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ROOF STRUCTURE

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Fig. 1.

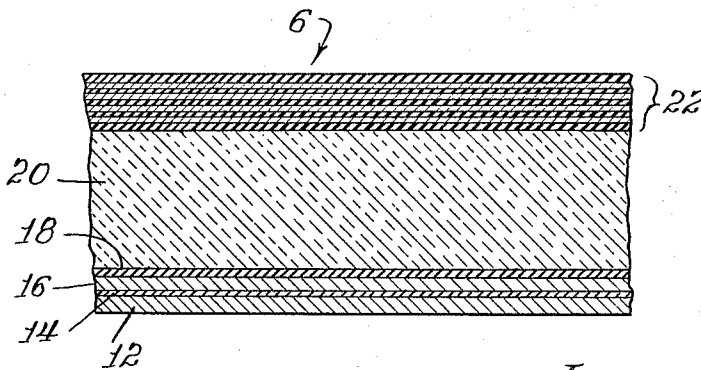
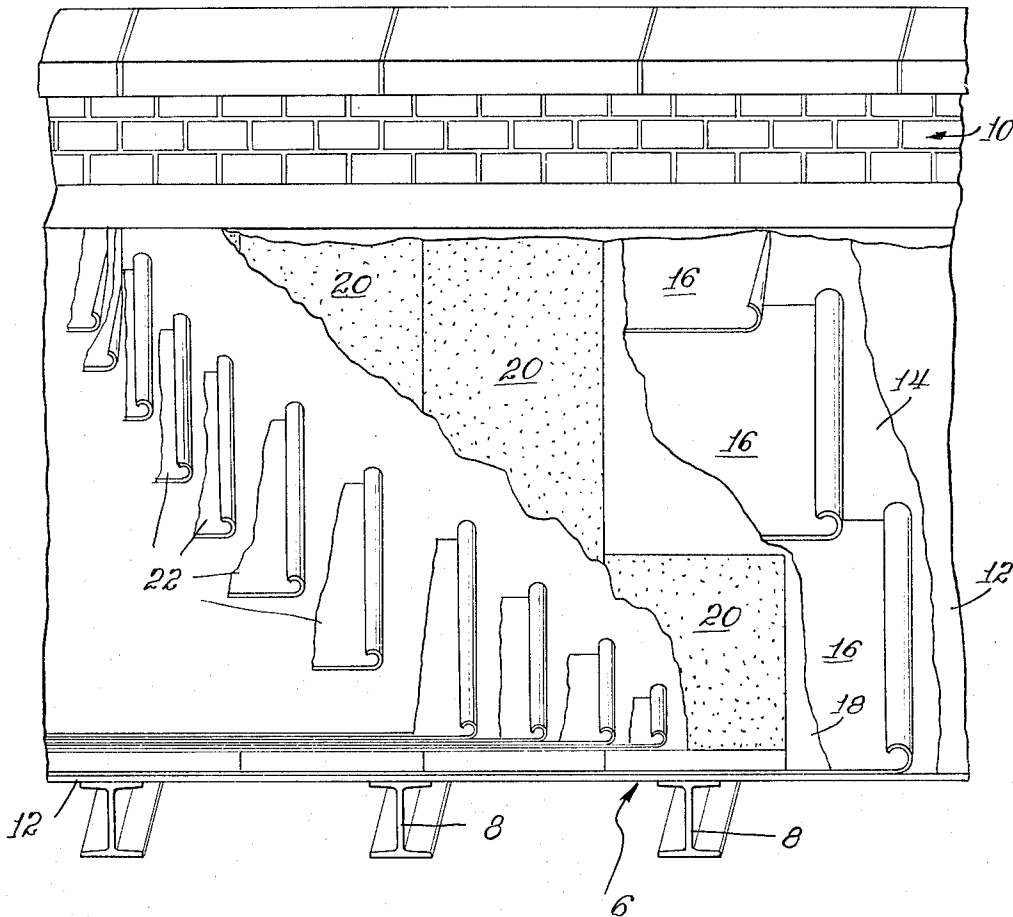


Fig. 2.

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ROOF STRUCTURE

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5 Claims. (Cl. 52—516)

This invention is directed to the problem of reducing the flow of combustible roofing materials through an insulated roof structure, in case of an internal fire. A fire in a roofed area can be drastically increased by flow of combustible roofing materials—such as asphalt melted by the fire—into the roofed area.

