EXPLOSIVE PRESSURE AND/OR HEAT AND SMOKE VENTING UNIT

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ABSTRACT OF THE DISCLOSURE

A venting unit capable of quickly relieving heat and smoke due to fires and pressures due to explosions originating in the interior of a building. The venting unit has at least one cover member releasably retained in a normally closed position. Fluid actuated motor means including a variable volume chamber forcibly urges the cover member toward an open position. The cover member is normally disconnected from the motor means and is freely pivotal toward its open position on being released. Motor energizing means, in the form of a replaceable cartridge containing pressurized working fluids, energizes the motor means in response to a selected elevated temperature within the building.

BACKGROUND OF THE INVENTION

(1) Field of the invention

This invention relates to venting units of the type adapted to discharge explosion pressures and/or heat and smoke from the interior of a building which are generated as a result of an explosion and/or a fire, and more particularly to an improved arrangement for forcibly urging the cover member to an open position.

(2) Description of the prior art

When a fire or an explosion occurs within a building, a quick relief of the heat and smoke or explosion pressures is desirable to minimize damage to the building. Normally, the most convenient discharge point is through an opening provided in the roof of the building. Consequently, venting units have been devised having normally closed dampers which open quickly to discharge the explosion pressures or heat and smoke associated with an explosion or a fire. Examples of such venting units will be found in U.S. Pat.s 2,827,603; 2,940,777; 3,182,581; 3,211,158; 3,333,438; 3,357,991.

In all such prior art venting units, the cover member is biased toward its open position by spring means, either in the form of coil springs or torsion bars. The spring means is maintained under stress to provide the force necessary to open the cover member. That force must be sufficient to overcome the weight of the cover member; any frictional resistance encountered in the hinge means and the operating mechanism of the venting unit; any wind loading, that is the force of the wind acting on the cover member; and the weight of any accumulated snow or debris on the cover member. Accordingly, the force provided by the tensioned spring means must greatly exceed the force required to open the cover member. In the absence of large frictional resistance, wind loading and/or snow loading, the cover member will move rapidly and with great force to the open position upon release of the latch means. The rapid and forceful movement of the cover member constitutes a hazard to workmen or firemen in the immediate vicinity of the venting unit.

As a further consideration, the spring force of the tensioned spring means must be counteracted by structural elements of the venting unit. Consequently, a great number of components of the venting unit are under continuous stress throughout the useful life of the venting unit.

SUMMARY OF THE INVENTION

The principal object of this invention is to provide a venting unit having improved motor means which, upon activation, forcibly urges a cover member to the open position and which when inactive, does not apply stresses to the cover member or other portions of the venting unit.

Another object of this invention is to provide a venting unit having a fluid actuated motor means which incorporates a replaceable cartridge containing pressurized working fluids as a power source for energizing the motor means.

A further object of this invention is to provide a venting unit having a pivotal cover member which is releasably retained in its normally closed position and which, when intentionally released, is manually pivotal to the open position.

Still another object of this invention is to provide a venting unit provided with a fluid actuated telescoping motor means for forcibly urging the cover member to the open position at a controlled rate of travel.

Still another object of this invention is to provide a venting unit which does not possess the disadvantages of prior art venting units.

The venting unit of this invention comprises a curb member surrounding an opening in a roof of a building and presenting a discharge opening. A cover member is pivotally connected to the curb member and is in overlying sealed engagement with the periphery of the discharge opening. The cover member is pivotal between its normally engaged position and a fully open position wherein the cover member extends generally at right angles to the discharge opening to permit free discharge of explosion pressures and heat and smoke generated within the building. Latch means is provided for releasably retaining the cover member in its normally engaged position. In one embodiment of this invention, release means responsive to a selected elevated temperature within the building is provided for releasing the latch means. In another embodiment of this invention, release means operated by the motor means is provided for releasing the latch means.

