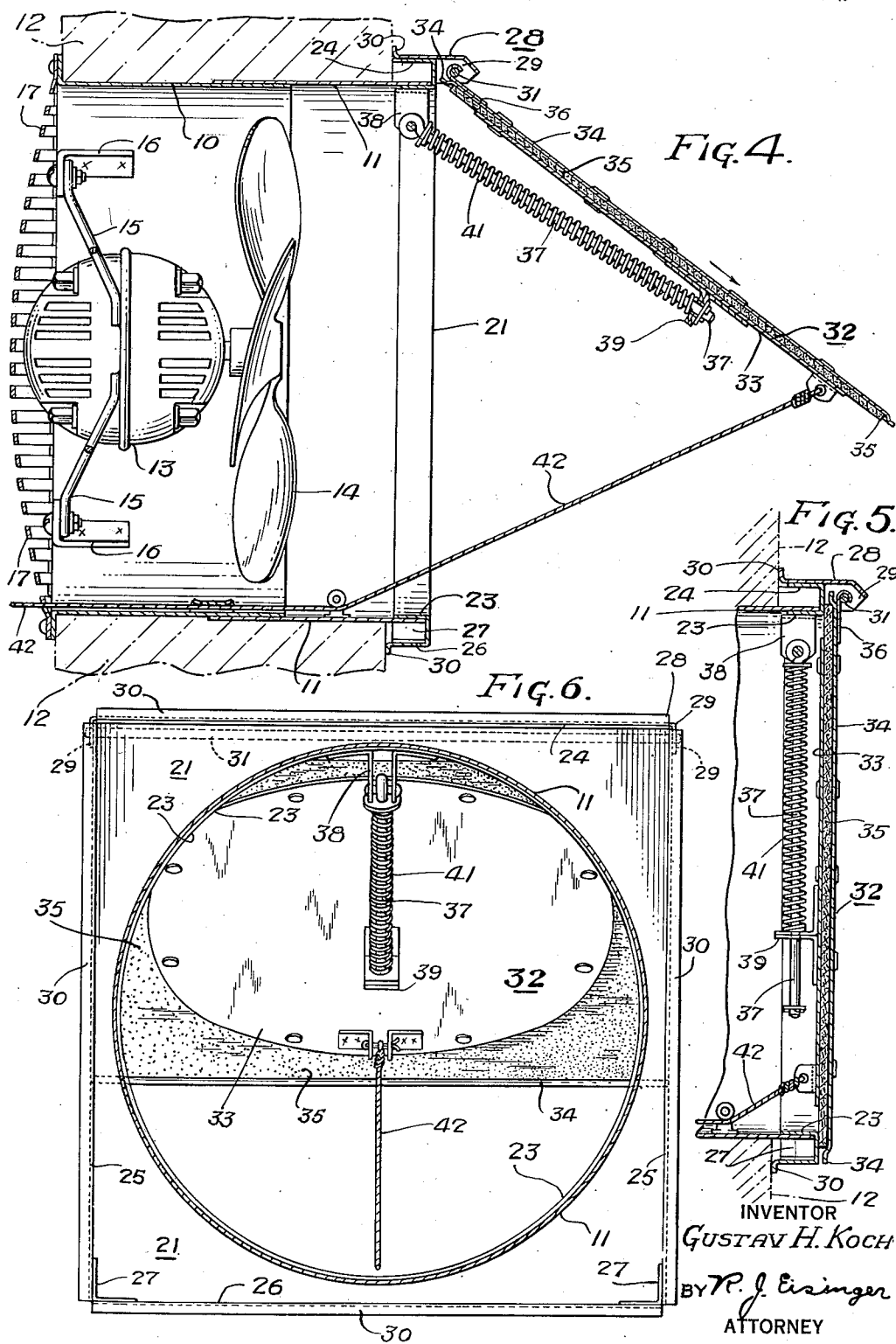
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2 SHEETS—SHEET 2



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WALL BOX FAN

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3 Claims. (Cl. 98-116)

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My invention relates to a wall box fan, more particularly to the casing structure thereof.

It is an object of my invention to provide an improved casing structure for a wall box fan.

A further object is to provide a simple hinge structure for hinging the door or closure of a wall box fan.

A more particular object is to provide a member which supports the door hinge pin, provides a hood for the upper portion of the door, and also serves to connect several flanges of the casing structure.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawings, forming a part of this application, in which:

Fig. 1 is a perspective view of a wall box fan in accordance with my invention;

Fig. 2 is a fragmentary front elevation, with the hood in section;

Fig. 3 is a vertical section taken on the line III-III of Fig. 1;

Fig. 4 is a vertical section taken along the axis of the fan;

Fig. 5 is a similar sectional view of the door in closed position; and

Fig. 6 is a vertical section taken in a plane perpendicular to the axis, and looking toward the outside.

Referring to the drawings in detail, the casing structure of the wall box fan comprises inner and outer tubular or sleeve sections 10 and 11 which extend through an opening in the wall 12. The fan motor unit, comprising a motor 13 and a fan 14 overhung on the shaft of the motor, is supported in the inner section 10 by means of arms 15 and brackets 16. A suitable grill 17 may be attached to the section 10, substantially flush with the inner surface of the wall 12.

