United States Patent [19]

Walk

[11] **3,760,743**

[45] **Sept. 25, 1973**

[54] **HATCH COVER**

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[73] Assignee: **ACF Industries, Incorporated**, New York, N.Y.

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[21] Appl. No.: **235,745**

[52] **U.S. Cl.** **105/377**, 220/57

[51] **Int. Cl.** **B61d 39/00**

[58] **Field of Search** 220/57; 292/238, 292/259; 105/377

[56] **References Cited**

UNITED STATES PATENTS

2,816,683	12/1957	Miers et al.	105/377
2,326,003	8/1943	Bailey et al.	220/57
3,664,270	5/1972	Stark et al.	105/377

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Assistant Examiner—Richard A. Bertsch
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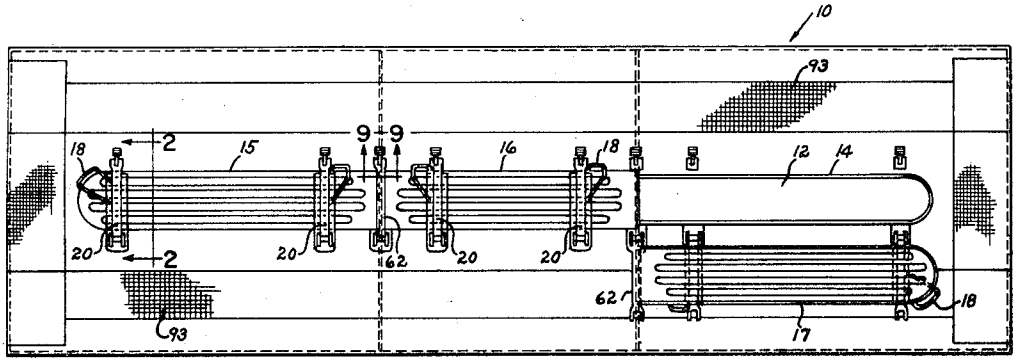
[57] **ABSTRACT**

A hatch cover having a flexible gasket is supported by one or more pivoted straps having a slotted end which is bent downward. The inner end of the slot engages a lever and cams it to a cocked position, so that after the strap passes the lever the latter falls back and engages the upper side of the bent down ends of the strap. Stepping on a footplate which is part of the lever moves it along the top side of the strap to an overcenter position, camming the strap downwardly and thus compressing the gasket and tightly locking the hatch cover closed.