In accordance with this invention, fluid actuated telescoping motor means including a variable volume chamber is provided for forcibly urging the cover member toward the open position. The motor means is supported at one end by one of the members (cover or curb) for pivotal movement about a pivot axis and is engageable at its opposite end with the other member. Means is provided for aligning the motor means in operative confronting relation with the other member—such means being independent of the cover member, spaced from the pivot axis, and operative prior to energizing the motor means. Replaceable cartridge means communicating with the variable volume chamber and containing pressurized working fluids is provided for energizing the fluid actuated telescoping motor means. The cartridge means comprises a source of pressurized working fluids carried by and movable with the motor means for energizing the motor means. Piercing means responsive to the release means discharges the pressurized working fluids to the variable volume chamber whereby the telescoping motor means is energized to effect movement of the cover member to the open position. The arrangement is such that once the cartridge means is emptied of pressurized working fluids, it may be disconnected and replaced by a charged cartridge means whereupon the fluid actuated telescoping motor means is capable of again forcefully urging the cover member to the open position.

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Inasmuch as the pressurized working fluids are contained within the cartridge means, the fluid actuated telescoping motor means remains inactive. Only when the working fluids are released from the cartridge means does the telescoping motor means apply forces to the cover member for opening the same.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary perspective view illustrating the present venting unit;
FIG. 2 is a cross-sectional view taken along the line 2—2 of FIG. 1;
FIG. 3 is a cross-sectional view taken substantially along the line 3—3 of FIG. 2;
FIG. 4 is a cross-sectional view taken along the line 4—4 of FIG. 2;
FIG. 5 is an enlarged fragmentary side view illustrating an abutment and an axially moveable rod positioned for engagement therewith;
FIG. 6 is a cross-sectional view taken along the line 6—6 of FIG. 2;
FIG. 7 is a cross-sectional view on an enlarged scale, taken along the line 7—7 of FIG. 2;
FIGS. 8 and 9 are cross-sectional views, similar to FIG. 2, illustrating alternative embodiments of the present venting unit;
FIG. 10 is a cross-sectional view taken along the line 10—10 of FIG. 9;
FIG. 11 is a fragmentary side view illustrating a combined abutment and latch assembly;
FIG. 12 is a cross-sectional view, similar to FIG. 2, illustrating a further alternative embodiment of the present venting unit;
FIG. 13 is a side view, on an enlarged scale, illustrating a motor means and energizing means therefor;
FIG. 14 is a fragmentary plan view as viewed from the line 14—14 of FIG. 12;
FIG. 15 is a fragmentary side view, on an enlarged scale, illustrating an alternative embodiment of a latch means; and
FIG. 16 is a fragmentary bottom view as viewed from the line 16—16 of FIG. 15.

DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

Referring to FIG. 1, there is illustrated a venting unit 20 having a curb member 22 surrounding an opening 24 in the roof 26 of the building, and a cover member 28. Referring to FIG. 2, the venting unit 20 additionally includes hinge means 30 for pivotally connecting the cover member 28 to a back curb wall 32; latch means 34 supported on a front curb wall 36 for releasably retaining the cover member in its normally closed position; an abutment 38 carried by the cover member 28; a pivot element 40 carried by a platform 42 extending between the front and back curb walls 36, 32; a fluid actuated telescoping motor means 44 pivotally connected to the pivot element 40 and extending toward the abutment 38; replaceable cartridge means 46 containing pressurized working fluids for delivery to the motor means 44; and release means 48 responsive to a selected elevated temperature within the building for (a) releasing the latch means 34, and (b) releasing the pressurized working fluids from the cartridge means 46 to the motor means 44.

The curb member 22 includes side curb walls 50 (only one visible) which cooperate with the back and front curb walls 32, 36 to define a discharge opening 52. The curb member 22 has an upper rim or periphery 54 surrounding the discharge opening 52 and provided with a resilient gasket 56.

