United States Patent [19]

Anghinetti et al.

[11] **3,792,556**

[45] **Feb. 19, 1974**

[54] **ROOF COVERING**

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[22] Filed: **Sept. 24, 1971**

[21] Appl. No.: **183,318**

[52] **U.S. Cl.** **52/1,** 49/7, 49/379

[51] **Int. Cl.** **E04h 9/06,** E05f 15/20

[58] **Field of Search** ..... 49/379, 7; 52/1; 92/25, 23, 92/19; 417/903; 60/52 H; 254/93 R

[56] **References Cited**

UNITED STATES PATENTS

3,516,197	6/1970	Lyons	49/1
1,512,837	10/1924	Evenden	92/19
3,135,555	6/1964	Caskey	92/23
2,896,583	7/1959	Stixrood	254/93 R
3,032,806	5/1962	Mallory	92/23
3,516,210	6/1970	Jentoft	52/1
3,601,437	8/1971	Lyons	49/7

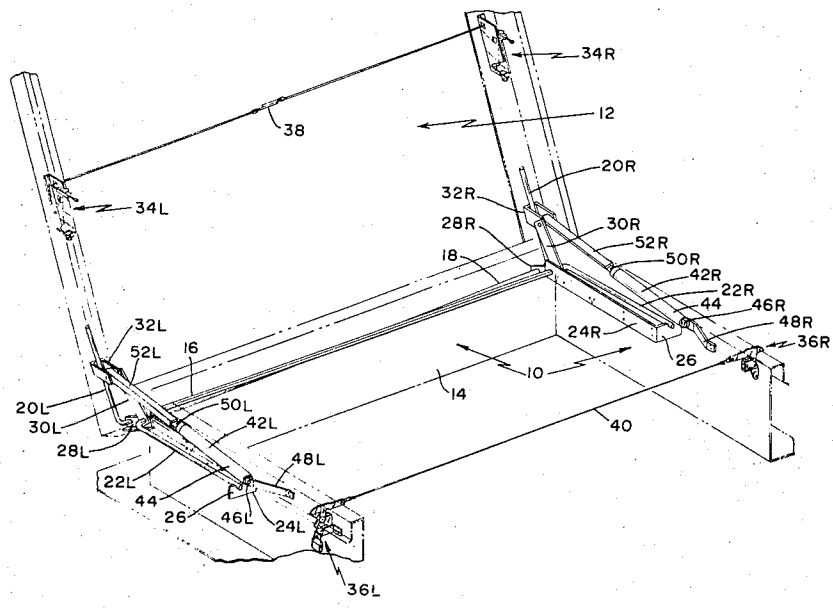
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[57] **ABSTRACT**

In a roof covering of the hatch or vent type having a spring loaded cover, an improved arrangement is provided for absorbing the shock of the springs when opening the cover and also for locking the cover in an open position to preclude it from being blown shut from the wind.