15 Claims, 11 Drawing Figures



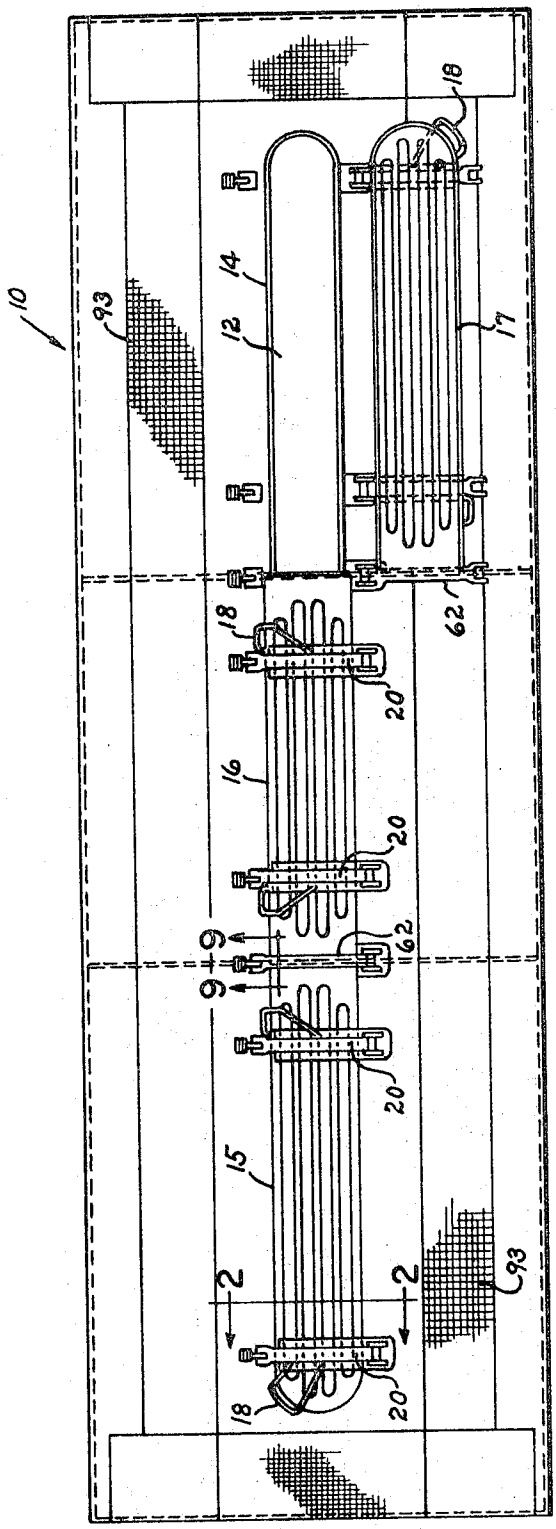


FIG. 1.

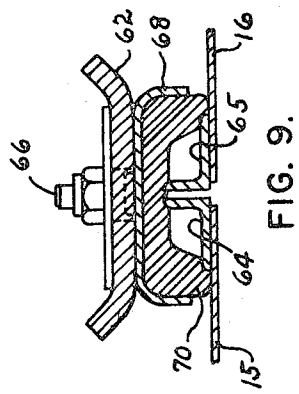


FIG. 9.

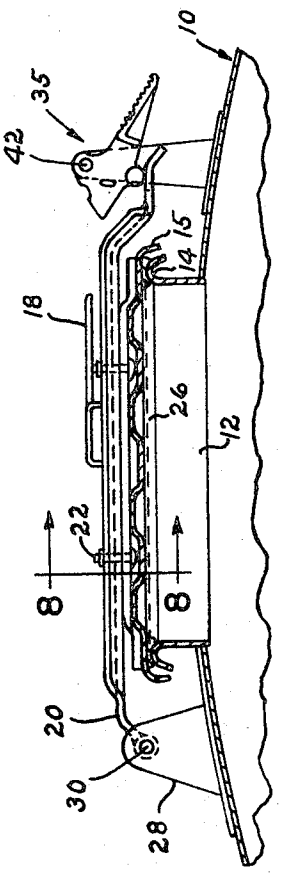


FIG. 2.

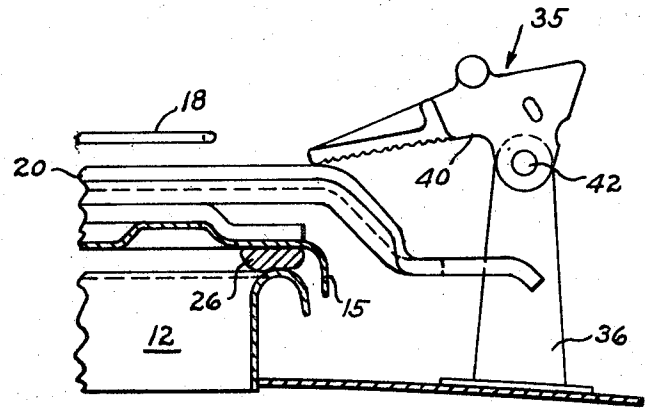


FIG. 3.