The present invention solves the problem in a simple, but effective manner, by providing a filter effect which regulates the flow of any such combustible roofing materials to a rate so low, that fire intensity, or propagation is not increased. Briefly, the inventive concept includes the use of a fire resistant sheet material between the roof deck and the roofing material, the latter of which may include a layer of thermal insulation. The fire resistant material selected, will act as a filter which regulates the flow of combustible materials through the roof deck.

The main object of this invention is to provide a method and construction which functions to prevent intensity increase, or propagation of a fire in a roofed area as a result of melted roofing materials flowing into the fire.

A more specific object is to provide a fuel barrier to roofing materials for internal fires, whereby the flow of melted combustible roofing materials into the fire is regulated to such a low rate as not to substantially increase the intensity, or propagation of the fire.

A further object is to provide an insulated roof structure, including a fuel barrier, which structure is easily formed of materials readily available in the market.

These and further objects and features of the invention will be more apparent from the following description and accompanying drawing wherein:

FIG. 1 is a perspective-like fragmentary view of a roof structure formed in accordance with the method of the invention; and FIG. 2 is an enlarged section view taken through the roof structure of FIG. 1.

Referring now to the drawing, numeral 6 identifies a roof structure embodying the principles of the invention, which structure is supported upon girders 8, the ends of which may be secured to walls 10 (one shown) of a building. The roof structure includes a metal deck 12, coated over its entirety with a fire resistant adhesive 14, upon which is laid a non-combustible sheet 16, which is not impervious to water vapor. The sheet 16 may be formed of asbestos felt (saturated in conventional manner with asphalt—usually 9 lbs. asphalt per 100 sq. ft. of felt or even non-saturated), flame retardant impregnated paper sheet, glass cloth, intumescent coating on asbestos, perforated metal foil or foil paper laminates. A waterproofing substance, such as a hot steep asphalt 18 (190° F. melt) is applied to the sheet 16, and blocks, or sheets 20 of a closed cell insulation, such as expanded polystyrene or polyurethane, are laid directly upon the hot asphalt 18 while still in tacky condition. The insulation thickness will be in accordance with thermal requirement, however, thicknesses in a range of from ¾" to 2¼" will suffice for most purposes. Finally, a 4 ply standard asphalt built-up roof 22 is applied directly upon the in-

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sulation 20, using a coated base sheet as the first ply. FIG. 2 illustrates in cross-section the resulting roof structure.

The non-combustible sheet 16 will regulate the flow of melted roof products during a fire so that the fire is not intensified or propagated by these products, and further, will allow the free passage of moisture vapor thus preventing blistering of the roof. Design objectives will, of course, dictate specifications of the materials being used, however, a highly successful roof structure was formed with a rubber base non-flammable adhesive 14 known as "Reflecto Barrier 77", sold by the Reflecto Barrier Sales Co. of Hartford, Connecticut applied at a rate of 0.4 of a gallon per 100 sq. ft., an asbestos sheet 16 of 30 lb./100 sq. ft. weight, and the asphalt 18, applied at a rate of 10 lbs. per 100 sq. ft.

It will be seen that a roof structure made as above described will satisfy all of the objectives of the invention.

The foregoing description has been given in detail without thought of limitation since the inventive principles involved are capable of assuming other forms without departing from the spirit of the invention or the scope of the following claims.

What is claimed is:

1. An improved roof structure which functions to prevent intensity increase and propagation of a fire under said roof structure as a result of melted roofing materials flowing into said fire, comprising in combination, a roof deck, a continuous coating of rubber base fire resistant adhesive on said deck, a non-combustible water-vapor pervious sheet adhered by said adhesive to said deck and completely covering said deck, a coating of waterproof substance completely covering said non-combustible sheet and adhered thereto, a layer of thermo-insulating material adhered to the top of said coating of waterproof substance and at least one layer of roofing material completely covering and adhered to said insulating material.

2. The improved roof structure of claim 1 wherein said non-combustible sheet comprises asbestos felt.

3. The improved roof structure of claim 1 wherein said non-combustible sheet comprises asbestos with an intumescent coating.

4. The roof structure of claim 1 wherein said non-combustible sheet comprises perforated metal foil.

5. The roof structure of claim 1 wherein said non-combustible sheet comprises a flame retardant impregnated paper sheet.

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EARL J. WITMER, Primary Examiner.