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M. H. NICKERSON
HEAT-RESPONSIVE CLOSURE FOR AUTOMATICALLY
VENTING A HOUSING WHEN OVERHEATED
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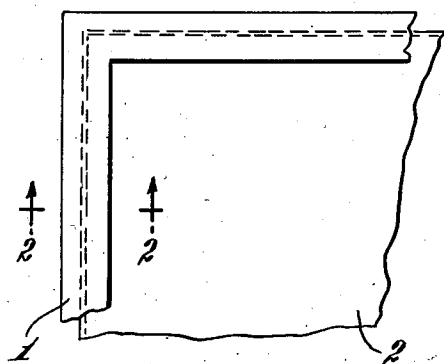


Fig. 1

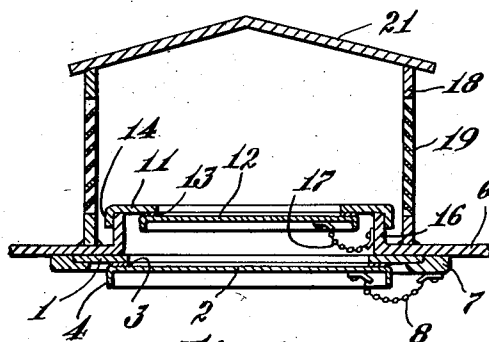


Fig. 3

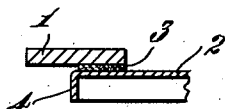


Fig. 2

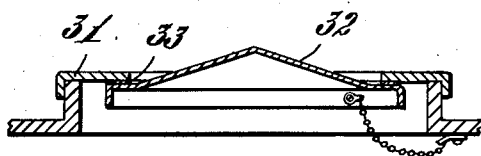


Fig. 4

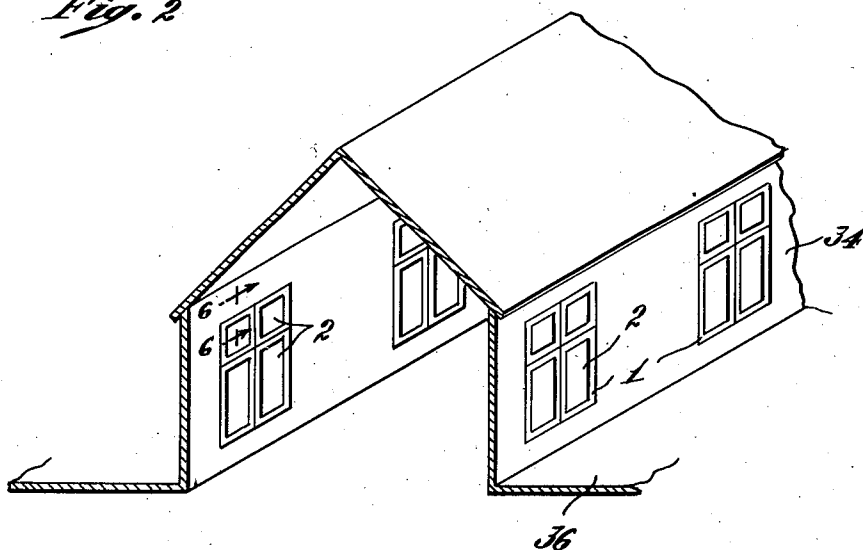


Fig. 5

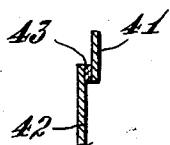


Fig. 6

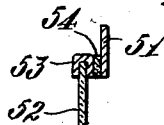


Fig. 7

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HEAT-RESPONSIVE CLOSURE FOR AUTOMATICALLY VENTING A HOUSING WHEN OVERHEATED

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2 Claims. (Cl. 189—45)

In case of fire in a building or other housing it is desirable to vent the building to permit the heat to escape, thereby to keep the temperature in the building from rising excessively. Ordinarily the vent should be in the roof to permit the heat to escape by normal convection currents.

It has been proposed to form a roof of fusible metal or plastic sheets which disintegrate in case of fire to vent the building. However, this proposal has not been practical for various reasons. Fusible metal in sheet form is not available on a commercial scale. Any plastic material having a suitable melting point does not have the necessary strength and does not weather well. Moreover plastic material is too expensive for the purpose.

