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K. SCHUTTÉ

PROCESS OF MAKING SHINGLE ELEMENTS

Filed Sept. 4, 1920

Fig. 1.

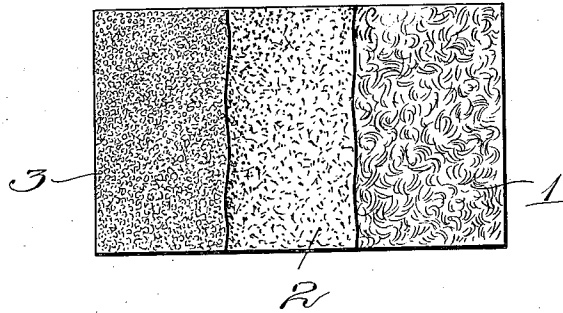


Fig. 2.

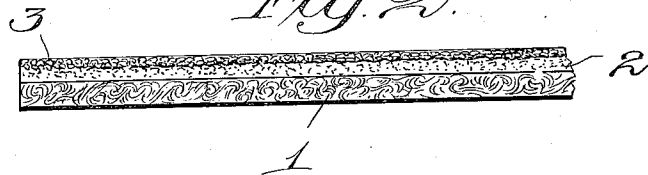
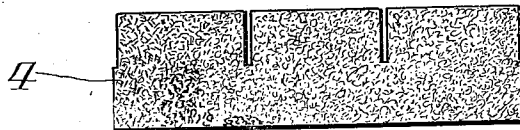


Fig. 3.



Witness:

Harry S. Guither

by

Inventor:

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Frank L. Belknap Atty.

UNITED STATES PATENT OFFICE.

KARL SCHUTTÉ, OF CARLSTADT, NEW JERSEY, ASSIGNOR TO FLINTKOTE COMPANY,
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PROCESS OF MAKING SHINGLE ELEMENTS.

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To all whom it may concern:

Be it known that I, KARL SCHUTTÉ, a citizen of the United States, residing in the city of Carlstadt, county of Bergen, and State of New Jersey, have invented certain new and useful Improvements in Processes of Making Shingle Elements, of which the following is a specification.

This invention relates to improvements in process of making shingle elements and refers more particularly to an improved process of making asphalt strip shingle or individual shingle made of saturated felt which is usually provided with an asphalt coating and a granular facing.

In the drawings:

Fig. 1 is a top plan view of a roofing sheet with parts broken away for clearness.

Fig. 2 is a cross sectional view of the construction shown in Fig. 1.

Fig. 3 is a top plan view of a shingle element cut out and ready to be put on a roof.

Referring in detail to the drawings, 1 designates the saturated felt backing, to the other side of which has been applied a cold aqueous emulsified bituminous matrix. A hot asphalt bituminous coating 2 is applied on top of said saturated felt 1, which in turn is covered with a gravel surfacing 3, which gravel surfacing is embedded in the bituminous coating 2. The finished sheet is then cut into shingle elements, which in the present instance, comprises a strip shingle 4, but it is to be understood that the shingle element may take any suitable form.

The object of the invention is to provide a process of making a shingle element of the type referred to which will have a waterproof seal back.

I have discovered from many tests that I have made that the ordinary asphalt shingles will absorb water and in particular that this absorption of water occurs through the uncoated backs and exposed edges of the felt shingle. This absorption of water is naturally objectionable as it has a tendency to introducing curling and induce expansion and contraction of the roofing element as its content of water or moisture varies.

I have found that by coating the backs of the shingles with a waterproof bituminous composition, I reduce to a minimum the amount of water absorption and more specifically I do this by coating the back of the shingle with an emulsified bituminous com-

