

May 21, 1946.

A. A. FASSIOTTO ET AL

2,400,746

METHOD OF MAKING THICK BUTT SHINGLES

Filed Dec. 8, 1943

2 Sheets-Sheet 1

Fig. 1.

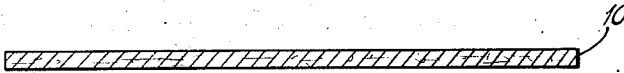


Fig. 2.

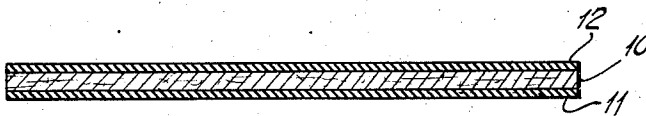


Fig. 3.

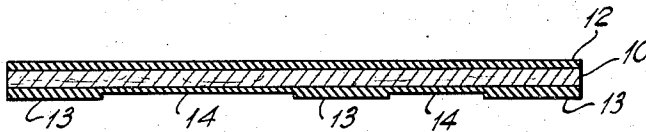


Fig. 4.

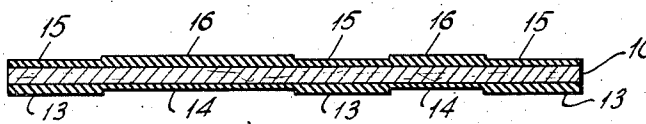


Fig. 5.

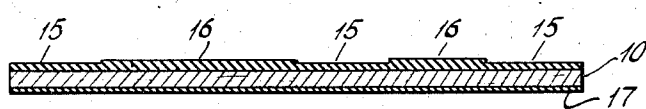


Fig. 6.

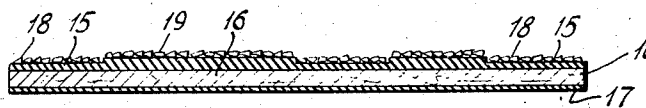


Fig. 7.

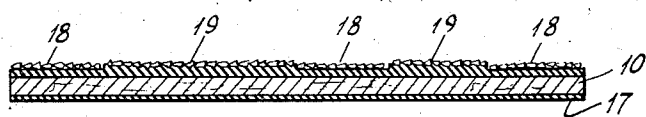


Fig. 8.

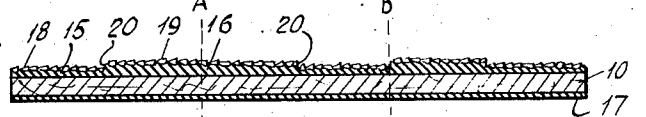
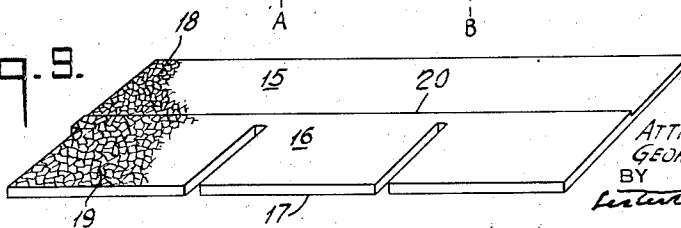


Fig. 9.



