Oct. 16, 1934. T. B. LEHON 1,976,948

PREPARED ROOFING

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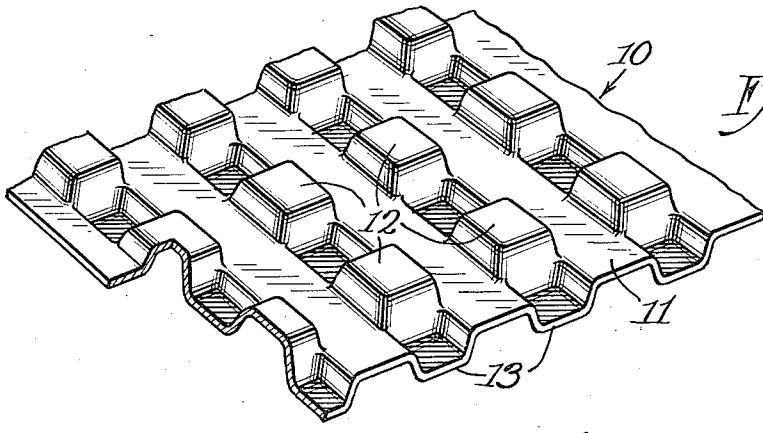


Fig. 1

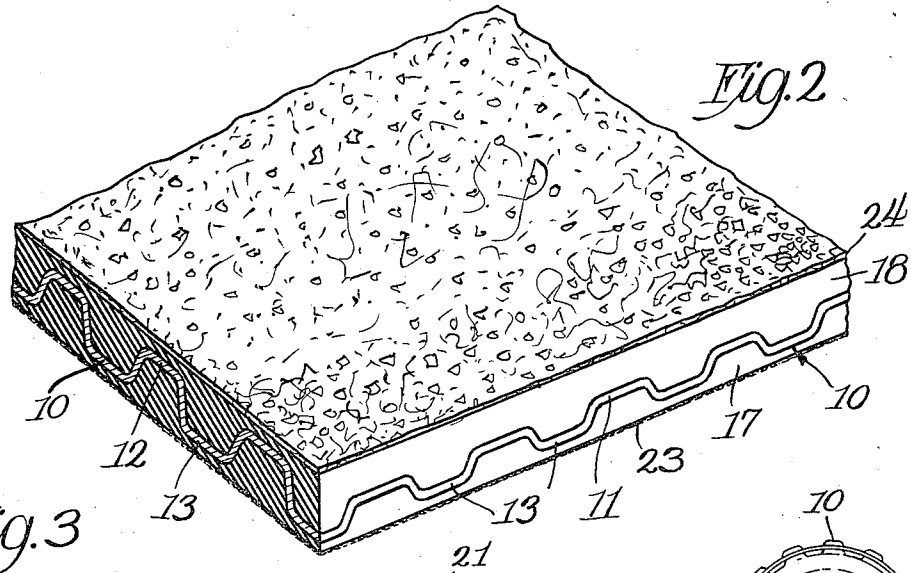
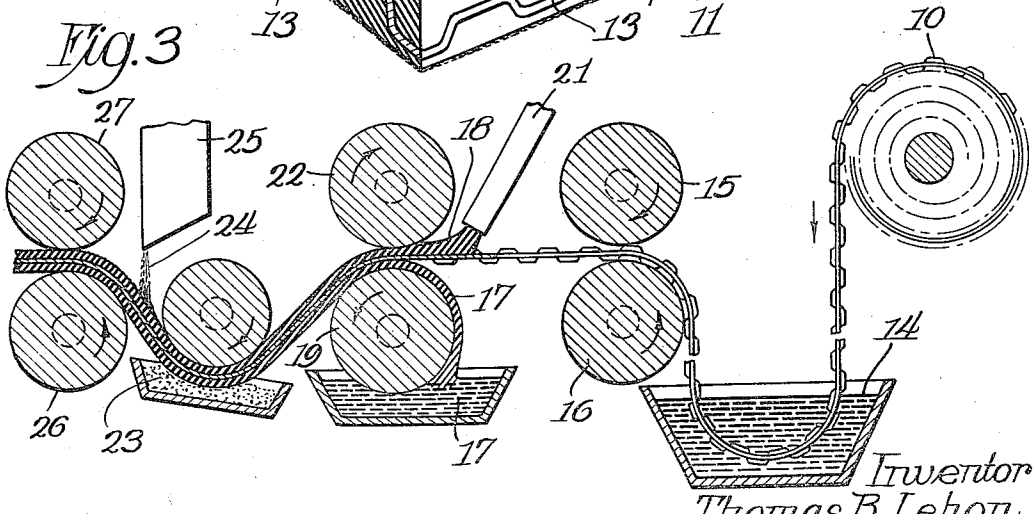


