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ROOF SCUTTLE

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FIG. 4.

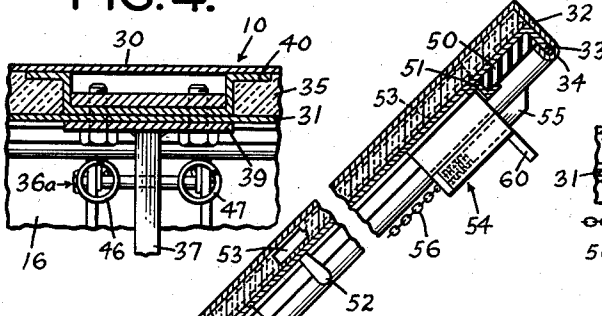


FIG. 5.

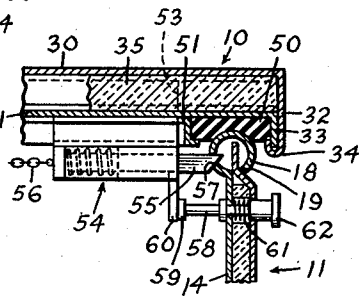


FIG. 2.

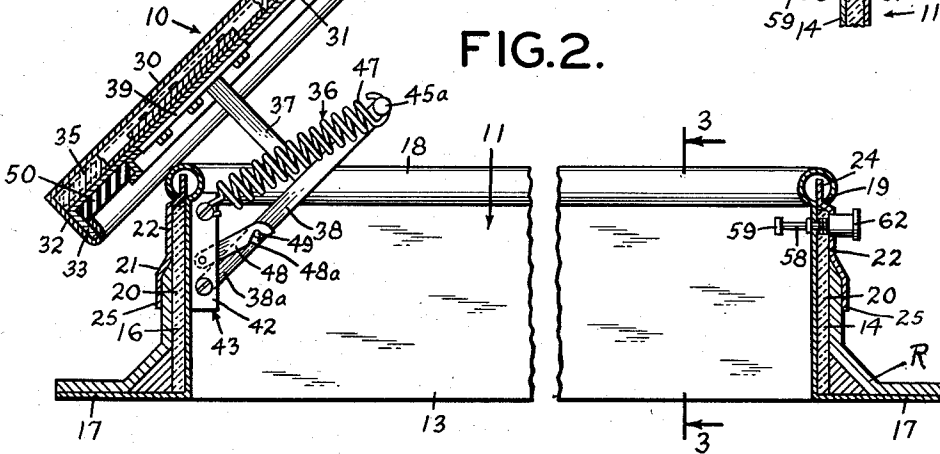


FIG. 3.

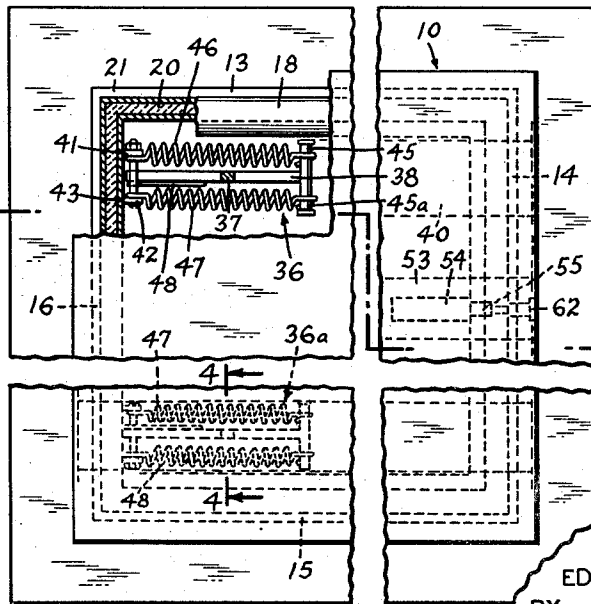
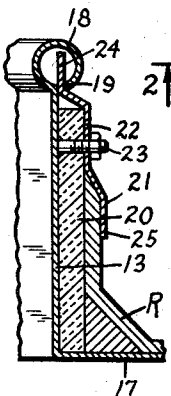


FIG. 1.

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ROOF SCUTTLE

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2 Claims. (Cl. 189—46)

This invention relates to closures for openings in building structures, and it relates particularly to scuttles or hatches for openings in the roofs, floors and the like of houses or other buildings.