The cover member 28 includes a peripheral frame 58 surrounding the curb member 22 and including central supports 60 extending transversely of the frame 58. A translucent or transparent dome 62 may be secured to the frame 58. The dome 62 terminates in a downwardly extending peripheral flange 64 which hides the peripheral frame 58 from view. Alternatively, the frame 58 may be provided with other cover materials such as, metals, opaque plastics, wood and the like. Suitable linkage means 66, shown in dotted outline, is provided for limiting the pivotal movement of the cover member 28 in a direction away from the curb 22 and for locking the cover member 28 in the open position, thereby preventing unintended closing thereof. The linkage means 66 may comprise any suitable mechanism.

Referring to FIG. 6, the latch means 34 comprises a latch arm 68, pivoted at 70 to the front wall 36 of the curb member 22. The latch arm 68 is hooked over a U-shaped element 72 depending from the central support 60 of the cover member 28. A spring 74 connected to the lower end of the latch arm 68 biases the latch arm 68 into hooked engagement with the U-shaped element 72. A cable 76 extends from the latch arm 68 into the interior of the building for manually releasing the latch means 34. The latch arm 68 has a latch surface 77 engaged with the U-shaped element 72. The latch surface 77 is inclined from the horizontal such that the cover member 28 will be opened by the force of shock waves produced during an explosion within the building.

Referring still to FIG. 6, a leaf spring 78 may be provided on the cover member 28 and positioned to engage the upper rim 54 of the curb member 22. When the latch means 34 is released, the leaf spring 78 causes the cover member to be elevated to a position wherein the U-shaped element 72 is above the latch arm 68. Accordingly, a workman may release the latch means 34 by pulling the cable 76 from a position within the building whereupon the leaf spring 78 will elevate the cover member 28 and maintain it disengaged from the latch means 34. The workman may then proceed to the roof and fully open the cover member 28 for inspection or maintenance of the venting unit 20.

Referring still to FIG. 2, the fluid actuated telescoping motor means 44 comprises a cylinder 80 having a piston 82 slideable within the cylinder 80 and cooperating with an end wall 84 of the cylinder 80 to define a variable volume working chamber 86. The cylinder 80 is provided with a vent opening 87 through which air passes during the reciprocating movement of the piston 82. The motor means 44 includes an axially moveable rod 88 connected at one end to the piston 82 and projecting at the other end away from the cylinder 80. The rod 88 terminates in a transverse portion 90 confronting the abutment 38. The cylinder 80 is connected to the pivot element 40 by a pin 92 for pivotal movement about a pivot axis (not illustrated) corresponding with the longitudinal axis of the pin 92. The cylinder 80 rests on a support member 94 carried by the platform 42. The support member 94 positions the motor means 44 at an appropriate inclination such that the transverse portion 90 of the rod 88 is in confronting relation with the abutment 38.

Referring to FIG. 5, the abutment 38 comprises a pair of spaced-apart plates 96 (only one visible) secured to the central supports 60 of the cover member 28 and each provided with a recess 98 adapted to receive the transverse portion 90 of the rod 88. The accurate length of the recesses 98 is such that the transverse end portion 90 when received therein is captive retained. Thus, as shown in FIG. 2, the cover member 28 in the open position is prevented from further clockwise rotation by engagement of the transverse portion 90 with the abutment 38.

Referring to FIGS. 2 and 3, the replaceable cartridge means 46 is threadedly engaged in a mounting member 100. Conduit means 102 provides communication between the mounting member 100 and the variable volume chamber 86 of the motor means 44. The conduit means 102 incorporates means (not visible) for releasing the pressurized working fluids from the cartridge means 46, as will now be described.

Referring to FIG. 7, the replaceable cartridge means 46
includes a threaded neck 104 which is threaded into an internally threaded hub 106 of the mounting member 100. The threaded neck 104 provides an outlet passageway 108 through which the pressurized working fluids are exhaust-ed. However, the outlet passageway 108 is blocked by a rupturable disc 110 which is detachably secured to the neck 104 to seal the outlet passageway 108. The mounting member 100 includes an internal passageway 112 communicating with the conduit means 102 and exposing the rupturable disc 110.