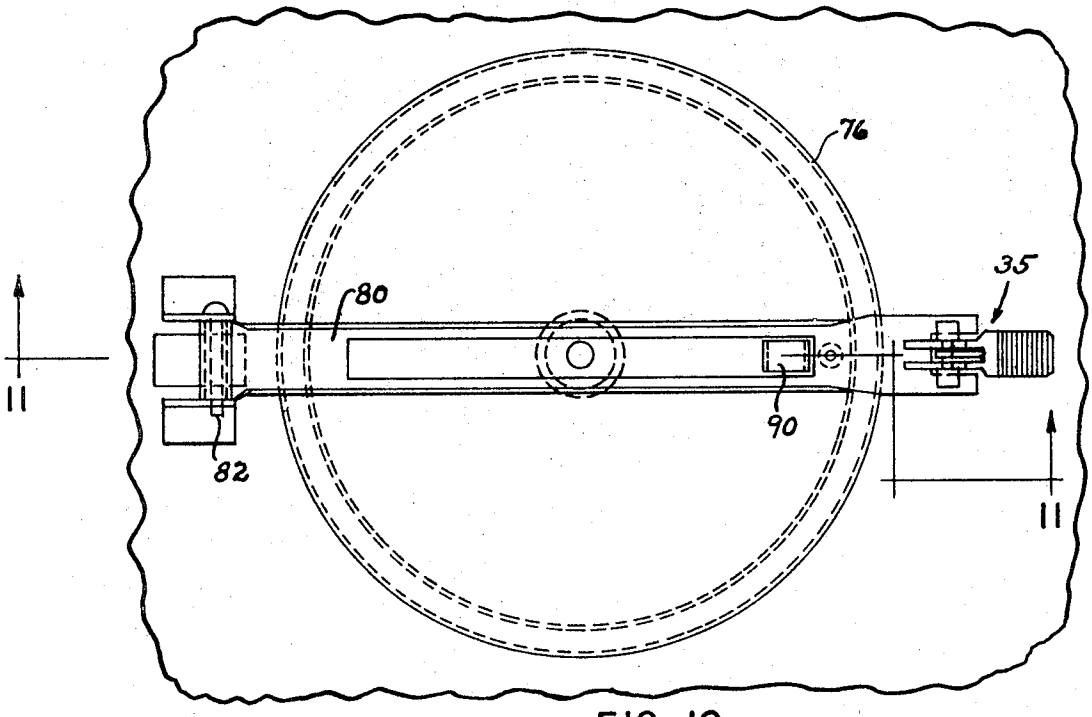


FIG. 10.

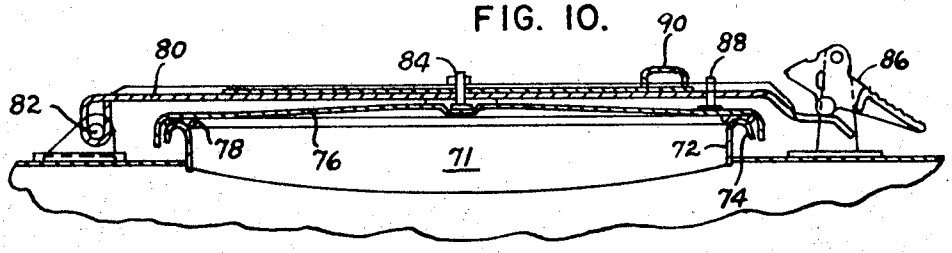


FIG. 11.

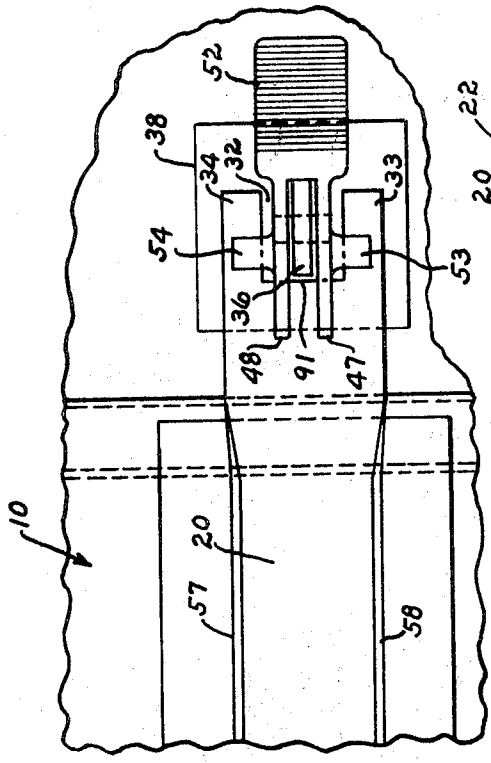


FIG. 7.

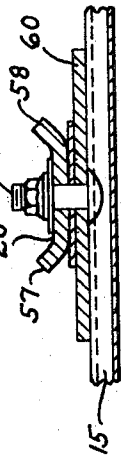


FIG. 8.