Scuttles for use on roofs and the like of houses or other buildings are usually made of wood or relatively heavy metal to impart sufficient strength to them to withstand wind, rain and snow. The use of these materials has the undesirable effect of making the scuttle door heavy and difficult to open. These materials also fail to provide substantial insulation and as a result they permit loss of heat in the winter and the entry of heat into the building during the summer and undesirable condensation of moisture therein.

In addition to the above-mentioned disadvantages of the prior types of metal scuttles, they usually have bolts or rivets extending through them which are exposed to the elements and provide crevices into which moisture can penetrate, thereby permitting corrosion of the metal and eventual leakage through the scuttle.

The present invention has as its principal object the provision of roof scuttles and the like which are strong, durable, weathertight and leakproof and, at the same time, are relatively light in weight and include insulation to prevent the passage of heat therethrough and condensation of moisture thereon. In addition, they are fabricated from lightweight materials which can be shaped and assembled with a minimum of heavy duty equipment and are free from holes for rivets, screws and the like.

More particularly, roof scuttles of the type embodying the present invention include a scuttle door which is formed principally of two pieces of sheet metal having their edges formed and joined in such a manner as to provide a flange telescoping around the outer edges of a curb to be positioned around an access opening in a roof or the like. Interposed between the sheets of metal making up the scuttle door is a layer of lightweight insulation which aids in stiffening the door, provides a vapor barrier and, at the same time, prevents heat losses or entry of heat through the door. The curb of the scuttle likewise may be formed of sheet metal and is provided with a beaded upper edge for coaction with a gasket carried by the scuttle door to prevent leakage between the door and the curb. The curb may also be provided with a layer of insulation around its outside, the insulation being protected by a flashing of sheet metal which is secured to the beaded edge of the curb and extends downwardly around and covers the insulation on the curb and roofing or the like which comes up to the curb.

The door and the curb are preferably joined by means of a hinge structure which, at least in part, counterbalances the door to enable it to be raised and lowered with a minimum of effort. The counterbalancing means also serves to hold the door in an open position so that danger of the door dropping on the head of anybody going through the scuttle is avoided. The door and the scuttle may be provided with cooperating locking elements which

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enable the scuttle to be opened from the inside or the outside.

The sheet metal construction of the door enables it to be fabricated very easily with conventional sheet metal brakes and welding equipment and, at the same time, permits a very strong union to be provided between the sheets so that danger of their separation, or exposure of the insulating material therebetween to the elements, is completely avoided. The combination of spaced metal sheets and the interposed layer of insulation provides a strong rigid structure of light weight making the scuttle suitable for application to any type of roof, or the like.

For a better understanding of the present invention, reference may be had to the accompanying drawing in which:

Fig. 1 is a plan view, partially broken away, of a typical roof scuttle embodying the present invention;

Fig. 2 is a view in section taken on line 2—2 of Fig. 1, showing the door in partially open position;

Fig. 3 is a view in section, somewhat enlarged, taken on line 3—3 of Fig. 2, showing details of construction of the curb;

Fig. 4 is a view in section taken on line 4—4 of Fig. 1, showing a detail of the hinge-supporting structure; and

Fig. 5 is a view in section taken on line 5—5 of the latch construction, shown somewhat larger than in Fig. 2.

The roof scuttle is illustrated as having a square door 10, although it may be rectangular, circular or any other desired shape. As best shown in Fig. 2, the door 10 co-operates with a curb 11, which is constructed to be attached to a roof, an attic floor, or a wall, as may be desired. The curb 11 is formed of sheet metal which may be suitably plated or otherwise treated to render it resistant to the elements, which is bent to form an open-end 4-sided enclosure, adapted to fit around an access opening in a building structure or the like. The curb 11 has four vertical side walls 13, 14, 15 and 16 of suitable height, for example, 4 to 10 inches. The lower edges of the side wall are bent outwardly or may have secured to them in any suitable way, a base flange 17 by means of which the scuttle is secured to the roof or building structure. The upper edges of the side walls 13 to 16 are rolled to form a substantially cylindrical bead 18 which extends completely around the perimeter of the curb 11. The bead 18 is curled outwardly and the outer edge of the bead is spaced from the side walls of the curb to form a peripheral gap 19, for purpose to be described.