The casing structure further comprises an outer wall 21, which is of rectangular outline. The wall 21 is formed with a circular opening and an inwardly extending flange 23 which surrounds the opening and fits within the outer end of the sleeve section 11. At its outer edges, the wall 21 is formed with inwardly extending flanges, including a top flange 24, vertical flanges 25 and a bottom flange 26. The lower ends of the flanges 25 are secured to the flange 26 by means of angle pieces 27 attached to the inner surfaces of the flanges, as shown in Fig. 6.

A hood member 28 extends over the top of the wall 21. It is spot welded to the top flange 24 and at its ends has downwardly extending hinge legs

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29 which are spot welded to the vertical flanges 25 to secure the flange 24 to the flanges 25. The flanges 25 and 26 and the hood may be provided with outwardly extending flanges 30 lying against the outer surface of the wall 12. A hinge pin 31 extends through and is supported by the hinge legs 29; suitable means, such as cotter pins, being provided at the ends of the hinge pin 31 to retain the same longitudinally. The hinge pin 31 is spaced outwardly from the wall 21 as shown in the drawings and as will be further described.

A door 32 for closing the opening in the wall 21 comprises inner and outer sheet metal members 33 and 34 and a sheet of insulating material 35 therebetween, the parts being secured in any suitable manner, as by rivets. The inner sheet 33 of the door is preferably provided by the material cut from the wall 21 in forming the opening therein.

A hook member 36 extends along the upper portion of the door 32 and is secured to the outer sheet 34, as by spot welding. The hook member 36 is formed so that, when the door is closed as shown in Fig. 5, it extends from the door upwardly, then outwardly over the hinge and then downwardly. It will also be noted from Fig. 5 that when the door is in closed position, the upper edge extends between the wall 21 and the hinge pin 31.

The outward movement of the door in normal use is limited by an arm 37 which is hinged on a bracket 38 disposed within the opening in the wall member 21 near the top thereof. The other end of the arm 37 extends through an opening in a bracket 39 attached to the inner sheet 32 and has a washer 40 and a cotter pin beyond such bracket. Thus, as the door moves outwardly, the arm 36 swings along with the door until the washer 40 strikes the bracket 39 to prevent further opening movement, as shown in Fig. 4. A compression spring 41 is also wound around the arm 37 and acts on the bracket 39 to bias the door outwardly in opening direction. Any suitable means, such as a cord or chain 42, may be provided for actuating the door against the bias of the spring 37.

In normal use, the spring 37 biases the door 32 away from the hinge pin 31, thereby urging the hook member 36 into engagement with the hinge pin. Also, in normal use, the hook member cannot be disengaged from the hinge pin, even against the force of the spring 37, because of the close proximity of the hood member 28 and the wall 21.

Referring to Fig. 5, it will be noted that the hood 28 is so close to the hinge pin 31 as to

prevent the upward movement of the hook 38 which is necessary to disengage it from the pin. In the open positions, such as the one shown in Fig. 4, the pin 31 is sufficiently close to the wall 21 so that the upper edge of the outer sheet 34 would strike the wall member 21 before the hook could disengage the pin.

In order to remove the door from the hinge, the cotter pin and the washer on the arm 37 are removed and the door is raised to approximately horizontal position as shown in Fig. 3. In this position, the upper edge of the sheet 34 has been rotated a sufficient distance from the wall 21, to permit the door to be moved towards the wall 21 sufficiently to permit the outer edge of the hook to disengage the pin 31 and to be withdrawn downwardly between the pin 31 and the wall member 21.

As will be noted from the drawing, the hood member 28 provides a shield or guard over the door hinge and over the top portion of the door and the wall 21. The hood also serves to connect the top and side flanges of the wall 21, thereby dispensing with angle pieces which would otherwise be necessary, such as those at the bottom corners.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What I claim is:

1. In a wall box fan, a casing structure comprising a sheet metal member including a vertical outer wall and top and side flanges extending inwardly from the top and the sides of said outer wall, a sheet metal hood member including a substantially flat and horizontal portion extending along the top of and secured to said top flange and further including flanges or hinge legs extending downwardly from the ends of said horizontal portion and secured to said side flanges, whereby said hood member serves to connect said top and side flanges, said hinge legs extending forwardly of said outer wall and a hinge pin attached to said hinge legs in outwardly spaced relation to said outer wall, said horizontal portion of said hood member extending outwardly beyond and over said hinge pin to provide a hood therefor.

2. In a wall box fan, the combination of a casing structure having an outside wall formed with an opening therein, a door for closing said opening, a hinge pin disposed horizontally above said opening in spaced relation to said outside wall, a hood member disposed above said hinge pin in spaced relation thereto, a door for closing said opening, said door being provided with a hook-shaped hinge member attached to the upper portion of said door and bent outwardly and downwardly therefrom so as to engage said hinge pin, means for limiting the extent of opening movement of said door, said limiting means being disengageable to permit greater opening movement when desired, the spacing between said hinge pin and said hood member and between said hinge pin and said outer wall being sufficiently small to limit the movement of said door toward the hinge pin to prevent disengagement of said hinge member from said hinge pin when the door is in closed position or in an open position permitted by said door opening limiting means, and the spacing between the hinge pin and the outer wall being sufficient to permit the hinge member to be disengaged from said hinge pin when the door is moved in opening direction substantially beyond the position permitted by said door opening limiting means.

3. A wall box fan as set forth in claim 2 and further including a spring biasing said door downwardly and outwardly, thereby biasing said hinge member into engagement with said hinge pin.

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