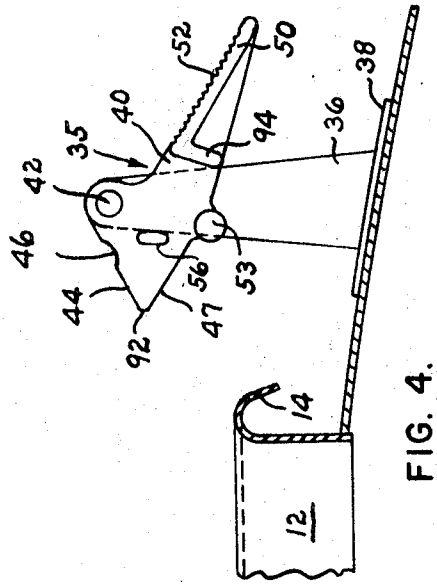


FIG. 4.

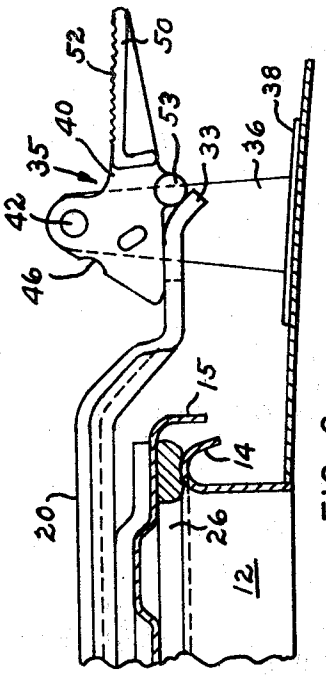


FIG. 6.

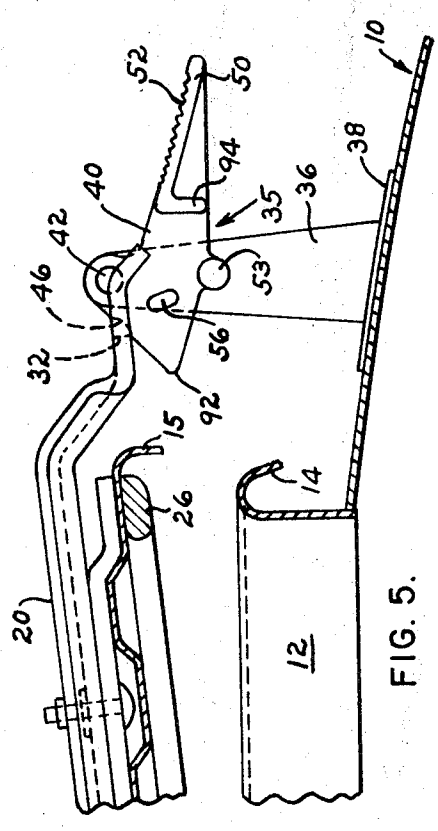


FIG. 5.

HATCH COVER

BACKGROUND OF THE INVENTION

It is important to hold the covers of railway car hatches closed during transit and numerous latching arrangements have been devised for this purpose. Occasionally, a workman may forget to close the latching device. Another reason for failure of hatch covers to remain closed is that they may work loose in transit. Frequently, the latching arrangement requires considerable manipulation. The present invention provides a latching arrangement which will automatically assume a position tending to hold the cover closed, even if it has not been fully operated, and which is operated simply by stepping on a footplate.

SUMMARY OF THE INVENTION

A latching arrangement for a hatch cover consists of one of more straps pivoted at one end and fastened to the hatch cover at an intermediate point. The other end of each strap is slotted and bent downward to form a pair of lips. As the strap turns to close the hatch cover, it engages one side of a lever and cams it outwardly. The lever is pivoted on a vertical plate in the plane of the strap. After the bent end of the strap passes the lever, the lever falls back over the top of the lips of the strap. The other side of the lever is provided with a footplate. Stepping on the footplate turns the lever so that a pair of laterally extending pins thereon ride over the top of the strap to an overcenter position pressing the strap downwardly and tightly closing the hatch cover. The inside of the cover is provided with flexible gaskets which are compressed to tightly seal the cover closed.