The mounting member 100 additionally includes piercing means, such as a pin 114 which is biased by a compressed spring 116 toward the rupturable disc 110. The pin 114 is held in the armed position by a tapered release pin 118 inserted through a slot 120 in the pin 114 and resting on a cap portion 122 of the mounting member 100. When the release pin 118 is extracted from the slot 120, the spring 116 forcibly drives the pin 114 toward the rupturable disc 110 thereby releasing the pressurized working fluids to the passageway 112 and thence into the conduit means 102. A cable 124 is connected to the tapered pin 118 and extends therefrom to means for releasing the pin, which means will be more fully described later in the specification.

The conduit means 102 is provided with a restriction in the form of an orifice plate 126 having an orifice 128. The orifice 126 serves to regulate the flow of the pressurized working fluids to the motor means whereby the motor means is subjected to a substantially uniformly increasing gas pressure which is converted to unidirectional forces applied to the cover member for forcibly urging the same to the open position at a controlled rate of travel. In the absence of the orifice plate 128, the motor means would be subjected to an abrupt increase in gas pressure which would cause rod 88 to slam against the abutment 38 thereby subjecting the cover member to undue stresses.

The working fluids contained within the cartridge means 46 may comprise any suitable gas, such as nitrogen. The working fluids may be provided at pressures ranging from 600 to 2500 pounds per square inch. In this range of gas pressures, sufficient force will be applied to the motor means to overcome any reasonably anticipated loading applied to the cover member.

Referring again to FIGS. 2 and 3, the release means 48 employs a fusible link 130 to maintain a spring 132 under tension. As is known, the fusible link 130 will melt at a selected elevated temperature, for example, 175°F. Upon melting of the fusible link 130, the spring 132 will contract and pull the cable 134 thereby extracting the tapered pin 118 from the slot 120 (FIG. 7) to effect (a) release of the pressurized working fluids from the replaceable cartridge means 46, (b) energization of the motor means 44 and (c) opening of the cover member 28.

A second cable is connected to the release means 44 and extends therefrom to the latch means 34. Upon melting of the fusible link 130, the second cable 134 will be pulled to release the latch means 34 thereby releasing the cover member 28.

The release means 48 is the primary mechanism which in the event of a fire, causes the motor means 44 to be energized to force the cover member 28 to the open position. It should be noted however that in the event the release means 48 fails to operate, the cartridge means 46 serves as a secondary means by which the cover member 28 is open. For example, in the event of a fire, the temperature of the air within the building will increase. The cartridge means 46 being exposed to the heated building air, will also experience a temperature rise. The gas pressure within the cartridge means 46 will increase until it attains a selected elevated pressure at which the disc 110 ruptures releasing the working fluids to the motor means 44.

Alternative embodiments of the present venting unit are illustrated in FIGS. 8 to 14 inclusive. Corresponding numerals will be employed to identify corresponding parts heretofore described.

Referring to FIG. 8, there is illustrated a venting unit 136 wherein the fluid actuated telescoping motor means 44 is pivotally connected to the pivot element 40 by the pin 92, at a location on the platform 42 which is remote from the hinge means 30. In this embodiment, the motor means is inclined toward the hinge means 30. As the abutment 38 is disposed intermediate of the pivoted element 40 and the hinge means 30. Operation of the venting unit 136 is similar to the operation of the venting unit 20 of FIG. 2.

Referring to FIGS. 9 and 10, there is illustrated a venting unit 138 wherein the fluid actuated telescoping motor means 44 is pivotally connected to the central supports 60 of the cover member 28 and depends therefrom such that the transverse portion 90 is supported on the platform 42 and is positioned for engagement with the abutment 38a also carried by the platform 42. In this arrangement the pin 92 of the pivot element is positioned intermediate of the abutment 38c and the longitudinal means of operation of the venting unit 138 is similar to the operation of the venting unit 20 of FIG. 1.