4 Claims, 3 Drawing Figures



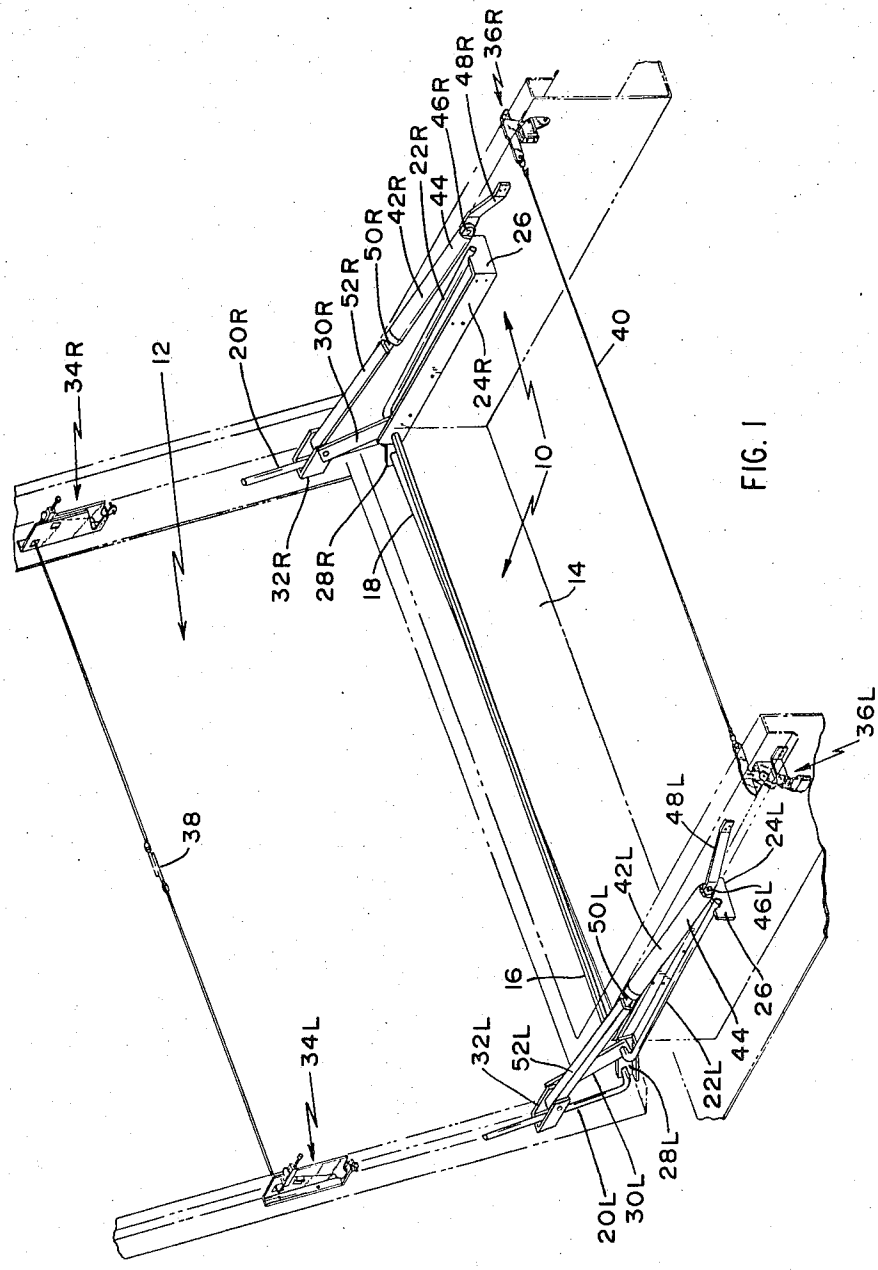

34R
12
20R
30R
52R
50R
42R
44
22R
46R
48R
36R
26
24R
40
10
32R
28R
18
14
38
34L
32L
52L
16
50L
42L
48L
24L
46L
26
44
22L
28L
30L
20L
36L