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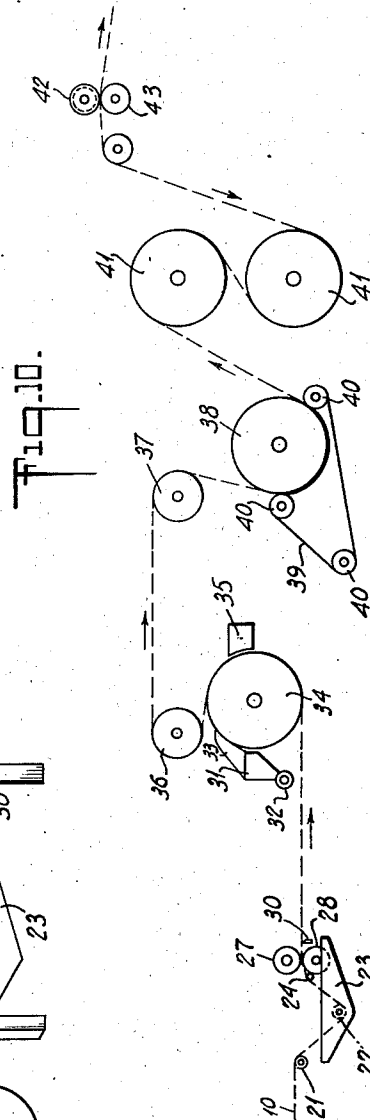
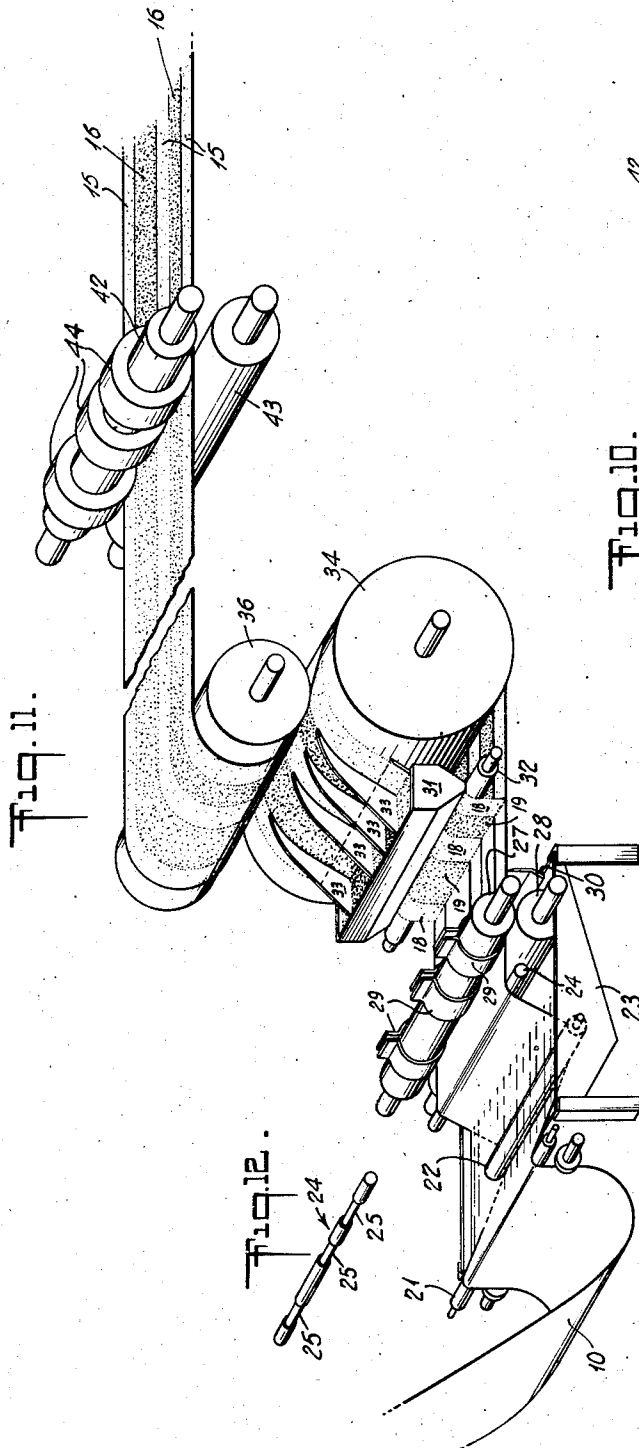
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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,400,746

METHOD OF MAKING THICK BUTT  
SHINGLES

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Application December 8, 1943, Serial No. 513,390

4 Claims. (Cl. 117-10)

This invention relates to an improved method of making thick butt shingles, especially those having a base of roofing felt saturated and coated with asphalt or other bituminous compositions, and faced with granules.

Numerous proposals have been made to increase the thickness of the butts. One method is to cover the face of the sheet with a coating of asphalt and a layer of granules, and then to cover the butt only with a second coating of asphalt and layer of granules. This is subject to the disadvantage, among others, that the second coat is not bonded directly to the base. Another method is to apply one coat of asphalt and layer of granules to the face, and another coat to the back under the butt. While this increases the thickness it does not increase the weather resistance of the butt. It has also been proposed first to apply a coating of one thickness to the butt portion, leaving the lap portion uncoated, and then to apply a coating of lesser thickness to the lap portion. Still another proposal is to apply a coating of uniform thickness to the entire face of the sheet, surfacing the lap portions with fine granules only and the butt portions with intermingled coarse and fine granules, and differentially pressing the coarse and the fine granules into the coating. This method has the disadvantages that the butt and lap portions are not clearly offset, and that the weight of the shingle, and particularly the butt portion, cannot be controlled with any reliable degree of accuracy or uniformity. Various other proposals pertaining to features of thickness of asphalt shingles are set forth at page 658 of "Asphalts and Allied Substances," fourth edition, by Herbert Abraham.

In the manufacture of shingles of this character it is important both to control the weight with substantial uniformity, and to provide a well defined shoulder or line of offset between the butt portions and the lap or background portions. Since the coating material is applied in a viscous or semi-fluid condition, it has been found to be difficult to obtain the desired difference in thickness between the butt and lap portions of the shingle, particularly when the coating material is applied in a single layer on the upper face. To attain the desired optical effect, practice has shown that this difference in thickness should run in the neighborhood of .05" and and that the step-up should be pronounced and angular.

