Jan. 20, 1970 D. C. PERRION 3,490,177

HATCHES

Filed May 29, 1968

FIG. 1

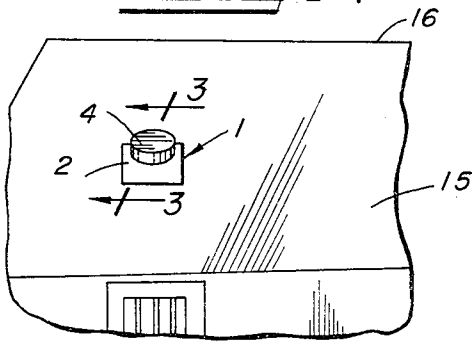


FIG. 2

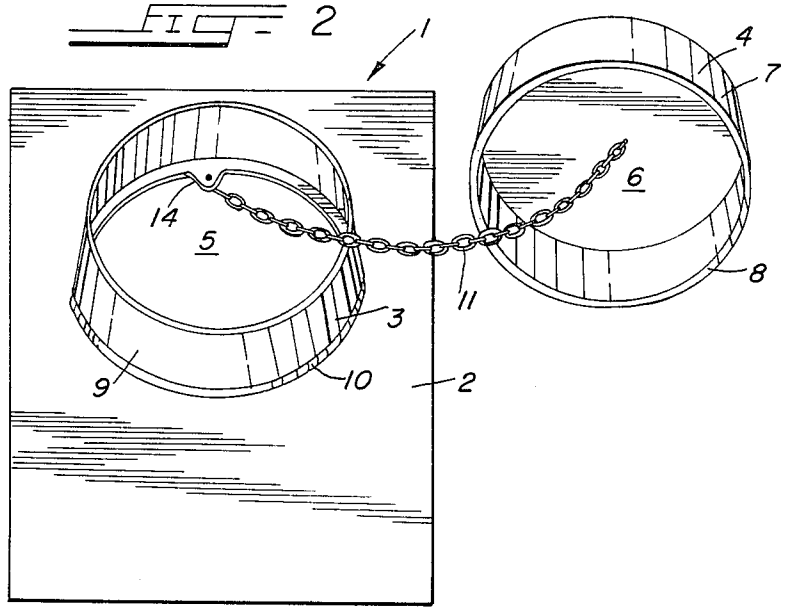
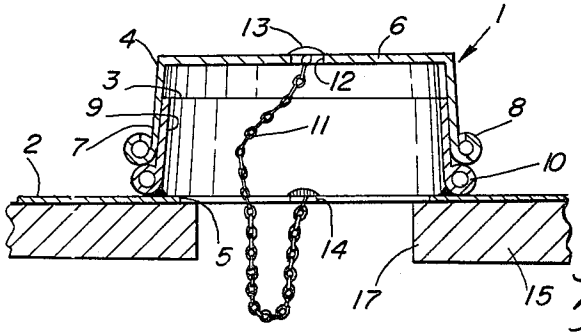


FIG. 3



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HATCHES

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ABSTRACT OF THE DISCLOSURE

A hatch having complementary interfitting parts movable into and out of nested relation to each other.

BACKGROUND OF THE INVENTION

This invention relates to hatches and, more particularly, to hatches which are particularly well adapted for use on granaries or grain bins, feed storage facilities, fertilizer storage facilities, and the like.

It is a primary object of the present invention to afford a novel hatch for use on granaries, and the like.

Hatches, which can be opened and closed, have been heretofore used on building structures, such as, for example, granaries, feed and fertilizer storage facilities, and the like, to provide passages through which materials may be fed into and out of such buildings, and through which such buildings may be ventilated. Hatches heretofore known in the art have had several inherent disadvantages, such as, for example, being complicated and expensive in construction; being large and cumbersome in size; being difficult to open and close; being impossible to open and close from inside the building in which they are mounted; not affording a rain-proof and weather-proof closure structure when in closed position; being readily opened by wind; or requiring hinges, latches, or the like which were subject to being easily rendered inoperative by rust, corrosion or careless operation, and the like. It is an important object of the present invention to overcome such disadvantages.

