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2,122,747

ROOFING FELT

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Fig. 1.

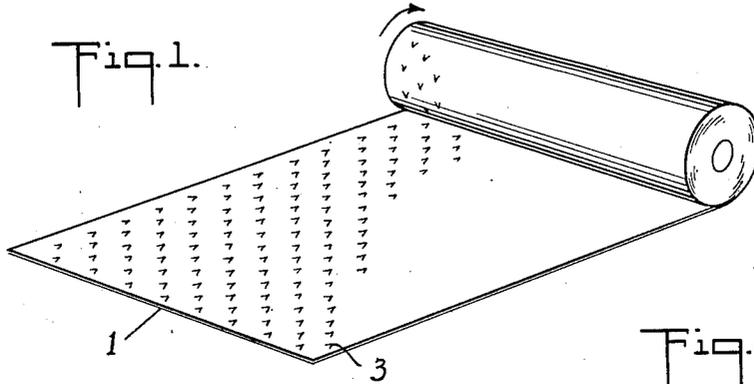


Fig. 2.

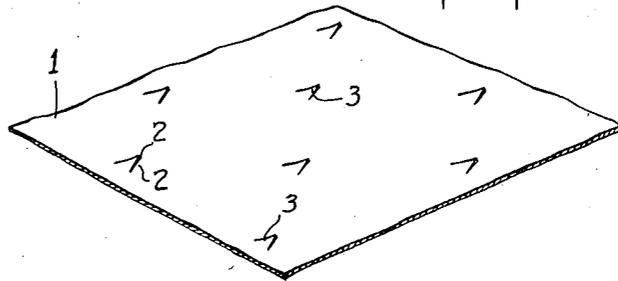


Fig. 4.

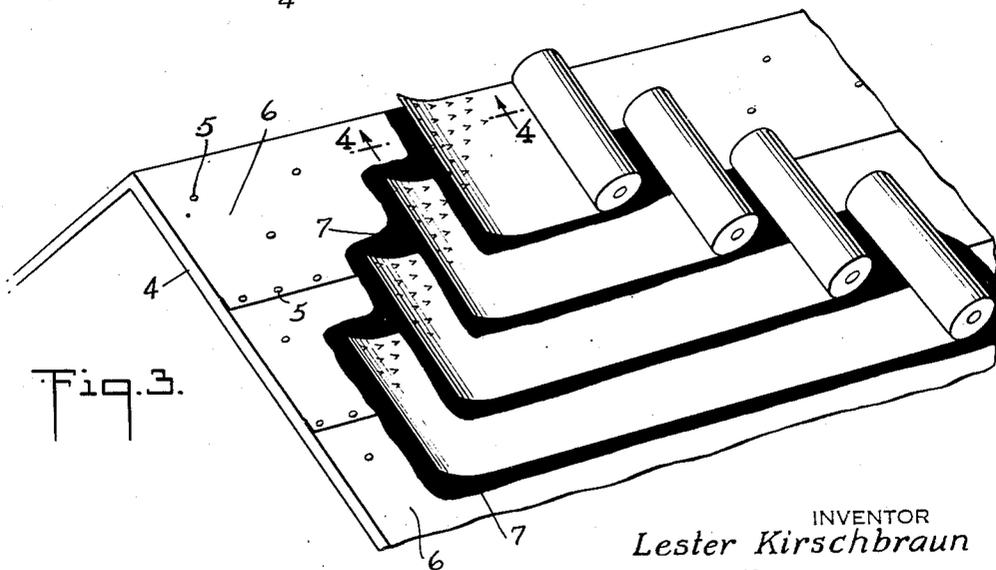
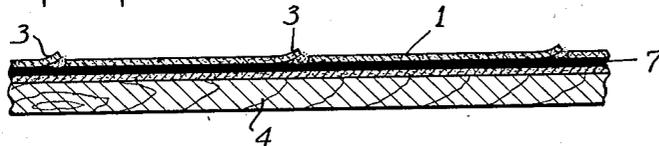


Fig. 3.