In order to insulate the curb against heat loss which would otherwise readily occur with such a sheet metal structure, a layer 20 of insulating board, such as asbestos board, is secured to the walls 13 to 16 and extends upwardly from the top of the flange 17 to a zone slightly below the lower edge of the bead 18. The insulating board is cemented to the side walls 13 to 16 with a weatherproof cement, such as a resin base adhesive, or the like. The upper, more porous edge of the insulating board is protected by means of a flashing strip 21 which extends around the entire outside of the curb. As best shown in Fig. 3, a flashing strip has a flat center portion 22 which is secured to the outer surface of the insulating board and the walls of the curb 11 by means of a series of bolts 23 butt-welded to the curb and passing through the insulation and flashing. The upper edge portion 24 of the flashing is offset inwardly and extends upwardly through the gap 19 into the interior of the hollow bead 18, thereby preventing the entry of moisture between the flashing and the side walls at the top of the insulation. It will be understood that the bead 18 may be rolled on the curb prior to attaching the insulating board and inserting the flashing, or the bead may be rolled after the flashing and the insulating board have been secured to the walls of the curb 11.

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The lower edge portion 25 of the flashing is offset outwardly in spaced relation to the insulating board to form a drip shield which will direct water away from the bottom edge of the insulating layer 20. The lower edge 25 of the flashing can also overlap and protect the upturned edge of the roof covering or roof flashing R to provide a weathertight seal therebetween.

The door 10 likewise comprises an insulated sheet metal structure. As shown in Fig. 2, the door consists of an outer metal sheet 30 and an inner metal sheet 31 of generally square shape. The outer sheet 30 is provided with edge flanges 32 which extend at substantially right angles to the plane of the sheet 30. The inner sheet 31 also is provided with edge flanges 33 around its periphery which fit tightly within the flanges 32 and are secured thereto by means of an overturned or rolled lip 34 on the outer flange 32. The overturned lip 34 may be rolled or turned over by means of a conventional rolling or bead forming device.

The flanges 32 and 33 on the sheets 30 and 31 are of such difference in height that a space is left between the sheets 30 and 31 to receive a sheet of insulating board 35, or the like, which serves to prevent the passage of heat through the roof and acts as a stiffening and sound deadening element in the door. The door 10 may be formed of relatively light gauge metal, such as sheet steel or sheet aluminum and, therefore, in its completed form, it is of light weight and of very substantial stiffness capable of supporting easily the weight of an adult.

The door 10 is supported on the curb 11 preferably by means of counterbalancing hinges 36 and 36a adjacent one edge of the door, which facilitate the opening of the door. The hinges 36 and 36a are alike and only one of them will be described. The hinge 36, as shown in Fig. 2, includes an inverted T-shaped member having an upright 37 and a crossbar 38. The upper end of the upright 37 may be provided with a flange 39 which is bolted or otherwise secured to a channel member 40 which is welded to the inner surface of the sheet 30 and spans the space between the sheets 30 and 31. The channel 40 may extend the entire length of the door to act as a stiffener.

One end 38a of the crossbar 38 is secured pivotally between spaced flanges 41 and 42 of a bracket 43 which is welded to the inside of the wall 15 of the curb 11. By securing the door in this manner, so that its effective hinge point is offset from the edge of the door, the entire door can swing away from the upper edge of the curb into a substantially perpendicular position in which the crossbar 38 rests against the bead 18 on the wall 16.

The opposite end 38b of the crossbar 38 has lateral extensions 45 and 45a thereon which are engaged by the ends of tension springs 46 and 47 on opposite sides of the crossbar. The outer ends of the springs 46 and 47 are connected to the flanges 41 and 42 at a point spaced above the point of pivotal support of the end 38a of the crossbar. In this way, when the door is closed, the springs 46 and 47 are stretched to place them under tension tending to lift the door 10 and urge it to an open position. The door may be latched in an open position by means of a catch 48 pivoted on the flange 42. The catch 48 has a notch 48a in its lower edge to engage a pin 49 on the crossbar 38 to prevent the door from falling or being blown down by the wind.