Another object of the present invention is to afford a novel hatch for granaries, and the like, which may be readily opened and closed from inside the building on which it is mounted.

Yet another object is to afford a novel hatch wherein the parts thereof are constituted and arranged in a novel and expeditious manner effective to afford an efficiently water-proof and weather-proof closure when the hatch is in closed position.

A further object is to afford a novel hatch of the aforementioned type which may be quickly and easily installed in operative position on the roof of a granary, or the like.

Another object is to afford a novel hatch of the aforementioned type which is practical and efficient in operation and which may be readily and economically produced commercially.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings, which, by way of illustration, show a preferred embodiment of the present invention and principles thereof and what I now consider to be the best mode in which I have contemplated applying these principles. Other embodiments of

the invention embodying structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a fragmentary, side elevational view of a granary, or the like, showing a hatch, embodying the principles of the present invention, mounted in operative position on the roof thereof;

FIG. 2 is an enlarged, perspective view of one of the hatches shown in FIG. 1, with the cover removed from the remainder thereof; and

FIG. 3 is an enlarged, detail sectional view taken substantially along the line 3—3 in FIG. 1.

DESCRIPTION OF THE EMBODIMENT SHOWN HEREIN

A hatch **1**, embodying the principles of the present invention, is shown in the drawings to illustrate the presently preferred embodiment of the present invention.

The hatch **1** embodies, in general, a base **2**, a bottom member **3** mounted on the base **2**, and a cover member **4** removably mounted on the bottom member **3**.

The base **2** is preferably in the form of a flat, rectangular shaped sheet, and may be made of any suitable material such as, for example, sheet aluminum or galvanized sheet iron, and the like. It has a round opening **5** through the central portion thereof for a purpose which will be discussed in greater detail presently.

The cover member **4** is of an inverted cup-shape having a round top wall **6**, from the peripheral edge of which depends an annular side wall **7**. The side wall **7** preferably is of a frusto-conical shape, and preferably has an annular flange, in the form of a rolled bead **8**, projecting outwardly from the lower marginal edge of the side wall **7**, for a purpose which will be discussed in greater detail presently.

The bottom member **3** preferably is identical in construction to the cover member **4**, including size and shape, except that it has no top wall. Like the cover member **4**, the bottom member **3** embodies an annular side wall **9**, which preferably is frusto-conical in shape, with a flange, in the form of a rolled annular bead **10** projecting outwardly from the lower marginal edge of the side wall **9**. As illustrated in FIGS. 2 and 3, the inside diameter of the lower edge of the side wall **9** of the bottom member **3** is preferably slightly greater than the diameter of the opening **5** in the base **2**. The bottom member **3** and the cover member **4** may be made of any suitable material such as, for example, aluminum, or galvanized iron, and the bottom member **3** is sealingly attached to the upper face of the base **2** in axial alignment with the opening **5** by any suitable means such as, for example, soldering.

The cover member **4** is movable between a closed position, FIGS. 1 and 3, wherein it is disposed in nested, covering relation to the bottom member **3**, and an open position, such as shown in FIG. 2, wherein it is completely removed from the bottom member **3**.

For reasons which will be discussed in greater detail presently, the dimensions of the bottom member **3** and

the cover member 4 are preferably such that the height of the cover member 4, while being of substantial length, in a minor fraction, in the order of one-fourth, of the inside diameter of the bottom of the cover member 4. For example, in one hatch construction which has been found to be highly practical and efficient, the height and inside diameter of the cover member 4 are approximately four inches and sixteen inches, respectively, although, as will be appreciated by those skilled in the art, this is set forth herein merely by way of illustration and not by way of limitation.