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ROOFING FELT

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Application December 31, 1936, Serial No. 118,477

6 Claims. (Cl. 108-7)

This invention relates to improvements in the construction of roofing felts particularly for use in so-called built-up roofs.

Built-up roofs have long been employed in the building industry both for new construction and for reroofing of old buildings. This type of roof, when laid upon a wooden roof deck, is conventionally composed of a dry laid foundation sheathing of any suitable material secured by nails or the like directly to the deck. Upon the sheathing one or more plies of felt are laid with asphalt layers or moppings therebetween and between the foundation sheathing and the lowermost ply. As many coatings of asphalt and plies of felt may be provided as are necessary to build up the roof to the desired thickness. The outermost ply may be covered with a layer of asphalt and a suitable surfacing material may be partially embedded therein. In the case where the roof is built up from a concrete deck the dry laid foundation sheathing layer is usually omitted and the initial felt ply laid directly on the deck and secured thereto by a spot mopping of asphalt.

It has been found that in these so-called built up roofs numerous separations or delaminations of the superposed sheets frequently occur, such separations often being evidenced on the surface of the roof by the appearance of raised portions or blisters. Any separation of the constituent layers of the roof lessens the durability and waterproofness thereof and may result in cracking of the felt at the points where the blisters occur, particularly when the roof is walked upon in the subsequent building operations, the cracking of the felt permitting moisture to enter between the laminations of the roof structure and thereby cause rapid deterioration of the roof. It has been determined that such separation of the plies of felt is frequently caused by steam, generated by the hot asphalt from the moisture contained in the felt, and by air entrapped between the layers as the felt is unrolled onto the hot asphalt. The asphalt saturated felt, as it is delivered for use, generally contains from 2 to 3% of moisture. In a 30 pound sheet this means that from $\frac{1}{3}$ to $\frac{1}{2}$ pound of water per 100 square feet of felt will be contained therein. The application or mopping of the hot asphalt onto the surface of a felt layer converts the contained water largely into steam which in turn induces a frothy ebullient condition of the asphalt and the second layer of felt being laid upon the asphalt while it is in this condition entraps the generated steam between the felt layers. Inas-

much as the steam occupies a volume 1700 times greater than did the water from which it was formed, it can readily be seen that the substantial volumes of steam produced from the presence of even 2 to 3% of moisture in the felt, will be sufficient to hold the upper felt layer from the asphalt coated lower layer thus preventing good adhesion of the plies of felt and forming pockets therebetween, the pockets often appearing as blisters on the surface of the felt. The unrolling of the felt onto the hot asphalt also entrains air therebetween, such air further preventing proper bonding of the felt layers and otherwise adding to the deleterious effects of the entrapped steam.

The principal object of my invention is to provide an improved form of felt for built-up roofs or the like. In accordance with my invention the felt is provided with vents to permit the escape of entrapped air and steam in the use of these felts in laying built-up roofs.

It is of primary importance that the above stated object of my invention be attained without weakening the felt sheets by the removal of substantial portions of the material thereof and without altering the sheets in such a manner as to permit substantial quantities of the asphalt of the mopping layers to ooze to the surfaces of the sheet where it would be picked up by the shoes of workmen.

It is therefore a further object of the invention to produce a felt for built-up roofs or the like in which vents are provided to permit the escape of entrapped air and steam but without removal of any substantial portion of the felt and without permitting passage of a substantial amount of asphalt to the outer surface of the felt.

A more specific object of the invention is to provide a roofing felt having openings therein to permit the escape of entrapped air and steam and having means formed from the body of the felt to close the openings.

The foregoing and other objects of the invention as well as numerous advantages thereof will more clearly appear from the following description of my invention.