BRIEF DESCRIPTION OF THE DRAWING

The drawing consists of the following figures:

FIG. 1 is a top plan of a railroad car having a continuous hatch showing one of the hatch covers open;

FIG. 2 is a section taken along line 2—2;

FIG. 3 is a view showing the lever in one of its possible positions;

FIG. 4 is a view showing the position of the lever when the cover is fully open;

FIG. 5 is a view showing the hatch cover closed to the position at which it engages the lever;

FIG. 6 shows the hatch cover closed before it is fully locked;

FIG. 7 is a plan view of the hatch in a fully closed position;

FIG. 8 is a section taken on line 8—8 of FIG. 2;

FIG. 9 is a section taken on line 9—9 of FIG. 1;

FIG. 10 is a top plan of a circular hatch cover;

FIG. 11 is a section taken on line 11—11 of FIG. 10.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawing, particularly FIGS. 1 to 8, a railway car 10 has a continuous hatch 12 with a top flange 14. The hatch is adapted to be closed by hinged covers 15, 16 and 17. Handles 18 are provided for lifting the hatch covers. Each hatch cover is connected to one or more straps 20 by means of bolts 22. The underside of the hatch covers have a gasket 26 made of flexible material and adapted to form a tight seal with flange 14 of the hatch. Strap 20 is pivoted at 30 to bracket 28. The other end of strap 20 has an open-ended slot 32 and a pair of turned-down lips 33–34. A latch mechanism 35 adapted to be engaged by strap 20 includes a vertical plate 36 mounted on base plate 38 and having a lever 40 mounted on a fulcrum 42. The inner end of lever 40 has an inclined edge 44 in which a notch 46 is provided. The side 44 of the lever has portions 47,48 on either side of the vertical plate 36. Portions 47,48 of the lever are integral with a foot plate 50 forming the other side of lever 40. The upper side of foot plate 50 has ribs 52. Projections or pins 53,54 extend laterally from portions 47,48 of the lever. The lever may also be provided with a slot 56 for receiving a lock or pin to hold the lever in its locked position. As shown in FIG. 8, strap 20 has flanges 57,58 along most of its length. The strap is fastened by bolt 22 to plate 60, which is integral with cover 15.

Referring now to FIGS. 1 and 9, pivoted straps 62 at the junction of covers 15 and 16, and the junction of cover 16 and 17 are similar to straps 20 and are adapted to be locked in the same manner as straps 20, but are differently related to the hatch covers. Hatch covers 15 and 16 are provided with flanges 64, 65. Strap 62 is fastened by bolts 66 to a U-shaped channel 68 provided with a flexible gasket 70 adapted to seal against the tops of flanges 64, 65. Thus straps 62 seal the junctions of the hatch covers and lock the covers closed.

FIGS. 10 and 11 show the invention applied to a circular hatch 71 including a ring 72 and ring flange 74. Cover 76 has a flexible gasket 78. Strap 80 is pivoted on pin 82 and is connected to cover 76 by screw and nut 84. Latching lever 86 is the same as lever 40 of FIGS. 1 to 8. Strap 80 is provided with pin 88 for pressing the rim of cover 76 closed, and with lifting handle 90.

To open hatch covers 15, 16 and 17, footplates 50 are first lifted manually from the fully closed position shown in FIG. 11 to the position shown in FIG. 6. In this position hatch covers 15, 16, and 17 are prevented by latches 35 from movement to fully open position. Latches 35 may be manually pivoted further to the position of FIG. 3 in which position hatch covers 15, 16 and 17 may be lifted by handles 18 to their open position, as is cover 17 shown in FIG. 1. Straps 62 are lifted by the adjacent hatch cover, and need not be separately raised.

To close the covers, they are simply turned and dropped to their closed positions, and then straps 62 are turned to the closed position. When a strap 20 strikes lever 40, as illustrated in FIG. 5, the strap would tend to knock the lever into the inoperative position shown in FIG. 3. To avoid this, notch 46 is provided at the point at which the lever is impacted. Strap 20 then strikes a nearly horizontal surface of notch 46, and a major portion of the impact is absorbed by pivot 42. As strap 20 continues to move downward edge 91 of slot 32 moves along side 44 of lever 40 and cams it counterclockwise. After strap 20 passes point 92 of the lever, the lever falls back to the position shown in FIG. 6. It is important to note that in this intermediate position of lever 40, strap 20 is already locked in place. The reason for this is that not only do lips 33,34 of the strap engage pins 53 and 54, but the undersides of portions 47 and 48 of the lever extend inwardly beyond slot 32. As strap 20 presses upward, therefore, it cannot turn lever 40 in either direction. Thus even if the workman fails to step on footplate 50, the hatch cover remains locked

in place. The locking of the hatch covers is completed, however, by a workman walking along walk **93** and stepping on each footplate **50** to move the levers to the position shown in FIGS. **2** and **11.** In this position flange **94** of footplate **50** engages vertical plate **36** and prevents further movement of lever **40.** This operation moves pins **53,54** to an overcenter position and further depresses strap **20,** compresses gaskets **26** and tightly seals the hatch closed. If desired, a lock or sealing wire or pin may be placed in slot **56** for preventing unauthorized opening of the hatch covers.