Fig. 2

Fig. 3



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PREPARED ROOFING

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2 Claims. (Cl. 91—68)

This invention relates to prepared roofing. The objects of the present invention are to produce a roofing which has materially increased life over roofings which are now common, and to use therein no greater weight of felt; to produce roofings which have a life equalling that now usually attained but in which the weight of felt is materially reduced; and to produce a felt which has, for the purposes of coating, an apparent thickness greatly in excess of the true thickness of the felt.

It is also an object of the invention to produce roofing which has a much better appearance than ordinary sheet roofings, for the greatly increased thickness of the roofing made in accordance with this invention lends itself particularly to the simulation of shingles or tiles.

These and other objects and advantages will become apparent as the disclosure proceeds and the description is read in conjunction with the accompanying drawing, in which

Fig. 1 is a perspective view of a section of the felt;

Fig. 2 is a perspective view of a small section of the completed roofing; and

Fig. 3 is a diagrammatic indication of the method of manufacture of prepared roofing from my improved felt.

Prepared roofings consist of a layer of soft absorbent felt which must be impregnated with some water proofing compound in order to prevent the rotting or disintegration of the felt. The saturated felt is then coated with a hard, high melting asphaltic material and the coating itself is protected by being covered with granules of ground rock or sand. Actually, therefore, the surface which protects the roof from the weather and sheds the rain is an asphalt surface, and the thicker the surface the longer the roof will last. The felt itself has practically no protective powers, and, as is well known, when the coating is gone, the roofing has reached the end of its useful life.

Broadly speaking, the function of the felt is only to provide a vehicle or a carrier for the asphaltic surface which protects the roof from the weather. Were it possible to apply a sheet of pure asphalt to a roof and make it stay there the felt would be entirely unnecessary.

Since the high grade felts that are necessary are by far the most expensive item entering into sheet roofing, the design of satisfactory roofing must include a compromise between the thickness of felt which is permissible in roofing from the point of view of its cost and the life which may be expected from the coatings which the felt may be made to support.

I am aware of various processes which have attempted to indent or deform the sheet after it has been impregnated with a weatherproofing compound and before the wearing surface or coating of asphalt has been applied. I know also of certain other processes in which the felt has been indented before saturation. Generally, this operation has been accomplished by passing the sheet between corrugated, roughened or studded rollers.

In the first case, that is when the sheet is deformed after saturation, the result inevitably is that the sheet is changed in dimension after it passes the rollers. Usually, it is both narrowed and shortened. Besides the unpredictable changes in dimension which this operation causes, it is open to the further serious objection that as the sheet passes between the corrugations or under the studs, the felt, instead of being maintained at a uniform thickness, is compressed. It is also bent around sharp corners. The compression of the felt affects to a material degree the bonding of the asphalt coat to the support, and the fact that the felt has been sharply distorted or bent hurts its mechanical strength.

In the second instance, that is, when the felt has been indented before the saturation of the sheet, a felt is formed which has small areas which are highly compressed and other areas which are either not compressed at all or compressed but slightly. Practically speaking, it is exceedingly difficult and almost impossible to run either felt through a saturator and have the degree of impregnation uniform throughout the extent of the sheet. Generally, it will be found that the soft uncompressed areas pick up the saturant readily, but that the material has not entered into the compressed felt in the indented spots. It simply coats them. The process also weakens the felt, since it is sharply bent and distorted after the felt is formed.

Felt which occupies several planes may be formed on a felt machine. This may be done by picking up the felt on a very rough or peculiarly formed belt or foraminous carrier, or the felt may be passed between corrugated or studded rollers before much of the water has been expressed. If this is done, a felt is produced which has throughout its whole extent substantially the same density, and for the purpose of making roofing has an apparent usable thickness several times in excess of its true thickness.

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A material known to the trade as "bottle wrapper" paper is manufactured in much the same way. It gains its name because its resilient and cushioning nature prevents glassware from being broken. I have found that under certain circumstances, it may be used as a satisfactory felt and that the impregnation of the saturant is uniform.

