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H. R. WARDELL

READY ROOFING

Filed Nov. 23, 1921

Fig. 1.

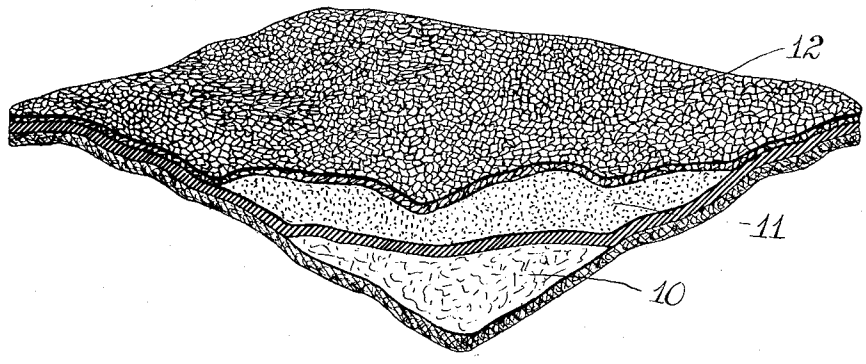
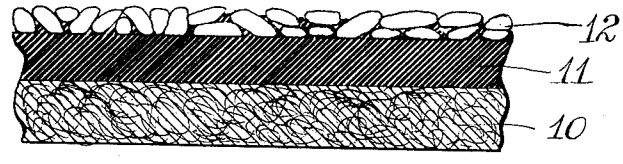


Fig. 2.



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UNITED STATES PATENT OFFICE.

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READY ROOFING.

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The invention relates to that type of ready-to-lay or so-called prepared roofing and shingles wherein a sheet of fibrous material which is saturated with an asphaltic waterproofing compound is employed as the foundation or body layer of the roofing. While this ready roofing, whether employed in the form of sheets, or in strip or shingle form, also includes a coating of heavy asphalt and a surface layer of crushed slate or the like, the quality and durability of the roofing is largely dependent upon the strength and character of the said foundation or body layer.

For this purpose saturated sheets of wool felt and asbestos felt have both been used. Prepared roofing and shingles having a foundation or body layer of saturated wool felt are of satisfactory strength and waterproof quality, but are insufficiently resistant to fire and heat. On the other hand, attempts to improve the heat and fire resisting quality of prepared roofing and shingles by the use of saturated asbestos felt for the foundation or body layer have been only partially successful owing to inherent limitations in the strength, thickness and absorbing power of sheets of asbestos felt.

As is well known, the saturation of the sheet employed for the foundation or body layer of prepared roofing is relied upon not only for securing the desired waterproof quality of this layer, but also for increasing its strength and for insuring a firm adhesion of the asphalt coating by the actual union of the coating with some of the saturating compound which exudes from the sheet when the coating is applied in a heated condition. It has been found, however, that sheets of felted asbestos fibres cannot be made of the thickness and strength regarded as most desirable for the foundation or body layer of prepared roofing and shingles, and that they are insufficiently absorbent of the asphaltic waterproofing compound to acquire, upon saturation, either a satisfactory increase in strength or the property of exuding a part of the saturating compound for union with the subsequently applied asphalt coating.

Failure of sheets of felted asbestos fibres to absorb a sufficient amount of the asphaltic waterproofing compound employed for saturating the same is believed to be due in part to the character of the asbestos fibres, whereby they resist wetting by the saturating compound, and in part to the fact that the fibres are matted together so compactly that there are comparatively few voids or spaces between the fibres to be filled with the compound. Obviously, however, excessive absorption of the saturating compound is not desired, as otherwise, an objectionable exudation of the compound from the back of the sheet might occur upon storage of the prepared roofing or shingles in a warm place with the result that different turns or courses of the product would stick together in the roll or package.

The invention accordingly contemplates prepared roofing and shingles of the type indicated having the foundation or body layer composed of a saturated felted fibrous sheet of a character which substantially retains the fire resisting quality of asbestos felt, but which is rendered absorptive of the asphaltic waterproofing compound by the intermixture with asbestos fibres or the like of texture opening bodies having surface attraction for the said melted compound. The object of the invention is to provide prepared roofing and shingles having the fire resisting property heretofore attributed only to a product made with a foundation or body layer of saturated asbestos felt and having also the strength and durability commonly associated with prepared roofing and shingles made with a foundation or body layer of saturated wool felt.

In the accompanying drawings;—

Fig. 1 is a perspective view showing a fragment of prepared roofing embodying the improvement provided by the invention, the upper and intermediate layers being each partly broken away;

Fig. 2 is a sectional view with the thickness of the prepared roofing and its several layers greatly exaggerated.

For simplicity of illustration the body layer 10 of the improved prepared roofing is shown as being coated on one side only with the usual asphalt coating layer 11. This coating layer 11, is preferably applied in the manner commonly employed in the manufacture of prepared roofing, as by depositing melted asphalt upon a continuously moving sheet of the said body layer 10 and thereafter causing the sheet and the asphalt carried thereon to pass under a doctoring roll (not shown). The coating layer 11, in turn, has applied thereto, the customary surface

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layer 12 of crushed slate or the like in accordance with the common practice in the manufacture of prepared roofing and shingles. Likewise, the foundation or body layer 10 is saturated with the usual asphaltic water-proofing compound, as by immersion of the sheet in melted asphalt at about 400° F. for a period of two minutes.