The bottom member 3 and the cover member 4 are complementary in size and shape so that when the cover member 4 is disposed in the aforementioned closed position, the flange 8 on the cover member 4 rests on top of the flange 10 on the bottom member 3, in good sealing engagement therewith, and the inner face of the side wall 7 is disposed in juxtaposed engagement with the outer face of the side wall 9, FIG. 3. With the bottom member 3 sealed to the base 2 throughout its lower edge, and with the bottom member 3 and the cover member 4 nested together in the aforementioned manner when the cover member 4 is disposed in closed position, it will be seen that an effective weather-proof and water-proof closure is afforded for the opening 5. Also, it will be seen that, with this construction, a substantially wind-proof closure is afforded, the cover member 4 engaging the bottom member 3 in such a manner that it is difficult, if not impossible, for wind to raise the cover member 4 from the bottom member 3.

Also, it will be seen that with this construction, the cover member 4 may be quickly and easily removed from the bottom member 3 by reaching upwardly through the opening 5 in the base 2 and pushing upwardly on the top wall 6 of the cover member 4 to thereby axially raise the cover member 4 off from the bottom member 3. An elongated, flexible, combination pull member and restraining member, in the form of a chain 11, has one end mounted in an opening 12 in the center of the top wall 6 of the cover member 4, and sealingly secured thereto by suitable means such as solder 13, and another end mounted in and similarly secured to an ear 14 projecting into the opening 5 from a peripheral edge portion of the base 2, FIGS. 2 and 3. The solder 13 preferably is so disposed on the cover member 4 that it completely seals the opening 12 therein in which the chain 11 is disposed.

The chain 11 affords a restraining member for restricting the distance that the cover member 4 may be removed from the bottom member 3, and is preferably of such length that it will comfortably permit the cover member 4 to be laid on its top adjacent to the bottom member 3 when it is disposed in removed or open position. In addition to affording a restraining member, the chain 11 affords a pull member by which the cover member 4 may be returned to closed position relative to the bottom member 3 when it has been removed from such position. In such an operation, when the cover member 4 has been moved from closed position to open position as shown in FIG. 3, the lower end portion of the chain 11 may be engaged by reaching upwardly through the opening 5, and then by pulling on the chain 11, the cover member 4 may be returned to the closed position on the bottom member 3, shown in FIG. 3.

The hatch 1 is of such construction that it may be quickly and easily mounted in operative position on the roof of a building structure, such as, for example, the roof 15 of the granary 16 shown in FIG. 1, to afford a readily openable and closable covering for an opening, such as the opening 17 in the roof 15, FIG. 3. Preferably, the opening 5 in the base 2 is the same size as, or slightly larger, than the opening 17 in the roof 5 so that when the hatch 1 is disposed on the roof 16 with the opening 5 disposed in axial alignment with the opening 17, the portion of the base 2 defining the outer periphery of the opening 5 is either flush with, or spaced outwardly from the outer periphery of the opening 17 so that it affords no obstruction to the opening 17.

The hatch 1 may be attached to the roof 15 in the aforementioned operative relation to the opening 17 therein by any suitable means such as, for example, nails 18 driven into the peripheral edge portions of the base 2, FIG. 1. Although in most instances securing of the base 2 to a roof, such as the roof 15, by the nails 18 is effective to seal the hatch 1 on the roof 15 against leakage of moisture, such as rain, or the like, between the base 2 and the roof 15, it will be appreciated by those skilled in the art that, if desired, additional sealing may be readily afforded in any suitable well known manner such as, for example, by sealing the peripheral edges of the base 2 to the roof 15 with suitable caulking compound, or the like, or disposing shingles or the like, of the roof 15 in overlapping relation to the peripheral edge portions of the base 2.