In FIG. 11 there is illustrated an alternative arrangement wherein a latch means 142 is incorporated with the abutment 38c. The latch means 142 comprises a pair of latch arms 144 (only one visible) pivoted at 146 to the central supports 60 of the cover member 28. The latch arms 144 include and arcuate lower segment 148 which is hooked under the transverse portion 90 of the rod 88. A tensioned spring 150 maintains the latch arms 144 engaged with the transverse portion 90. The latch arms 144 also include an upper extension 152 connected to a cable 154 extending into the interior of the building. The cable 154 is used to manually rotate the latch arms 152 in a counterclockwise direction into the position shown in dotted outline. In the dotted outline position, the latch arms 144 are spaced from the end portion 90 by distance sufficient to permit the cover member 28 to be raised manually. In this embodiment, the abutment 38c is provided with a generally L-shaped recess 156 which cooperates with the arcuate lower segment 148 to captively retain the transverse end portion 90 of the rod 88. A cable 158 is connected to the arcuate lower segment 148 and extends therefrom to the release means 48 (not shown). Another embodiment, the transverse end portion 90 of the rod 88 is always captively retained by the latch means 142 and the abutment 38c. However, the latch means 142 may be readily released by pulling the cable 154 thereby permitting the cover member 28 to be lifted manually when desired.

Referring to FIG. 12, there is illustrated a venting unit 160 which does not include the platform 42 (FIGS. 2, 8, 9). In this embodiment the motor means 44 is pivotally connected to the back curb wall 32 by means of a pivot element 40c. The motor means 44 extends from the pivot element 40c toward an abutment 162 provided in the central supports 60 at a location remote from the hinge means 30. Latch means 164 is provided on the central supports 60 between the abutment 162 and the front curb wall 36. Stop means 166 associated with the pivot element 40c and the motor means 44 maintains the motor means 44 in confronting relation with the element 162.

Referring to FIG. 13, the release means 48c has one end connected to a forward end 168 of the motor means 44. Spring means 170 has one end connected to the release means 48c and an opposite end connected to an eye bolt 172 carried by a mounting plate 174. The mounting plate 174 is secured to the back curb wall 32. It is to be noted that the pivot element 40c also is secured to the mounting plate 174.

Conduit means 176 supports the cartridge means 46 and serves to communicate the compressed working fluids from the cartridge means 46 to the interior of the motor means 44. Conduit means 176 has one end rigidly se-

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cured to the end wall 84 of the motor means 44 and its opposite end secured to the internally threaded hub 106 of the mounting member 100.

Referring to Fig. 14, the mounting member 100 is provided with a lever arm 178 which is adapted to push the piercing pin 114 toward the rupturable disc 110. The lever arm 178 is pivotally connected to the mounting member 100 by link arms 180 (only one visible). The orifice plate 128 may be positioned between the end of the conduit means 176 and the internal passageway 112 of the mounting member 100.

Returning to Fig. 13, a short length of cable 182 loosely connects the lever arm 178 to that end of the spring means 170 adjacent to the release means 48. Sufficient slack is provided in the cable 182 to permit the cartridge means 46 to be fired manually by means of a manual operating cable 184 connected to the lever arm 178 and extending therefrom to a pulley 186 and thence downwardly into the interior of the building.

In the event of a fire, the release means 48 will be broken releasing the spring means 170. The spring means 170 will contract pulling the cable 182 and the lever arm 178 to the positions indicated in dotted outline in Figs. 13 and 14. Such movement will cause the compressed working fluids to be released from the cartridge means 46 to the conduit means 176 and thence to the motor means 44.

The spring means 166 may comprise a lug 188 carried by the mounting plate 174 and an adjustable bolt 190 carried on a plate member 192 projecting from the end wall 84 of the motor means 44. By virtue of the adjustment provided by the bolt 190, the angle of inclination of the motor means 44 relative to the horizontal may be adjusted so as to position the transverse end portion 90 (Fig. 12) of the piston rod 88 in confronting relation with the abutment 162 (Fig. 12).