FIG. 1

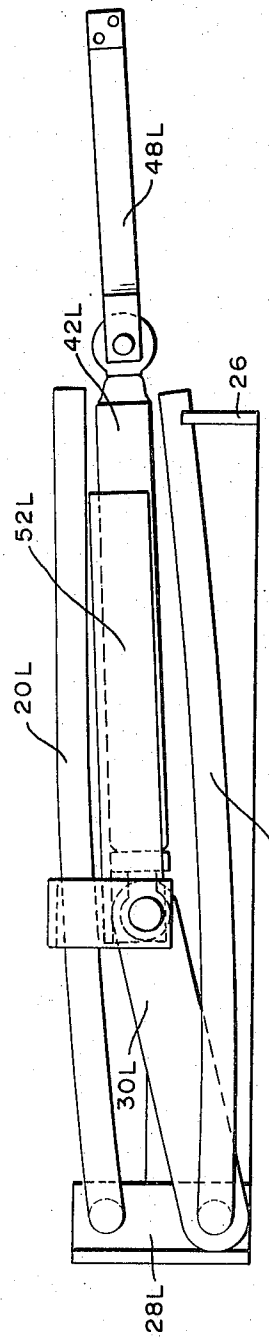


FIG. 2

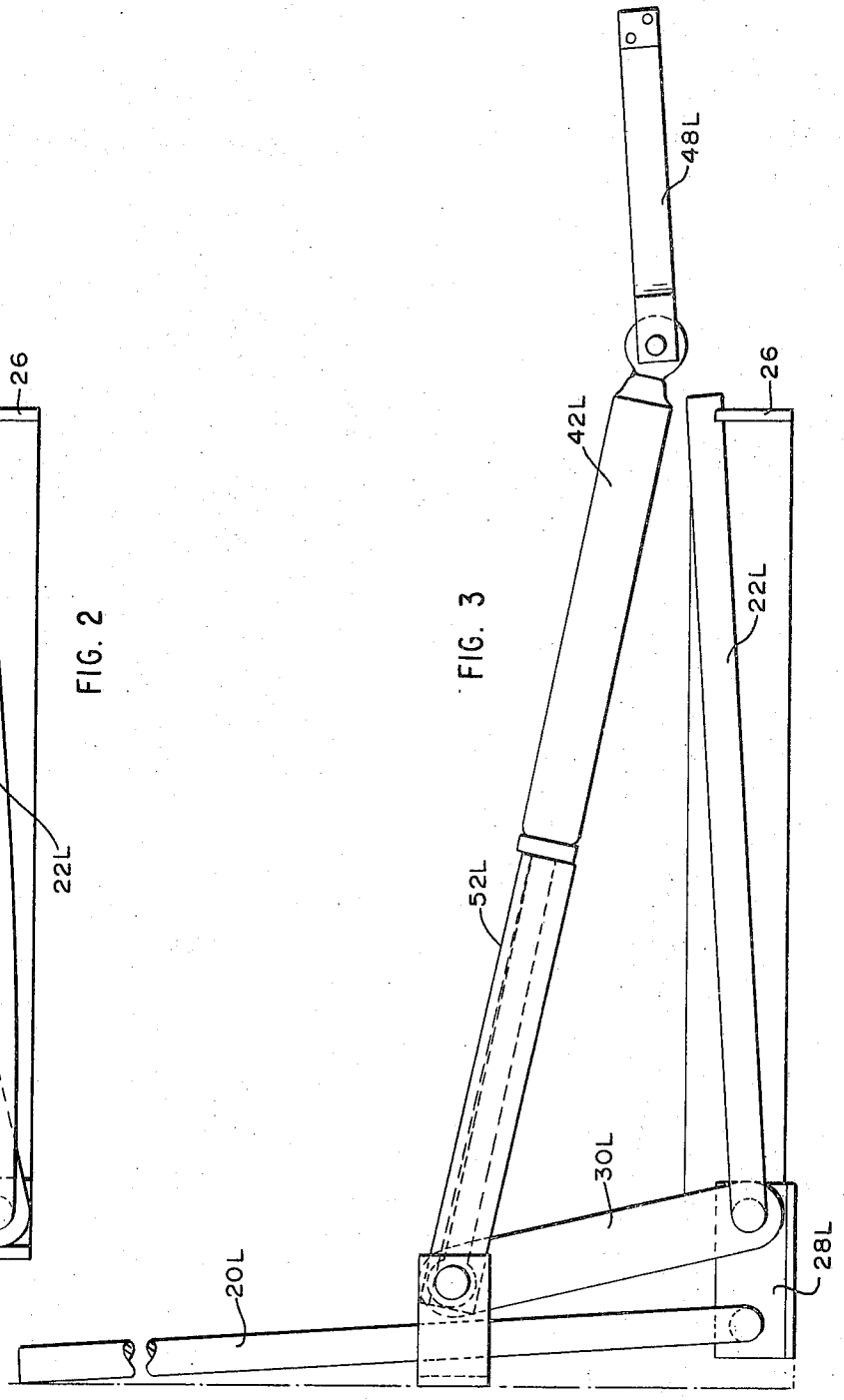


FIG. 3

ROOF COVERING

BACKGROUND OF THE INVENTION

This invention relates to improvements in roof hatches of the type generally shown in U.S. Pat. No. 3,516,210 issued June 23, 1970. That patent describes a fire and smoke relief ventilator hatch which is adapted to open automatically in response to a fire and which also may be opened for inspection, testing or general ventilating purposes. As described in that patent, it is important that the cover be open rapidly in the event of a fire. Because the hatch is relatively large in order to be effective as a fire and smoke vent, specially designed springs are employed to apply a sufficient opening force to the cover, even when additional loads are imposed on the cover, such as snow. Because the forces for opening the cover quickly are considerable, the cover snaps open with a great deal of force which may be of a magnitude as to damage the vent structure, the roof, or both. While damage to the vent may not be the primary consideration in the event of an actual fire, it is important to avoid any damage when the hatch is tested periodically, is inspected or is opened intentionally to serve as a vent during warm weather.