When the hatch 1 is disposed in the aforementioned operative position on the roof 15, with the cover member 4 disposed in closed position relative to the bottom member 3, FIG. 3, the bottom member 3 and the cover member 4 are disposed in nested relation to each other effective to afford efficient sealing against the entrance of rain and the like, through the opening 17 into the granary 16. However, as will be appreciated by those skilled in the art, it is often desirable to open hatches in granaries, such as the hatch 1, so as to afford ventilation to the interior of the granary, or so as to afford an opening through which grain may be fed into the granary, and the like. When it is desired to open the hatch 1 on the granary 16, this may be readily accomplished from within the granary 16 by raising the cover member 4 by hand or with a suitable instrument such as, for example, a pole, or the like. In opening the hatch 1, the cover member 4 may be raised substantially axially off from the bottom member 3 and then laterally moved or tipped over into position wherein it lies on the roof 15 adjacent to the bottom member 3, the chain 11 limiting the distance from the bottom member 3 to which the cover member 4 may move. Subsequently, when it is again desired to close the hatch 1, this also may be readily accomplished from inside the granary 16 by grasping the chain 11 by hand, or with a suitable implement, such as, for example, a hook on the aforementioned pole, and pulling on the chain 11 to thereby pull the cover member 4 back into the aforementioned closed position relative to the bottom member 3.

It will be seen that with the bottom member 3 and the cover member 4 having the aforementioned frusto-conical shape, and having the beads 10 and 8 at the lower edges thereof, structurally strong and effectively interfitting parts are afforded. In addition, it will be seen that this preferred construction of the bottom member 3 and the cover member 4 also lends itself to ready replacement of the cover member 4 to closed position on the bottom member 3, after the cover member 4 has been removed therefrom. This is particularly true when the height of the cover member 4 is limited to the aforementioned minor fraction of the diameter of the bottom thereof. Thus, with this construction, it will be seen that whether the cover member 4 is in upside down position on the roof 16, which is the preferred position, or is in right side up position on the roof 16, when it is disposed in the aforementioned open position, a pull on the chain 11 is effective to cause the cover member 4 to readily slide upwardly along the outer face of the inwardly sloping bottom member 3 into position wherein continued pull on the chain 11 is effective to cause the cover member 4 to tip over or drop down into the aforementioned closed position relative to the bottom member 3. Also, the rounded lower edge on the cover member 4, afforded by the bead 8, affords a structure which may be readily so moved upwardly over the outside of the bottom member 3, and, in addition, affords an inwardly tapering, rounded edge portion on the bottom 4, which acts as a guide for

the insertion of the upper free edge of the bottom member 3 into the cover member 4.

With such construction, the hatch 1 may be readily opened and closed from inside the building on which it is mounted even by relatively inexperienced and unskilled persons.

It is to be observed that although only one hatch 1 is shown mounted on the granary 16, and that approximately midway between the upper and lower edges of the roof 15, this is merely by way of illustration and not by way of limitation. If desired, a greater number of the hatches 1 may be mounted on such a roof. Also, the hatch 1 may be mounted on the roof 15 at any other desired position, such as, for example, closer to the upper or lower edges thereof, as dictated by various factors, such as the maximum height to which the granary is to be filled, and the like.

From the foregoing it will be seen that the present invention affords a novel hatch for granaries, and the like, which affords an effective wind-proof and water-proof closure therefor.

In addition, it will be seen that it affords a novel hatch which may be readily closed and opened from inside a granary or the like.

Also, it affords a novel hatch which may be quickly and easily mounted on a granary, or the like.

Furthermore, it affords a novel hatch which is effective and efficient in operation and which may be readily and economically produced commercially.

Thus, while I have illustrated and described the preferred embodiment of my invention, it is to be understood that this is capable of variation and modification, and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. A hatch comprising
(a) base having an opening therethrough,
(b) an inverted cup-shaped member
  (1) having an open top and open bottom, and
  (2) having said bottom mounted on the top of said base in surrounding relation to said opening, and
(c) an inverted cup-shaped cover complementary in size and shape to said member, and having
  (1) an open bottom, and
  (2) a closed top,
(d) said cover
  (1) having a normal position wherein it is disposed in nested relation to said member, with the internal surface thereof disposed in overlying juxtaposition to the external surface of said member, in position to close the top of said member, and
  (2) being removable upwardly substantially axially of said member from said normal position to thereby open the top of said member.