Referring now to Figs. 15 and 16 the latch means 164 includes a latch plate 194 and a latch bar 196. The latch plate 194 is pivotally connected to a support plate 190 by means of a shear pin 200. The latch plate 194 includes a recess 202 which receives the latch bar 196. It is to be noted that the shear pin 200 is directly above the latch bar 196 such that upward movement of the cover 28 is prevented. As best shown in Fig. 16, the opposite ends of the latch bar 196 are secured to the front curb wall 36 by fasteners 204.

It is to be noted that in the event of an explosion within the building, the explosion pressures acting on the cover member 28 will cause the pin 200 to be sheared thereby releasing the cover member 28 for movement to the open position.

As best shown in Fig. 15, the latch plate 194 is pivotal about the shear pin 200 in a counterclockwise direction to the dotted outline position wherein the cover 28 may be lifted free of the latch bar 196. In this embodiment, means operated by the motor means 44 is provided for rotating the latch plate 194 to the dotted outline position thereby releasing the cover plate 28 for movement to the open position. That means may comprise a cable 206 extending from connection 208 downwardly through a link 210 secured to the latch plate 194 and thence to a connection 212. It will be noted that the portion of the cable 206 extending between the link 210 and the connection 212 is presented in the path of travel of the transverse end portion 90 of the piston rod 88.

The abutment 162 in this embodiment consists of a pair of recesses 214 (only one visible) one formed in each depending flange 216 of the central supports 60. Upon energization of the motor means 44, the transverse end portion 90 will be projected toward and into the recesses 214 thereby pushing the cover member 28 to the open position. Prior to entering the recesses 214, the transverse end portion 90 engages the cable 206 displacing it into contact with a pin 218 extending between the flanges 216 of the central supports 60. When the transverse end portion 90 is seated within the recesses 214, the latch plate 194 has been rotated to the dotted outline position thereby releasing the cover member 28 for movement to the open position.

Referring to Fig. 12, it will be seen that in the absence of the platform 42 (Figs. 2, 8 and 9) the roof opening 24 is substantially entirely unobstructed when the cover member 28 and the motor means 44 have been pivoted to the generally vertical position shown in dotted outline. The obstruction of the roof opening 24 provided by the pivot element 40, the motor means 44 is negligible.

Referring to Fig. 13, it will be seen that the motor means 44, the cartridge means 46, the release means 48, the spring means 170, the pivot element 40 and the mounting plate 174 are combined into a unitary structure which may be readily installed into the curb 22.

We claim:

1. A venting unit comprising a curb member presenting a discharge opening; and a cover member pivotally connected to said curb member and overlying said discharge opening, said cover member being pivotal between a normally closed position and a fully open position wherein said cover member extends generally at right angles to said discharge opening; the improvement comprising:

2. A fluid actuated motor means for forcibly urging said cover member toward said fully open position, said motor means being pivotally supported at one end by one of the members for pivotal movement about a pivot axis and engageable at its opposite end with the other member;

3. A source of pressurized working fluids carried by and movable with said motor means for energizing said motor means independent of said cover member, spaced from said pivot axis, and operable prior to energizing said motor means for aligning said motor means in operative confronting relation with said other member.

4. The improvement defined in claim 1 wherein said source of pressurized fluids comprises:

5. Replaceable cartridge means containing said pressurized working fluids, and including conduct means for communicating said pressurized working fluids from said cartridge means to said motor means.

6. The improvement defined in claim 2 wherein said replaceable cartridge means includes:

7. Rupturable disc means for containing said pressurized fluids within said cartridge means; and means responsive to a selected elevated temperature within said building for piercing said rupturable disc means.

8. The improvement defined in claim 2 including:

9. Orifice means in said conduit means downstream of said cartridge means for regulating the flow of said pressurized working fluids to said fluid actuated motor means, whereby when said working fluids are communicated to said motor means, said motor means is subjected to a substantially uniformly increasing gas pressure to effect movement of said cover member toward said open position at a controlled rate of travel.