Another aspect of the invention relates to an improved arrangement for locking the open cover in the open position. As described in the aforementioned U.S. Patent, this is desirable in order to resist wind pressures on the covers which might cause the heavy cover to sway or even be closed.

It is among the general objects of the invention to provide an improved arrangement for damping the opening forces of the cover and to lock the cover in an open position.

SUMMARY OF THE INVENTION

In brief, the improved damping arrangement includes a hydraulic piston-type shock absorber having a head end pivoted to the curb or frame of the vent structure and a rod end which is pivoted to the cover. Also pivoted to the cover, at the same pivot point of the rod end of the shock absorber is a locking bar, the other end of which is free. When the cover is closed, the free end of the locking bar rests atop and generally is parallel to the cylinder of the shock absorber. When the cover is unlatched and opens, the free end of the locking bar is drawn, in unison with the piston rod of the shock absorber, along the exterior cylindrical shock absorber. The locking bar is shorter in length then the length of piston rod which extends from the shock absorber when in a fully opened position. Thus, when the cover reaches its open position, the free end of the locking bar is drawn beyond the end of the cylinder of the shock absorber and drops downwardly onto the extended piston rod. The free end of the locking bar then bears generally and axially against the end of the cylinder to lock the cover in the opened position.

It is among the primary objects of the invention to provide an improved arrangement for cushioning the opening shock of roof vents of the type described and for locking the cover in an open position.

Another object of the invention is to provide a device of the type described which is of simple construction.

A further object of the invention is to provide a device of the type described in which all the operative elements thereof are maintained in an out-of-the way position and which do not interfere with the opening through the vent.

DESCRIPTION OF THE DRAWINGS

These and other objects of the invention will be understood more fully from the following detailed description thereof with reference to the accompanying drawings wherein:

FIG. 1 is a somewhat diagramatic illustration of invention as employed in a roof fire vent;

FIG. 2 is a side elevation of the invention when the vent is in a closed configuration; and

FIG. 3 is an illustration similar to FIG. 2 with the vent in an open position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows a portion of the roof vent and its surrounding curb **10** with the cover **12** being in an open position. The cover **12** is hinged for pivotal movement along the rear wall **14** of the curb, and is biased toward the open position suggested in the drawing by means of a pair of torsion bar springs, indicated generally as **16** and **18.** As described more fully in the aforementioned U.S. Pat. No. 3,516,210, each of the torsion bar springs **16, 18** includes a pair of end members **20R**, **20L** and **22R**, **22L** respectively. This form of notation will be employed throughout the following description to denote identical elements disposed symetrically on both the right and left sides of the vent.

When the vent is in an open configuration as shown, the torsion springs **16, 18** assume their relaxed position and define a generally three-dimensional Z-shaped configuration. When the cover is closed, each of the springs defines a generally C-shaped configuration as their respective end members **20R**, **20L** are urged downwardly toward the horizontal as the cover is closed.

The end members **22R**, **22L** are engaged by and restrained at their outer ends by means of brackets **24R**, **24L** which are secured to the outer surfaces of the curb sidewalls. Each bracket **24R**, **24L** has an outwardly projecting finger **26** which receives the end of its associated end member **22R**, **22L** as shown. The end members **20R**, **20L** of each torsion bar **16, 18** bear upwardly against the inner surface of the cover **12.**

The cover is hinged for pivotal movement along the rear wall of the curb by a pair of cover hinges **28R**, **28L** and a pair of reaction bars **30R**, **30L**. The cover hinges **28R**, **28L** are secured to the right and left rearward corners, respectively, of the cover and are pivoted to the torsion bar springs **16, 18** at their laterally extending, outer regions as shown. Similarly, the reaction bars **30R**, **3L** are secured to the cover **12** by means of brackets **32R**, **32L** which, in turn, are secured to the cover **12.** The other end of each reaction bar **30R**, **30L** is pivoted to the laterally extending outer region of each torsion bar **16, 18** outwardly of their associated cover hinges **28.**

The vent also includes mating latching arrangements **34R**, **34L** and **36R**, **36L** on the cover **12** and curb **10** respectively. As described fully in the aforementioned U.S. Patent, these latching arrangements are effective to maintain the cover in a closed configuration and may be released, to enable the torsion spring **16, 18** to open

the cover, by a fusible link **38**, manual operable means **40** or electrical means (not shown).