2. A hatch as defined in claim 1, and in which
(a) said external surface tapers inwardly in an upward direction from said bottom of said member.

3. A hatch as defined in claim 1 and in which
(a) said member is substantially frusto-conical in shape.

4. A hatch as defined in claim 2 and in which
(a) said member has an outwardly projecting flange disposed around the bottom thereof, and
(b) the lower edge of said cover rests on top of said flange when said cover is disposed in said normal position.

5. A hatch as defined in claim 2 and which includes
(a) an elongated, flexible retaining member
  (1) having one end secured to said cover,
  (2) extending downwardly into said member, and
  (3) having another end connected to said base and member for restricting the distance said cover can be removed from said member.

6. In a building structure including a roof having an opening therethrough,
(a) an upstanding side wall mounted on said roof in surrounding relation to said opening,
(b) said side wall tapering inwardly and upwardly from said roof,
(c) a cover member having
  (1) a top wall, and
  (2) another side wall adjoining said top wall and tapering outwardly and downwardly from its junction with said top wall,
(d) said cover member
  (1) having a closed position relative to said first mentioned side wall
    (a) effective to close said opening from the top, and
    (b) wherein said other side wall is disposed in overlying, substantially parallel relation to said first mentioned side wall, and
  (2) being removable in an axial direction from said closed position to thereby open said opening.

7. The combination defined in claim 6 and
(a) which includes a pull member for returning said cover to said closed position when it has been removed therefrom, and
(b) in which said pull member comprises an elongated member secured to said cover and extending down into the area defined by said first mentioned side wall.

8. The combination defined in claim 6, and in which
(a) said side walls are substantially frusto-conical in shape, and
(b) said other side wall is disposed in juxtaposed engagement with said first mentioned side wall when said cover is disposed in said closed position.

9. The combination defined in claim 6, and
(a) which includes a substantially flat plate
  (1) having an opening therethrough, and
  (2) mounted on said roof with said openings disposed in substantially axial alignment with each other, and
(b) in which said first mentioned side wall is mounted on said plate in surrounding relation to said second mentioned opening.

10. The combination defined in claim 9, and in which
(a) said side walls are substantially frusto-conical in shape,
(b) said side walls each have an annular bead projecting from the bottom edge thereof,
(c) said bead on said first mentioned side wall is sealingly secured to said plate, and
(d) when said cover is disposed in said closed position, said bead on said other side wall rests on top of said bead on said first mentioned side wall.

11. In a building structure including a roof having an opening therethrough,
(a) a bottom member
  (1) being open at the top and bottom,
  (2) mounted on said roof in surrounding relation to said opening, and
  (3) tapering inwardly and upwardly from said roof,
(b) a cover member
  (1) substantially complementary in size and shape to said bottom member, and
  (2) having a top wall,
(c) said cover member
  (1) having a closed position relative to said bottbottom member
    (a) effective to close said opening from the top, and
    (b) wherein it is disposed in overlying,

nested relation to said bottom member, and

(2) being removable upwardly from said closed position to thereby open said opening.

12. The combination defined in claim **11**, and in which

(a) said bottom member and said cover member each has an outwardly projecting flange disposed on the bottom edge thereof, and

(b) said flange on said cover member rests on said flange on said bottom member when said cover member is disposed in said closed position.

References Cited

UNITED STATES PATENTS

2,360,087	10/1944	Tuck	49—463 X
2,553,934	5/1951	Olyott	94—34
3,090,160	5/1963	Shaver et al.	52—19

J. CARL BELL, Primary Examiner

U.S. Cl. X.R.

52—19; 220—24