H. R WARDELL.

SHINGLE.

APPLICATION FILED MAY 9, 1918.

1,325,546. Patented Dec. 23, 1919.

Fig. 1.

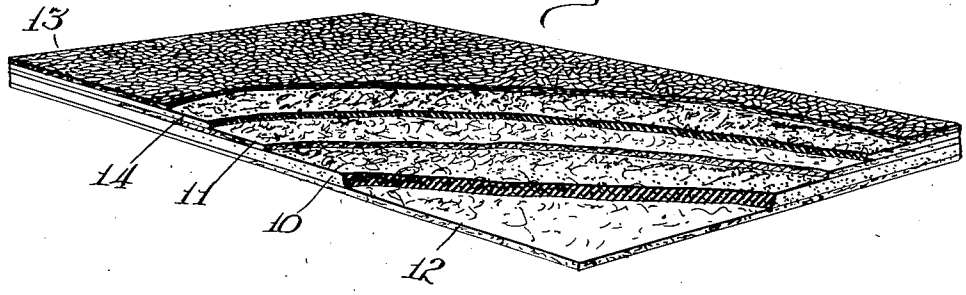


Fig. 2.

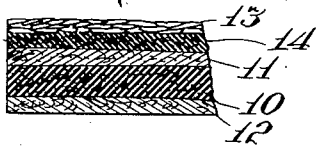
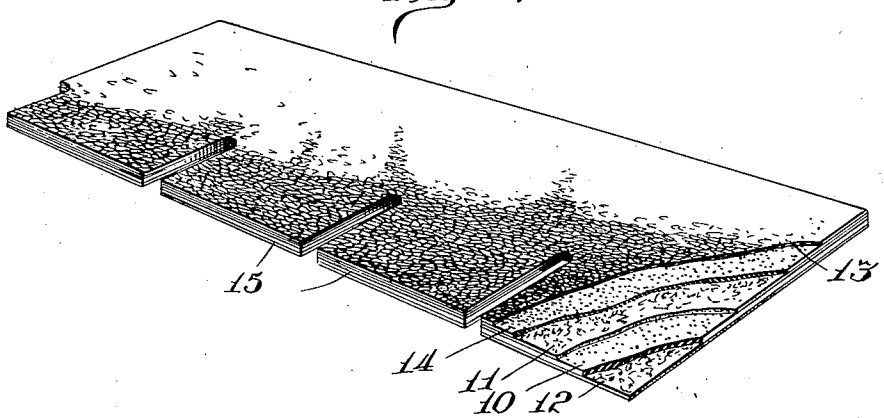


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SHINGLE.

1,325,546. Specification of Letters Patent. Patented Dec. 23, 1919.

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To all whom it may concern:

Be it known that I, HENRY R. WARDELL, a citizen of the United States, and resident of Yonkers, county of Westchester, and State of New York, have invented certain new and useful Improvements in Shingles, of which the following is a specification and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to prepared roofing and particularly to shingles and other roofing elements which are laid upon the roof in over-lapping relation. In order that these roofing elements may give satisfactory service it is important that they should at all times lay flat upon the roof without the employment of fastening devices in their exposed portions. For this purpose it is required that the shingles or the like should be sufficiently stiff to prevent their exposed portions being lifted by the wind and that they should be of such permanently waterproof construction as to effectively avoid warping or buckling even after long continued exposure to the weather. That is to say, if the waterproof character of the shingles is not retained the edges and adjacent under portions of the exposed part of the shingles will thereafter be repeatedly damp and dry in alternation and warping or buckling may result. It is also desirable that these prepared roofing elements should be largely composed of fire-proof or slow burning materials.

The object of the invention is to provide a prepared roofing shingle or like element which is of greatly improved quality, particularly as to its stiffness, waterproof and fire-resisting properties, its durability and appearance.

In the accompanying drawings;—

Figure 1 is a perspective view showing a shingle embodying the features of improvement provided by the invention with parts broken away to expose details of the several layers;

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

Fig. 3 is similar to Fig. 1 but shows a so-called strip shingle embodying the features of improvement provided by the invention.

The mastic core or body layer is represented at 10. In order that this layer may have the required stiffness without being made unduly thick it is preferably formed with a large proportion of finely divided inert material and a relatively small proportion of bituminous cementing material. A mixture comprising ten per cent. by weight of asbestos fiber, fifteen per cent. by weight of sharp sand and seventy-five per cent. by weight of silicious clay may be used in the proportion of about sixty-five per cent. by weight in the mastic compound, the remainder preferably comprising natural asphalts such as gilsonite, Trinidad asphalt and grahamite, mixed with oil to form a compound melting at about 250° F. and having a hardness represented by a reading of about seventy on the penetrometer scale at a temperature of 77° F. This mastic is desirably worked at temperatures between 350° and 400° F. It will maintain substantial rigidity at summer temperatures without becoming frangible in winter.

