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BITUMINOUS ROOFING MATERIAL

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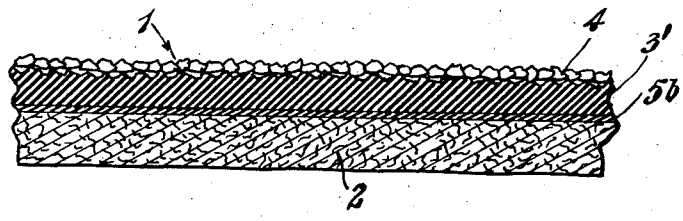

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BITUMINOUS ROOFING MATERIAL

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2 Claims. (Cl. 108—7)

This invention relates to improvements in bituminous roofing, particularly asphalt roofing having fibrous sheets impregnated with a waterproofing material and coated or mopped on one or opposite surfaces with adhesive bituminous layers. Granular material is usually applied to the weather exposed surface to give a decorative and artistic appearance as well as protect the bituminous material from the actinic rays of the sun. In prepared asphalt roofing, the coating layer on the non-weather exposed side is usually dusted with talc, mica dust, or the like to render it non-adhesive, thereby preventing adhesion between the convolutions of a roll of a sheet of the roofing material or between adjacent individual shingles or strips cut from a sheet of the roofing and stacked in bundles.

The fibrous base or foundation of prepared asphalt roofing is usually a felt or woven fabric impregnated with waterproofing asphalt. The asphalt is usually maintained at 225 to 400° F. in a saturating tank through which the fabric is fed at a speed of about 100 to 350 lineal feet per minute. Roofing felt will absorb about 100 to 200 per cent by weight of the impregnating material, the amount absorbed depending on the porosity of the felt. Woven fabric will absorb a much smaller per cent of the impregnating material. The aim is to impregnate the foundation or base fabric with as much waterproofing material as possible. While complete impregnation of all the voids of the fabric or felt is desired, the conventional methods fail to achieve this perfection of impregnation. That roofing material disclosed and claimed in Fasold et al., Patent 2,159,586 and issued May 23, 1939, comes the nearest to complete impregnation of the fibrous foundation of any heretofore disclosed in the art. It has less than 0.5 per cent voids, as determined by soaking the roofing in water at 77° F. for twenty-four hours.

The reason for complete impregnation of the fabric foundation or base is to penetrate the impregnating material to all regions of the fabric throughout its thickness and devoid it of all pores or cells. Pores and cells do not protect the fabric in those areas, but provide access for water and moisture to be drawn in and collect or condense in the body of the roofing, and this collected moisture when heated causes a vapor pressure that deforms the coating layer and results in blisters being formed. These blisters under continual pressure are sometimes forced entirely through the coating layer on the weather exposed side, thereby causing numerous eruptions into pock or crater-like formations over the weather exposed surface. These marks not only mar and disfigure the appearance of the roofing surface, but impair its weather protecting qualities by exposing the fabric base or felt to the weather. Many of the granules on the weather exposed surface are pushed off completely or loosened from the bituminous coating to which they are adhered. The blisters are of varying size and number, depending on the size and number of voids in the felt, and their distribution through the felt.

Blistering is particularly prevalent in roofing that is used in the Gulf coastal area in the southern part of the United States where there is high humidity and much rainfall in the summer months, and the roofing surface temperatures may be as high as 170° F. Exposure of roofing to these conditions and at the high summer temperature causes blistering if there are any pores or cells in the impregnated fabric to which the impregnating material has not penetrated.

Accordingly, the aim of this invention is to provide improvements in bituminized roofing wherein blisters are prevented from reaching and erupting through the weather exposed surface of roofing in which the fabric foundation is not completely impregnated. The weather exposed side is provided with an adherent blister barrier protecting means thereon, and any moisture entrapped in the felt base of the roofing that would tend to form blisters in the roofing will be forced out from other points remote from the weather exposed side.

For a better understanding of the invention reference may be made to the accompanying drawing in which the single figure is a cross section of a roofing embodying the invention.

Referring to the drawing in which like numerals are used to designate like parts, prepared roofing, either in the form of a sheet or strips into which the sheet is divided, is composed of a felt foundation 2, impregnated with a bituminous composition and coated on the the weather side with a bituminous layer 3' of the same general character as the impregnating composition but of higher melting point and of harder consistency. The underside or non-weather side of the foundation felt is usually and preferably coated with a bituminous layer, such as 3' which is applied to the weather side. Layer 3' is surfaced with any of the commonly used granular materials 4 and the opposite or non-weather surface side, whether it be the impregnated felt or a bituminous coating layer thereon, is dusted with talc, mica dust, or any other finely divided materials suitable for

rendering the non-weather exposed side non-adherent when the shingles are stacked or bundled.

A relatively thin adherent layer 5b is superposed on the weather side of the foundation felt between it and the bituminous coating to provide a blister barrier. This blister barrier layer has sufficient strength and toughness for resistance to rupture from or appreciable deformation by any vapor pressure to which it may be subjected by reason of heat and moisture in the roofing from weather conditions. The blister barrier layer is preferably coextensive with the area of the roofing material so that said roofing material is protected against blisters on all points of the weather exposed side of the foundation.

The thickness of the blister barrier layer may vary from about 0.0005 to 0.015 of an inch and is usually of considerable less thickness than the bituminous coating 3. This composition blister barrier or resistant layer is composed of shellac, a high melting point or hard asphalt, such as gilsonite or the like, or any such adhesive material which is sufficiently strong and tough so as not to be ruptured by any vapor pressure to which the roofing may be subjected. The composition material can be applied directly to the impregnated felt foundation and secured thereto by reason of its adherent character. The blister barrier or resistant layer is tougher and harder than the bituminous layer 3' or the saturated felt and prevents any blister breaking through or penetrating to the overlay bituminous coating 3' over the blister barrier layer and on the weather exposed side or that to which the granular surfacing material is applied.

While one embodiment has been disclosed and described in detail for carrying the invention into effect, there may be various changes in the detail of constructing the roofing material as well as in the use of many other suitable adhesive materials for any blister barrier within the scope of the invention.

We claim:

1. A shingle comprising a base of fibrous material saturated with asphalt or the like, an asphaltic coating on the weather exposed side, mineral granules surfacing the asphaltic coating, and membrane layer formed of adherent material interposed between the fibrous base and the asphalt coating and applied directly to the said fibrous base by the adherent character of the membrane layer, said membrane layer being impermeable to moisture vapor emitted from the fibrous base during exposure of the shingle to the weather.

2. A shingle comprising a base of fibrous material saturated with asphalt or the like, an asphaltic coating on the weather exposed side, mineral granules surfacing the asphaltic coating, and a membrane layer formed of tough resistant adherent thermoplastic material interposed between the fibrous base and the asphalt coating and adhered directly to the said fibrous base, said membrane layer being impermeable to moisture vapor emitted from the fibrous base during exposure of the shingle to the weather.

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