My invention in its generic form resides in the provision of tabs in the felt sheets which normally lie in the plane thereof but are capable of yielding under pressure to expose openings through the sheets. In its preferred form my invention resides in the formation in the felt of uniformly distributed pairs of short cuts or incisions extending through the felt, the cuts of each pair meeting at an acute angle and thus

forming pointed tabs which, when displaced from the plane of the felt, expose correspondingly shaped openings. A sheet of felt embodying by invention, when laid over a layer of hot molten and frothy asphalt in a conventional manner, has the tabs thereof displaced from the plane of the sheet by the pressure exerted by the entrapped steam and air which is thereby permitted to escape through the resulting openings. Conventionally, as the felt is unrolled on the asphalt layer it is pressed into the asphalt by an operation known in the art as brooming which consists in brushing the sheet with a stiff broom or the like. Where felt, embodying the preferred form of my invention, is employed in the construction of built-up roofs the brooming operation in addition to its usual functions will, after the escape of the entrapped steam and air, return the displaced tabs once more into the plane of the felt sheet where they will be cemented down by the asphalt which tends to ooze through the apertures. As is apparent from the foregoing description of the construction and use of this invention, prevention of blistering by entrapped steam and air is obtained but the strength of the completed roofing structure is not decreased and little asphalt is exposed on the surfaces of the felt sheets in their application to the roof.

Asphalt impregnated felts when in rolled form often exhibit a tendency toward adhesion between the several convolutions of the roll, particularly when the felt is at all oversaturated with the asphalt. This tendency is generally insufficient to cause material trouble in felts previously employed. Where however, the tabs of the present invention are present, difficulty may arise due to the adhesion of such small tab areas to the underlying convolution of the roll of felt if the tabs point towards the outer end of the rolled sheet. In such case if there is even a slight adhesion between the tabs of one convolution and the next underlying convolution, the point of the tab will be carried with the underlying convolution of the roll as the felt is unrolled and a tearing action on the base of the tab will result which, in many cases, may be sufficient to tear the sheet. Furthermore, in the brooming of the felt it is desirable that the tabs be so arranged that the normal operative stroke of the broom will pass from the base of the tab to its point in order that the tab may be pressed into the plane of the felt rather than be raised therefrom. It is therefore preferable to so form the tabs (and their complementary openings) that their points extend in a direction toward the roll as it is being unrolled.

The invention will be more fully understood by reference to the accompanying drawing in which:

Figure 1 is a perspective view, of a roll of roofing felt embodying a preferred form of my invention, partially unrolled;

Figure 2 is a fragmentary perspective view of a sheet of the roofing felt of Figure 1, on an enlarged scale;

Figure 3 is a perspective view of a roof illustrating the application thereto of the roofing felt of this invention; and

Figure 4 is a sectional view of the roof taken on a line 4-4 of Figure 3.

In the drawing, 1 represents a sheet of asphalt impregnated felt having formed therein a multiplicity of pairs of short cuts or incisions 2, each pair forming between them a triangular tab 3. As shown in Figures 1 and 2, the tabs are placed in a staggered arrangement in the sheet of felt to avoid undue weakening of the sheet. An appli-

cation of the roofing felt of the invention to a wooden roof deck is illustrated diagrammatically in Figure 3. As shown therein, a foundation layer of sheathing material 6 may be first laid directly on the roof sub-structure 4, and fastened thereto by suitable means 5 such as roofing nails, or the like. The sheets are laid with their edges overlapping. A coating of hot molten asphalt 7 may be spread or mopped onto the surface of the sheathing layer and, while the asphalt is in the hot molten condition, sheets of roofing material, embodying the cuts and tabs of the present invention, unrolled thereon in successive overlapping relationship with the portion of each sheet to be overlapped receiving a mopping of the hot molten asphalt so that in no place will felt touch felt. The sheets are pressed into the hot asphalt by means of stiff bristle brooms or other roofing implements. As the felt is laid, the steam generated by the action of the hot asphalt on the moisture content of the felt and also any air entrained between the felt and the asphalt as the felt is unrolled, will force the tabs out of the plane of the sheet to a position as shown in Fig. 4, and escape through the openings thus exposed. As many plies of the felt embodying my invention may be laid as is necessary to build up the roof to the desired thickness. The outermost layer may be provided with a mopping of asphalt and a suitable surfacing material may be partially embedded therein. In the case where the roof is to be built up from a concrete or similar deck the operations are the same except that the dry laid foundation sheathing layer is usually omitted and the initial felt ply spot mopped directly onto the roof deck. As is readily apparent the advantages and new results, flowing from the use of the felt embodying my invention, will be obtained irrespective of the particular built-up roof construction employed.