The fire-resisting properties of the shingle are improved if each of the fabric layers, represented at 11 and 12, comprises an asbestos felt. For this purpose asbestos felt of loose texture is desirably employed. As it is preferred that the fabric layers 11 and 12 should be of less thickness than the mastic layer 10, a felt weighing about ten pounds per square of 108 square feet may be employed. This felt is rendered waterproof prior to its application to the mastic layer 10. In order that the waterproof character of the felt may be permanent, the waterproofing is accomplished by impregnating the felt with a dense asphaltic compound. For this purpose an asphalt mixture which is only semi-liquid at ordinary temperatures is preferable. Thorough impregnation of the felt with this dense asphaltic compound is obtained by drawing the felt through a batch of the melted asphalt and then over and between heated rolls (not shown). The finished saturated fabric should preferably comprise about sixty per cent. by weight of asbestos and forty per cent. by weight of the asphalt compound.

The saturated fabric layers 11, 12, may be assembled with the mastic core or body layer 10 in any convenient manner, as by drawing the sheets of asbestos felt between a pair of horizontal composing rolls (not shown) and maintaining a batch of the heated mastic between the sheets and rolls in accordance with the plan disclosed in

Patent No. 302,938 issued to W. H. Rankin, August 5, 1884. While the thickness of the shingle as a whole, and the relative thickness of its component layers may be varied in accordance with the weight of the shingle desired and its adaptability for special use, it is proposed that the thickness of the completed shingle will generally not greatly exceed that of prepared roofing shingles now in common use. It is also proposed that the mastic core or body layer 10 of the shingle may comprise about eighty per cent. of the total thickness, the fabric layers 11 and 12 being each about ten per cent.

The surface 13 of the shingle may be composed of grit, as usual. This is applied over an adhesive layer of asphalt 14, in a well known manner.

The improved shingle has sufficient weight and stiffness to insure that its exposed portions, as 15, (Fig. 3) will not be raised by the wind. Furthermore, as the use of fugitive materials is avoided in waterproofing the fabric layers 11, 12, and these layers are protected by direct contact with the mastic layer 10, warping and curling of the shingles are effectively prevented. When asbestos felt is employed for the fabric layers 11, 12, as described, the improved shingle also has substantial fire-resisting properties whereby it cannot be ignited by burning brands falling upon the roof nor will the shingles serve for the transmission of burning brands to adjacent buildings.

I claim as my invention:

1. A stiff non-frangible fire-resisting shingle of laminated structure comprising an intermediate mastic body layer formed with a major portion of finely divided incombustible material and a minor portion of bituminous cementing material and a layer of asbestos fabric impregnated with asphalt adhering to and covering the said mastic layer on each side of the same.

2. A stiff non-frangible fire-resisting shingle of laminated structure comprising a mastic body layer formed with a major portion of finely divided incombustible material and a minor portion of bituminous cementing material and an outer layer of asbestos fabric impregnated with asphalt adhering to and covering the said body layer upon one side of the same.

3. A stiff non-frangible fire-resisting shingle of laminated structure comprising an intermediate mastic body layer formed with a major portion of finely divided incombustible material and a minor portion of bituminous cementing material, a layer of asbestos fabric impregnated with asphalt adhering to and covering the said mastic layer on each side of the same, an adhesive layer of asphalt covering one of the said fabric layers and a surface layer of grit adhering to and covering the said asphalt layer.

4. A stiff non-frangible shingle of laminated structure comprising a mastic body layer formed with approximately sixty-five per cent. by weight of finely divided incombustible material and thirty-five per cent. by weight of asphalt melting at about 250° F. and a layer of asbestos felt impregnated with a dense asphaltic compound which is semi-fluid at ordinary temperatures adhering to and covering the said mastic layer upon one side of the same.

5. A stiff non-frangible shingle of laminated structure comprising a mastic body layer formed with a major portion of finely divided incombustible material and a minor portion of bituminous cementing material and a layer of asbestos felt impregnated with a dense asphaltic compound which is semi-fluid at ordinary temperatures adhering to and covering the said mastic layer upon one side of the same.

6. A fire resisting prepared roofing of laminated structure comprising a plurality of sheets of asbestos felt each impregnated with an asphaltic water-proofing compound, an intermediate layer, comprising bituminous cementing material extending between and uniting the said sheets of asbestos felt, a layer of adhesive asphalt covering the outer side of one of the said sheets of asbestos felt, and a layer of grit adhering to and covering the said adhesive asphalt layer.

7. A fire resisting prepared roofing of laminated structure comprising a plurality of sheets of asbestos felt each impregnated with a dense asphaltic compound which is semi-fluid at ordinary temperatures, an intermediate layer comprising bituminous cementing material extending between and uniting the said sheets of asbestos felt, a layer of adhesive asphalt covering the outer side of one of the said sheets of asbestos felt, and a layer of grit adhering to and covering the said adhesive asphalt layer.

8 A fire-resisting prepared roofing of laminated structure comprising a sheet of asbestos felt impregnated with an asphaltic waterproofing compound, a layer of adhesive asphalt covering the said sheet of asbestos felt upon one side of the same, and a layer of grit adhering to and covering the said adhesive asphalt layer.

HENRY R. WARDELL.