Objects of the present invention are to provide a closure for an opening in a housing which will automatically open in response to heat at any predetermined temperature, which is simple and economical in construction, which can be light-transmitting if desired, which is durable and reliable in use and which may have adequate weather protection without adversely affecting the performance of the device.

According to the present invention the closure comprises a frame adapted to engage the housing around an opening in the housing, together with a panel bridging the space between the sides of the panel and fusible material joining the periphery of the panel to the frame so that when heated the panel is free to leave the frame, whereby the housing may be automatically vented when overheated. Preferably the margin of the panel overlaps the frame. When the closure is applied to a vertical wall, the panel is preferably applied to the outside of the frame so as to fall outwardly when released. However, when the closure is applied to an opening in a roof, the panel should be applied to the underside of the frame so as to fall away from the frame by gravity when released. If the panel is to be light-transmitting it preferably comprises a rim secured to its periphery, the rim being joined to the frame by the fusible material.

For the purpose of illustration typical embodiments of the invention are shown in the accompanying drawings in which:

Fig. 1 is a side view of a closure made according to the present invention, parts being broken away;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 shows an application of the aforesaid panel to the roof of a building with weather protection above;

Fig. 4 shows a modified closure applied to a roof;

Fig. 5 shows closures made according to the present invention applied to vertical walls;

Fig. 6 is a section on line 6—6 of Fig. 5; and

Fig. 7 is a section like Figs. 2 and 6 showing a modification.

The particular embodiment of the invention illustrated in Figs. 1 and 2 comprises a frame 1 and a panel 2 bridging the sides of the frame in both dimensions with its margin overlapping the frame and secured thereto with fusible material 3. The panel 2 may have a peripheral flange 4 to help collect heat adjacent the fusible material. The frame 1 and panel 2 are preferably made of metal which can readily be soldered together and the

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material 3 may comprise any suitable solder having any desired melting point, preferably 212° F. or higher.

As shown in Fig. 3 one of the aforesaid panels is secured under an opening in the roof 6 by means of strips 7 secured to the ceiling around the opening. The panel 2 may be attached to the support 7 by means of a chain 8 to swing down on the chain when released from the frame 1.

In lieu of or in addition to the closure 1 the opening may be provided with a closure comprising a rim 11 and panel 12 secured together with solder 13, the rim 11 having a peripheral flange 14 telescoping over an upstanding flange 16 surrounding the opening in the roof, together with a chain 17 to support the panel 12 when released from the rim 11. When using a double closure as shown in Fig. 3 the opening in the lower rim 1 is preferably larger than the panel 12 in the upper closure so that the upper panel can fall through the lower frame when released. To protect the closures from the weather they may be covered with a housing comprising side walls 18 containing louvers 19 and a top 21.

The modification shown in Fig. 4 is similar to the upper closure of Fig. 3 in that it comprises a rim 31 and a panel 32 secured together by fusible material 33. However the panel 32 slopes downwardly from the middle outwardly to permit precipitation to run off.

In the modification shown in Fig. 5 the closures are applied to the sides of a cupola or monitor 34 on a roof 36. Each closure comprises a frame 41 and panel 42 interconnected around their peripheries by fusible material 43 as in the previous embodiments. However, when applied to vertical walls the panels 42 are preferably on the outside of the frames 41 so as to fall outwardly in response to pressure and convection currents from the inside of the building.

The modification shown in Fig. 7 comprises a rim 51, a panel 52 and a rim 53 on the panel, the rim being secured to the frame by means of fusible material 54. With this construction the panel 52 need not be formed of metal but may be formed of glass or other light-transmitting material.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. For closing an opening in a roof, a closure comprising a frame adapted to rest on the roof around the periphery of the opening, a panel bridging the space between the sides of the frame with its margin overlapping the underside of the frame, and fusible material joining the periphery of the panel to the frame so that when heated the panel is free to drop from the frame, said panel having a depending flange around its periphery to collect heat, whereby the housing may be automatically vented when overheated.

2. For closing an opening in a housing, a closure comprising a frame adapted to engage the housing around the periphery of the opening, a panel bridging the space between the sides of the frame with its margin overlapping the frame, said overlapping margin and frame having abutting faces which are joined together by fusible material so that when heated the panel is free to leave the frame, whereby the housing may be automatically vented when overheated.

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