10. The improvement defined in claim 1 including: latch means for releasably retaining said cover member in said normally closed position;

release means responsive to a selected elevated temperature within said building for releasing said latch means; and means operable said release means for energizing said motor means.

11. The improvement defined in claim 1 including: latch means for releasably retaining said cover member in said normally closed position;

Means responsive to a selected elevated temperature for releasing said pressurized working fluids to said
fluid actuated motor means for energizing the same; and
means operated by said motor means for releasing said latch means.

7. In a venting unit comprising a curb member surrounding an opening in a roof of a building and presenting a discharge opening; a cover member overlying said discharge opening and disposed in sealed engagement with the periphery of said discharge opening; and hinge means for pivotally supporting said cover member for movement between its normally engaged position and a fully open position wherein said cover member extends generally at right angles to said discharge opening thereby to permit free discharge of explosion pressures and heat and smoke generated within said building; the improvement comprising:
an abutment secured to one of the members;
a pivot pin supported by the other member;
fluid actuated motor means pivotally connected to said pivot pin and extending toward said abutment for forcibly urging said cover member toward said fully open position;
a source of pressurized fluids carried by and movable with said motor means for energizing said motor means; and
means independent of said abutment, spaced from said pivot pin, and operative prior to energizing said motor means for aligning said motor means in operative relation with said abutment.

8. The improvement defined in claim 7 including:
latch means for releasably retaining said cover member in its normally engaged position; and wherein said fluid actuated motor means being engageable with said abutment but being normally disconnected therefrom whereby said cover member may be (a) manually pivoted out of contact with said fluid actuated motor means toward said fully open position on release of said latch means, and (b) forcibly pivoted to said fully open position on activation of said motor means.

9. The improvement defined in claim 7 including:
latch means for releasably retaining said cover member in its normally engaged position;
release means responsive to a selected elevated temperature within said building for releasing said latch means; and
said means for energizing said motor means being operated by said release means.

10. The improvement defined in claim 7 wherein said pivot pin is carried by said curb member and said abutment is carried by said cover member.

11. The improvement defined in claim 7 wherein said abutment is positioned intermediate of the said pivot pin and the said hinge means.

12. The improvement in claim 7 wherein said pivot pin is positioned intermediate of said abutment and said hinge means.

13. The improvement defined in claim 7 wherein said pivot pin is carried by said cover member and said abutment is supported by said curb member.

14. The improvement defined in claim 7 wherein:
said fluid actuated motor means includes an axially moveable rod having a transverse end portion positioned exteriorly of said motor means; and
said abutment includes a recess positioned to receive said transverse end portion and to capacitively retain said transverse end portion when said cover member is in said open position.

15. In a venting unit comprising a curb member surrounding an opening in a roof of a building and presenting a discharge opening; a cover member overlying said discharge opening and disposed in sealed engagement with the periphery of said discharge opening; and hinge means for pivotally supporting said cover member for movement between its normally engaged position and an open position wherein said cover member is spaced from said discharge opening by an amount sufficient to permit free discharge of explosion pressures and heat and smoke generated within said building; the improvement comprising:
an abutment;
a pivot element carried by said cover member;
a platform extending across said discharge opening and secured to said curb member;
said abutment being secured to said platform at a location remote from said hinge means;
fluid actuated motor means pivotally connected to said pivot element and extending toward said abutment for forcibly urging said cover member toward said open position, said fluid actuated motor means including an axially moveable rod member having an end portion resting on said platform and being engageable with said abutment, said fluid actuated motor means being pivotally connected to said cover member at a location intermediate of said hinge means and said abutment, whereby said cover member is manually pivotal toward said position and said fluid actuated motor means is moveable with said cover member while said end portion of said axially moveable rod is slideably supported by said platform; and
means for energizing said motor means.

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