To obtain the desired fire resisting quality in the said foundation layer 10 and at the same time have the original sheet possess the property of absorbing a satisfactory amount of melted asphalt, the said original sheet preferably consists of felted asbestos fibres with which have been mixed a quantity of other fibres which serve to open the texture of the felted sheet and attract rather than repel the melter asphalt without materially impairing the fire resisting property of the sheet. It has been found that prepared roofing and shingles of excellent quality are produced if the felt employed for the foundation or body layer 10 is composed of a mixture of asbestos fibres and cattle hair, the latter constituting about 15% of the weight of the felt. Cattle hair, in lengths not much exceeding half an inch, comprises somewhat stiff springy bodies which do not curl or kink nor tend to collect together in knots or balls but do distribute themselves uniformly through the asbestos fibres so that an asbestos fibre felt, with cattle hair incorporated in it, is of uniform texture throughout.

As asbestos fibre felt, with cattle hair incorporated in it, is of greater thickness than felt of the same weight made from asbestos fibre alone, it follows that the comparatively stiff and springy cattle hair serves to prevent the asbestos fibres from felting together in a compact mass. This should result in the presence of a larger proportion of voids or openings between the fibres and this appears to be the case, as a sheet so prepared will absorb a very materially larger proportion of the saturating compound than a sheet composed entirely of asbestos fibre. Likewise, the cattle hair is believed to lead the melted saturating compound into the said voids or spaces between the asbestos fibres, as saturation readily continues upon immersion of the sheet beyond the time indicated. Since use of an amount of cattle hair comprising about 15% of the weight of the sheet is sufficient to produce a sheet capable of absorbing the desired amount of the melted asphalt compound, it is unnecessary to impair the fire resisting quality of the product by using a larger amount of the cattle hair in proportion to the amount of asbestos fibre employed.

While I have described only prepared roofing and shingles having the foundation or body layer 10 composed of a saturated sheet of a felted mixture of asbestos fibre and cattle hair, it will be understood that other material having similar properties with respect to loosening and expanding the felted asbestos fibre and thereby increasing the voids or interstitial space to be occupied by the saturating compound, should be regarded as an equivalent of the cattle hair. Furthermore, while the drawing shows only a fragment of sheet roofing, use of this material in large sheets is not required and the same may be cut in shingle pieces or shingle strips as desired.

The objectionable warping and curling of prepared roofing shingles in service is believed to be due in some cases to the repeated absorption of moisture by the foundation or body layer of the shingles and the drying out of the same in consequence of the frequent changes in weather conditions to which the roof is exposed. As the foundation or body layer 10 of the improved roofing herein described will absorb only slight amounts of moisture upon long continued soaking under test, shingles and shingle strips made in accordance with the invention do not warp or curl in service but lie flat upon the roof at all times.

I claim as my invention:

1. Prepared roofing of laminated structure comprising a sheet composed of a mixture of asbestos fibre and cattle hair impregnated with an asphaltic waterproofing compound, a layer of adhesive asphalt covering the said sheet upon one side of the same, and a layer of grit adhering to and covering the said adhesive asphalt layer.

2. Prepared roofing of laminated structure comprising a sheet composed of a mixture of mineral fibres and texture opening bodies impregnated with an asphaltic waterproofing compound, a layer of adhesive asphalt covering the said sheet upon one side of the same and a layer of grit adhering to and covering the said adhesive asphalt layer.

3. Prepared roofing of laminated structure comprising a sheet composed largely of asbestos fibre with a relatively small proportion of texture opening bodies interspersed therethrough, the said sheet being impregnated with an asphaltic waterproofing compound and a layer of heavy asphalt covering the sheet upon one side of the same, the said heavy asphalt layer being united with the said waterproofing compound over the entire area of the sheet by exudation of the said waterproofing compound upon the application of the said heavy asphalt layer to the sheet while in a heated condition.

4. Prepared roofing of laminated structure comprising a sheet composed largely of asbestos fibre with a relatively small proportion of cattle hair interspersed therethrough, the said sheet being impregnated with an asphaltic waterproofing compound which is solid at ordinary temperatures, and a layer of heavy asphalt covering the sheet upon one side of the same, the said heavy asphalt layer

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being united with the said waterproofing compound over the entire area of the sheet by exudation of the said waterproofing compound upon application of the said heavy asphalt layer to the sheet while in a heated condition.

5. Prepared roofing of laminated structure, comprising a sheet impregnated with an asphaltic waterproofing compound and composed of a mixture of asbestos fibre and cattle hair in substantially the proportions of eighty-five per cent by weight of asbestos and fifteen per cent by weight of cattle hair, a layer of adhesive asphalt covering the said sheet upon one side of the same and a layer of grit adhering to and covering the said adhesive asphalt layer.

6. Prepared roofing of laminated structure comprising a sheet impregnated with an asphaltic waterproofing compound and composed of mineral fibres and texture opening bodies in substantially the proportions of eighty-five per cent by weight of mineral fibres and fifteen per cent by weight of texture opening bodies, a layer of adhesive asphalt covering the said sheet upon one side of the same and a layer of grit adhering to and covering the said adhesive asphalt layer.

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