What is claimed is:

1. A hatch cover structure for a railway hopper car comprising, a hatch cover adapted to be positioned over a hatch opening on the car and movable between open and closed positions relative to the opening, a hold-down strap having one end mounted on the car for pivotal movement adjacent one side of the hatch cover and an opposite free end adjacent the opposite side of the hatch cover having an open slot therein, means connecting the hatch cover to said strap for pivotal movement therewith, a bracket fixed to the roof of the car so as to extend through the slot in said strap, a lever mounted on the bracket having a pair of horizontal projections extending from opposite sides thereof for engaging the slotted outer end of said strap, said lever having a footplate extending outwardly and a cam surface extending inwardly and adapted to be engaged by the free end of said strap, whereby closing said hatch cover causes said strap to cam said lever outwardly to permit said hatch cover to fall to a closed position, said lever being responsive to stepping on said footplate for moving said projections over the upper side of said strap to an overcenter position and camming said strap downwardly to lock said hatch cover tightly closed.

2. Apparatus according to claim **1,** wherein said cam surface of the lever at the point initially impacted by said strap is notched to reduce the recoil of the lever upon impact.

3. Apparatus according to claim **1** wherein said cam surface of said lever is engaged by the inner edge of the slot of said strap.

4. Apparatus according to claim **1,** wherein said lever has a stop for preventing turning of said lever after said projections reach a predetermined overcenter position.

5. Apparatus according to claim **1** wherein said hatch cover has a flexible gasket on the bottom thereof for sealing the hatch opening and adapted to be compressed when the hatch cover is tightly locked.

6. Apparatus according to claim **5** wherein the slotted ends of said strap are in the form of bent down lips against the upper sides of which said projections lodge to hold said cover closed before said footplate is stepped on.

7. A hatch cover structure for a railway hopper car comprising: a hatch cover adapted to be positioned over a hatch opening on the car and movable between open and closed positions relative to the opening; a hold-down strap having one end mounted for pivotal movement adjacent one side of the hatch cover and an opposite free end adjacent the opposite side of the hatch cover having an open slot therein and extensions on either side of said slot; a lever mounted on the roof of the car having a fulcrum and generally horizontally extending projections on opposite sides thereof, a cam surface extending inwardly from said fulcrum and adapted to be engaged by the slot portion of said strap, and a weighted portion extending outwardly from said fulcrum, whereby closing said strap causes said strap to cam said lever outwardly and permit said strap extensions to fall below said projections, the weighted portion of said lever causing said lever to move inwardly with said projections engaging said extensions whereby said strap is prevented from moving upwardly by said projections and said cover is held closed; said lever also having means thereon for moving said projections relative to said extensions to cam said strap to a locked position holding said hatch cover tightly closed.

8. Apparatus according to claim **7,** including means for stopping the lever when said projections move inwardly to a predetermined overcenter position.

9. Apparatus according to claim **7,** wherein cam surface of the lever at the point initially impacted by said strap is notched to reduce the recoil of the lever upon impact.

10. A hatch cover structure according to claim **7** wherein said strap is affixed to said cover.

11. A hatch cover structure according to claim **7** wherein said strap is mounted on the car.

12. A hatch cover structure according to claim **7** wherein said hatch cover has a flexible gasket on the bottom thereof for sealing the hatch opening and is adapted to be compressed when the hatch cover is tightly closed.

13. A hatch cover structure according to claim **7** wherein the means for moving said projections relative to said extensions is a foot plate.

14. A hatch cover structure according to claim **7** wherein said extensions comprise bent down lips upon which said projections lodge in the closed position.

15. A hatch cover structure according to claim **14** wherein said extensions further comprise a horizontal portion upon which said projections lodge in the locked position.

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