Such a felt is illustrated in perspective in Fig. 1. In the manufacture of roofing from such a felt, the felt is unrolled, passed through a saturator where the impregnation of the felt takes place, passes over chilling rolls and then to the coater where a layer of asphalt or other wear resisting coating is applied. If the rollers are properly adjusted, the coating will not only coat both sides of the felt, but will fill up the depressions and corrugations between the ridges.

Consequently, a felt formed as shown in Fig. 1 has the power to pick up a coating of asphalt which weighs much more than that which could be picked up by a plain sheet of felt weighing the same amount per sq. yd. It is free from the objections noted in the discussions of the other processes since the felt maintains throughout its whole extent substantially the same density and, therefore, it is evenly and uniformly saturated. Also, since the felt is distorted while in a soft and semi-watery stage, there is no breaking of the fibres and no impairment of its normal mechanical strength.

With particular reference to the figures, it will be noticed that the felt, generally indicated by 10, in Fig. 1, is distorted both above and below its normal plane 11 to form protuberances 12 extending above the plane and similar protuberances 13 extending below the plane 11. It is, of course, appreciated that the scale in Figs. 1 and 2 is greatly exaggerated so that the configuration of the felt may be easily set forth. However, in actual practice, the protuberances 12 and 13 at least equal the normal thickness of the felt itself and I prefer to use a felt having the following characteristics: thickness about .026 of an inch; height of protruding areas (12, Fig. 1) about $\frac{1}{32}$ of an inch; depth of the depressed areas (13, Fig. 1) $\frac{1}{32}$ of an inch. The projections occur about every $\frac{3}{16}$ of an inch center to center. The apparent, but usable thickness for asphalt holding purposes is, therefore, .0885 inch (with considerable tolerance). These dimensions are cited by way of example only. All dimensions are a matter of preference, and it is understood that any dimensions suitable may be used.

In Fig. 3, the felt 10 is shown as being fed from a roll into the "saturator" 14. It is then drawn out by the feed rolls 15 and 16 and through the coating unit which spreads supplies of asphalt over the under and upper surfaces of the sheet. The coating 17 upon the underside is spread by the roll 19 while the upper coating 18 is received through the spout 21 and is spread over the sheet by the roll 22. The hot felt now passes through a mineral coater which coats the underside of the roofing with ground or powdered talc, fine sand, or the like from the supply 23 and also applies the weather resisting coating 24 of crushed slate, colored granules or the like from the supply hopper 25. The roofing then passes between the chilled feed rolls 26 and 27, and through loopers to cool the roofing in a manner which is well understood.

The undercoating of asphalt 17, the layer of sand or talc 23, the upper coating of asphalt 18, and the layer of crushed slate or colored granules 24 are shown in their proper positions in relation to the felt 10 in Fig. 2.

A considerable amount of the prepared roofing used in the trade is built up from a felt base weighing 50 lbs. per 480 sq. ft., the thickness of which varies from .050 to .052 of an inch. To produce roofing of the same grade, using the present invention, it is possible to use a sheet weighing but twenty-six lbs. to 480 sq. ft. but having an apparent thickness of .050 to .052 of an inch. To produce a roofing twice as thick as the standard roofing above referred to, a felt weighing fifty lbs. to 480 sq. ft. and having an apparent thickness of .104 is satisfactory.

It is thus evident that the practice of my invention results in a considerable economy in felt, a materially longer lived roofing, or a material much better suited to simulate shingles or tiles.

What I claim, therefore, is:

1. Prepared roofing material comprising a sheet of felt impregnated with waterproofing material, said sheet being bodily distorted to form a multiplicity of projections extending outwardly from the plane of the sheet at one side thereof with corresponding recesses on the opposite side, without impairing the strength, density, or uniform thickness of the felt, to give the sheet an effective thickness greater than the actual thickness thereof and a layer of waterproofing material on said sheet embedding said projections.

2. Prepared roofing material comprising a sheet of felt impregnated with an asphaltic composition, said sheet being bodily distorted without impairing the strength, density or uniform thickness of the felt to form a multiplicity of projections and depressions on both sides of the sheet to give the sheet an effective thickness greater than the actual thickness of the felt, and a layer of asphaltic composition covering said projections and filling said depressions on each side of the sheet.

THOMAS B. LEHON.