In order to achieve the desired shock dampening when the cover opens, the vent employs a pair of hydraulic piston type shock absorbers **42R, 42L**. Each of the shock absorbers **42R, 42L** is pivotally connected at its head end **44** to its associated sidewall of the curb at the pivots **46R, 46L** respectively. The pivots **46R, 46L** preferably are braced by brackets **48R, 46L** as shown. Each of the shock absorbers **42R, 42L** is arranged so that its piston rod **50R, 50L** extends rearwardly. The rear end of each piston rod **50R, 50L** is pivotally connected to its associated bracket **32R, 32L**. As shown, in the preferred embodiment of the invention, the cylinder brackets **32R, 32L** comprise U-shaped members which support transverse pins for pivotal connection to the piston rod and the locking bars **52R, 52L** as described below.

In order to insure that the cover **12** remains in its open configuration after the vent has been opened, each rear corner of the device includes a lock bar **52R, 52L**. The lock bar may comprise a length of angle iron as shown. Each lock bar **52R, 52L** is pivoted at its rear end of the pivot pin in its associated cylinder bracket **32R, 32L** and its forward end, is free. As shown in FIG. **3** when the cover is closed, the lock bar rests atop the cylinder of its associated shock absorber. When the cover is unlatched, and swings to its opened position, the lock bars **52** are drawn rearwardly, together with the extending piston rod of each shock absorber with the free end of each lock bar being drawn along the upper surface of its associated cylinder. Each of the lock bars **52** is of a length sufficiently short so that when the cover has swung to its open position, the free end of each lock bar is disposed rearwardly beyond the end of its associated cylinder. The free end of each lock bar then drops downwardly to rest on its associated piston rod so that its extreme free end may bear axially against the rear end of the shock absorber cylinder as shown in FIG. **3**. A reaction pad **54R, 54L** may be secured to the rear end of each of the cylinders to bear the load of the free end of each lock bar. The cover may be reclosed simply by lifting the free ends of the lock bars. It should be noted that although in the illustrative embodiment, the lock bar comprises an angle iron, other cross sectional configurations for the lock bar may be employed which enables the bar to rest atop the cylinder and then slide along the cylinder onto the piston rod of its associated shock absorber.

Thus, we have described an improved, simplified arrangement for reducing the shock of the relatively large forces ordinarily encountered when opening vents of the type described, which arrangement further includes a simplified, easily operable, automatic structure for locking the cover in its open position.

It should be understood, however, that the foregoing description of the invention is intended merely to be illustrative thereof and that other embodiments and modifications may be apparent to those skilled in the art without departing from its spirit.

Having thus described the invention what I desire to claim and secure by Letters Patent is:

1. A roof covering construction comprising:
side walls defining a curb and forming an enclosed well;
a cover hinged to one of said side walls along a hinge line substantially along one of said side walls;
means for biasing said cover toward an open position;
a shock absorber having an elongate cylinder adapted to contain a fluid, a piston slidably disposed within said cylinder and a piston rod extending axially outwardly of one end of said cylinder;
means pivotally connecting the head end of said cylinder to said curb for pivotal movement about a transverse axis;
means pivotally connecting the outwardly extending end of said piston rod to said cover; and
means for locking said cover in an open position comprising a locking bar pivoted at one end to said cover, the other end of said locking bar extending forwardly and paralleling generally said cylinder, the other end of said locking bar being adapted to rest on said cylinder and to slide therealong as said cover is opened, said locking bar being of a length so that the free end thereof may ride over the rod end of said cylinder and onto the extended piston rod thereof when said cover is in an open position whereby the free end of said locking bar thereafter may bear against the rod end of said cylinder, to lock said cover in said open position.

2. A roof covering construction as defined in claim **1** further comprising:
means mounting said pivoted end of said locking bar and the pivoted end of said piston rod to the same pivot whereby said locking bar may be drawn along said cylinder simultaneously and in unison with extension of said piston rod.

3. A roof covering construction as defined in claim **2** wherein said locking bar comprises:
an elongate rigid structural member of angled cross-sectional configuration defined by a pair of elongate flanges;
said locking bar being connected to said pivot at one of said flanges, the other of said flanges being disposed over and in alignment with the longitudinal axis of said cylinder and piston rod whereby said other flange may bear against said cylinder and piston rod and be supported thereby.

4. A roof covering construction as defined in claim **3** further comprising:
a bearing pad secured to the rod end of said cylinder and adapted to bear the load of said free end of said locking bar.

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