A weathertight seal may be effected between the door 10 and a curb 11 by providing the door with draft stop 50 formed of rubber or similar material. The draft stop 50 may consist of a strip of rubbery material which extends around the inner periphery of the door closely adjacent to the flange 33 on the inner sheet of metal 31. The overturned lip 34 aids in retaining the outer edge of the draft stop in position. The inner edge of the draft stop 50 is secured in position by means of a retaining strip 51 of generally Z-shaped cross section which extends around the inner surface of the door in spaced relation

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to the flange 33 and overlies the inner edge of the draft stop. The draft stop may also be cemented to the inner sheet 31. The draft stop is so positioned that when the door is closed, it engages the upper edge portion of the bead 18 around the curb and is indented thereby to produce a weathertight seal between the door and the curb.

To facilitate closing the door 10, it may be provided with a conventional handle member 52. The inner sheet 31 may be stiffened and supported at the zone of the handle by means of a channel member 53. Also, the door 10 may be provided with a bolt type latch 54 also bolted to the channel member 53. The latch 54 is of the conventional spring urged bolt type and the bolt 55 thereof may be provided with an actuating chain 56 for withdrawing it to release the door. The cooperating catch consists of a notch 57 in the bead 18 on the wall 14 of the curb which has an upper end portion 58 and which overlies the nose of the bolt 55 when the door is closed. The bolt 55 may be released by means of a push rod 58 which extends through the flashing 21 and the wall 14 and has a button 59 on its inner end engaging a bar 60 fixed to the bolt. The push rod is biased outwardly by means of a spring 61 interposed between the wall 14 and a head 62 on the push rod. If desired, the bolt 55 and the push rod 58 may be provided with means to receive padlocks P to secure the catch against release.

The roof scuttle described above provides a weather-tight construction because the lateral flanges on the door 10 telescopically receive the upper edges of the curb and overlie them. Moreover, the draft stop 50 engages the beaded edge 18 of the curb and effects a seal therewith. In this way any water dripping from the edges of the door 10, even if blown by a high wind, is diverted downwardly around the flashing 21 and drips onto the roof or other building structure and cannot enter between the door and the curb.

Inasmuch as the curb and the door are formed of relatively thin metal and stiffened by the presence of channel members and the insulating board, the scuttle structure is lightweight while at the same time sturdy and highly resistant to the elements. Moreover, the outer surface of the door is imperforate and is free from cracks or crevices in which water can collect. In this way corrosion is reduced to a minimum and leakage cannot occur.

It will be understood that the scuttle may be varied in size and shape and that the materials used therein may be altered in accordance with requirements and to conform to the building structure. Therefore, the form of the invention described herein should be considered as illustrative and not as limiting the scope of the following claims.

I claim:

1. A scuttle door for cooperation with generally polygonal curb positioned around an access opening in a roof, comprising inner and outer metal sheets having flanges projecting downwardly around their peripheries and in interlocked engagement to form a peripheral lip engageable around the outside of said curb in telescopic relation thereto, a gasket extending around the door inside said lip to engage said upper edge of said curb and effect a seal therewith an inverted T-shaped member having an upright and a crossbar, said upright having one end connected rigidly to said inner sheet inwardly of the edges thereof and extending downwardly therefrom, a bracket to be secured to said curb, pivot means for connecting one end of said crossbar to said bracket, and a spring connected to the other end of said crossbar and to said bracket above said pivot means to normally urge said door to open position.

2. A scuttle door for cooperation with a curb positioned around an access opening in a building structure, comprising an inner metal sheet having a peripheral flange extending substantially perpendicular to said sheet, an outer imperforate metal sheet parallel with the inner

metal sheet and having a peripheral flange extending in the same direction as said flange on said inner sheet and in telescopic relation to the peripheral flange on the inner sheet, said flange on said outer sheet having an outer edge portion bent around the outer edge of the flange on latter sheet to secure the sheets together, said bent-over portion having its edge spaced from said inner sheet, a layer of heat-insulating material between said sheets, reinforcing means interposed between said sheets, hinge means for connecting said door to said curb for movement toward and away from said curb and joined to said inner sheet and said reinforcing means, a gasket extending around the inner side of said door and inwardly of and in peripheral engagement with said flanges, and a retaining strip secured to said inner sheet and spaced from said flanges on the inner side of said door and engaging the gasket, said gasket engaging between said inner sheet and said edge of said bent-over outer edge portion and retained by said strip and said edge against said inner sheet for engagement with said curb to effect a seal therewith.

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