As clearly shown in Figure 1, the triangular tabs and their corresponding apertures are preferably placed so as to point toward the roll of felt as it is being unwound, that is, to point in the direction of unwinding of the roll. By this construction if there is any tendency for the felt of the tabs to adhere to an adjacent convolution of the roll, the force created by the unwinding of the roll will move from the base of the tab toward the point thereof, this resulting in a peeling action of the adjacent convolution of the felt from the tab and little likelihood of tearing of the felt will result. As previously stated, the unrolled felt is pressed into the asphalt coating by a brooming operation which consists in brushing the felt with a stiff bristle brush or the like. By pointing the tabs in the direction of the unrolling of the felt the brooming of the felt into the hot asphalt will return the tabs to their original location within the plane of the sheet where they will be cemented down by the asphalt.

A preferred form for the tabs is illustrated in the drawing and above description. It is to be understood however that the objects of the invention may be obtained by employing tabs having other configurations. For example, in place of the triangular tabs shown there may be used tabs of semi-circular or quadrilateral shape. It will thus be apparent to those skilled in the art that numerous variations and changes may be made without departing from the spirit of my invention as defined by the appended claims.

What I claim is:

1. As an article of manufacture, a sheet of roofing felt, of indefinite length for the construc-

tion of built-up roof coverings and the like, the sheet comprising a body portion and a plurality of tabs, the tabs being individually of small area in relation to the area of the sheet and formed from the material of the sheet and integrally therewith, the tabs being displaceable from the plane of the body portion to permit the escape of entrapped gases and the like occurring in the laying of the roof covering.

10 2. As an article of manufacture, a roofing sheet of indefinite length for the construction of built-up roof coverings and the like, the sheet having a plurality of pairs of short incisions therethrough, the incisions of each pair forming a tab displaceable from the plane of the sheet to permit the escape of entrapped gases and the like occurring in the laying of the roof covering.

15 3. As an article of manufacture, a convoluted sheet of roofing felt, of indefinite length for the construction of built-up roof coverings and the like, the sheet comprising a body portion and a plurality of uniformly distributed pointed tabs of individually small area in relation to the area of the sheet, the tabs being formed from the material of the sheet and integrally therewith, the tabs being displaceable from the plane of the body portion to permit the escape of entrapped gases and the like occurring in the laying of the roof covering.

20 4. As an article of manufacture, a roofing felt for the construction of built-up roof coverings and the like having a plurality of pairs of incisions therethrough and distributed through-

out the area thereof, the incisions of each pair diverging from a point common to the pair and forming between them a substantially triangular tab with its base integrally joined to the felt, the tabs being displaceable from the plane of the felt to permit the escape of entrapped gases and the like occurring in the laying of the roof covering.

5. As an article of manufacture, a roll of roofing felt for the construction of built-up roof coverings and the like, the felt comprising a plurality of tabs, each tab being formed from the felt and integrally joined thereto at its base and extending from its base in a direction as to point toward the roll upon the unwinding of the roll, the tabs being displaceable from the plane of the felt when the felt is unrolled to permit the escape of entrapped gases and the like occurring in the laying of the roof covering.

6. As an article of manufacture, a roll of roofing felt for the construction of built-up roof coverings and the like, the felt having a plurality of uniformly distributed pairs of incisions therethrough, the incisions of each pair diverging from a point common to the pair and forming between them a pointed tab integrally connected with the felt at its base and extending from its base in a direction as to point toward the roll upon the unwinding of the roll, the tabs being displaceable from the plane of the felt when the felt is unrolled to permit the escape of entrapped gases and the like occurring in the laying of the roof covering.

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