position. This emulsified bituminous composition consists of a non-adhesive emulsified matrix of asphalt, water and colloidal clay such for example as may be prepared in accordance with the Patent #1,302,810, issued to Lester Kirschbraun. This emulsified matrix is made by first mixing an aqueous paste of water and colloidal clay and to this I gradually add the asphalt in melted or liquid form, in the meantime agitating the mixture so that it will produce an emulsion in which the water forms the continuous or external phase and the asphalt the dispersed or internal phase. This asphalt is preferably a fairly high melting point asphalt so as to prevent the shingles from sticking in the package. This asphalt may be air-blown asphalt of approximately 200 melting point and approximately 10 penetration. Instead of using air-blown asphalt, I may use a mixture of steam distilled asphalt and hard pitches as for example stearine pitches or other animal, vegetable or mineral pitches. It will be understood that the stiffness or consistency of this seal backing will be varied to suit the character of the shingle; for example, a higher melting point backing may be used where it is desirable of having a very stiff shingle and a comparative amount of colloidal clay can be incorporated into the backing when it is desired to obtain a combination of non-tackiness together with appreciable thickness.

The shingle elements may be prepared in the following manner. I take ordinary dry roofing felt and run it through the asphalt saturating tank in the usual way. I then pass the saturated felt over a roller which is revolving in a pan or other receptacle containing the emulsified matrix referred to. The arrangement is such that a thin coating of the emulsion is applied to the under surface of the saturated felt. It is to be understood that this emulsion is cold and as this emulsified matrix is applied to the lower surface of the felt, the water is evaporated and the asphalt contained in the emulsion coalesces and forms a continuous waterproof film or coating over the bottom side of the saturated sheet. At the same time, the heat which is required for evaporating the water is extracted from the hot saturated felt. This not only results in the coalescing of the asphalt but produces another very advantageous result in that it materially re-

duces the temperature of the saturated felt itself. The saturated felt then may pass between the usual coating rollers and its upper surface coated with the usual asphalt coating and the granular facing is then applied to this asphalt coating. The sheet then passes over cooling drums and loopers and finally to the shingle chopping mechanism wherein either strip shingles or individual shingles may be formed. In this connection, it may be noted that the cooling of the saturated felt by application of the cold aqueous emulsion permits of very materially increasing the output of the machine. This results from the fact that in the present method of forming asphalt shingles the production is limited by the temperature at which the shingle can be received and stacked. If they are stacked while too hot they stick together. Moreover, if they are too hot while passing over the loopers the sheet is too weak resulting in numerous breaks and shutting down of the entire machinery. From the foregoing, it will be seen that I not only get a novel and better product but that there is a pronounced advantage in the operation of the process itself from the standpoint of output. It may be desirable in certain instances to sprinkle over this waterproof seal, powdered mica, talc or powdered slate to further decrease any tendency to sticking. It may also be noted that the waterproof seal referred to is preferably less than $\frac{1}{16}$ of an inch thick and is usually only a few thousandths of an inch thick, the object being to produce a waterproof seal and not to build up the roofing.

I claim as my invention:

1. A process of making a shingle element consisting in applying a cold aqueous emulsified bituminous matrix containing colloidal clay to one surface of saturated felt, simultaneously drying out the water, cooling the

saturated felt and permitting the bituminous content of said matrix to coalesce to form a waterproof seal, applying a hot asphalt bituminous coating to the other surface of said saturated felt, applying a granular facing to said last mentioned coating and then cutting the sheet into shingle elements.

2. A process of making a shingle element consisting in applying a cold aqueous emulsified bituminous matrix to one surface of saturated felt, simultaneously drying out the water, cooling the saturated felt and permitting the bituminous content of said matrix to coalesce to form a waterproof seal, applying a hot asphalt bituminous coating to the other surface of said saturated felt and then cutting the sheet into shingle elements.

3. A process of making a waterproof covering element consisting in applying an aqueous emulsified bituminous matrix containing colloidal clay to one surface of saturated felt to form a seal coat, removing the vehicle in which the bitumen is contained whereby the bituminous content is allowed to coalesce, then applying a bituminous coating to the other surface of said felt.

4. A process of making a waterproof shingle element consisting in applying an aqueous emulsified bituminous matrix containing colloidal clay to one surface of saturated felt to form a seal coat, removing the vehicle in which the bitumen is contained whereby the bituminous content is allowed to coalesce, to form a waterproof seal, then applying a bituminous coating to the other surface of said felt and applying a granular facing to said last mentioned coating.

KARL SCHUTTÉ.