According to the present invention, the saturated felt sheet is coated on both surfaces, each with a single layer of uniform thickness of molten asphalt coating material or other thermo-plastic

bituminous composition, preferably admixed with suitable fillers. The coating on the front face is molded or shaped to provide alternate thinner and thicker portions, however, before molding the coating on the upper face, the coating on the back is temporarily shaped with thicker and thinner portions in inverse relation and opposition to those subsequently formed on the front face. It has been found that this procedure greatly facilitates the formation of distinct shoulders or offsets between the portions of different thickness on the front face. After shaping the coating on the front face, that on the back is removed except for a uniformly thin seal coat. The coating on the front face while still plastic is covered with granules, the granules on the thicker and thinner portions being partially embedded in said portions respectively by separate pressing operations.

The invention will be understood from the following description thereof, reference being had to the accompanying drawings, in which:

Figs. 1 to 8 are cross-sectional views of a sheet of material illustrating, somewhat diagrammatically, various stages or steps in the method of manufacture of the shingles;

Fig. 9 is a perspective view of one form of thick butt shingle made according to the method;

Fig. 10 is a conventionalized view in elevation of a form of apparatus for carrying out the method;

Fig. 11 is a perspective view of portions of the apparatus shown in Fig. 10; and

Fig. 12 is a perspective view of the member of the apparatus that applies the coating of differential thicknesses to the back of the sheet.

Having reference now particularly to Figs. 1 to 8, 10 indicates a sheet or web of saturated felt of any desired weight, thickness, and width. A coating of asphalt or suitable thermo-plastic composition is applied to both faces of the sheet, the coating on the back being indicated by the reference character 11, and that on the front by the character 12, in the view illustrated in Fig. 2.

The coating on the back is then shaped to form alternate thicker portions 13 and thinner portions 14, as seen in Fig. 3. Next the coating on the front is shaped to form alternate thinner portions 15 and thicker portions 16, as shown in Fig. 4. It will be seen that the thicker portions on the back are opposite to the thinner portions on the front, and vice versa. The coating on the back is then levelled or evened, as indicated in Fig. 5, to leave only a uniform, thin coat 17 such as the usual seal coat on the back of prepared roofing shingles.

The thicker portions 16 of the front coat constitute the butts of the cut and finished shingles, one form of which is illustrated in Fig. 10, while the thinner portions 15 constitute the backgrounds, that is, the portions that are lapped when laid. The particular sheet illustrated represents a sheet of 36" width that is intended to be cut longitudinally into three strips each of 12" width, the lines of cutting being indicated by the lines A—A and B—B in Fig. 8. For this reason one of the thicker portions is made twice the width of the others. It is to be understood that the width of the sheet, as well as the width and shape of the shingles, may be varied since the method may be used to make thick butt shingles of a number of different forms.

After the coating on the front face of the sheet has been shaped, and that on the back partly scraped off, a layer of granules is deposited on the front coat, as depicted in Fig. 6. The granules 18 on the thinner portions may be of the same or of a different character from the granules 19 on the thicker portions. The former are usually of a cheaper grade, while the latter, which face the exposed portion of the shingles, are commonly of a better grade and generally colored. At this stage of manufacture the granules are not embedded in the coating.

The sheet is then subjected to two separate pressing operations by which the granules 19 are first partially embedded in the thicker portions of the coating, and then the granules 18 are partially embedded in the thinner portions. In this manner relatively sharp shoulders or lines of offset 20 are formed between said portions as indicated in Figs. 7 and 8. While it is preferred to press the granules in this order, the order may be reversed.

One form of apparatus for practice of the method is illustrated in Figs. 10 to 12. With use of this apparatus, the sheet of saturated felt 10 is led over guide rolls 21 and under a dip roll 22 through a coating pan 23 whereby coatings 11 and 12 are applied to the two faces of the sheet. The coated sheet as it emerges from the dip pan passes over a former or scraper 24 which may be cylindrical or of other shape, and which is formed with indentations or depressions 25 in its surface, see Fig. 12. This member shapes the back coating 11 into thicker and thinner portions 13 and 14.

The sheet then passes between two rolls 27 and 28, one above the other, both of which may be stationary, or the lower one may rotate. Bands 29 are positioned around the roll 27 at properly spaced intervals so that as the sheet passes between the rolls the coating 12 on the top or front face is molded or shaped with alternate thinner and thicker portions 15 and 16.

The member 24 is set adjacent the lower roll 28 with its indented portions 25 disposed opposite to the bands 29, so that the thicker portions 13 of the back coat will come under the subsequently formed thinner portions 15 of the top coat. The thicker portions on the back tend to raise the sheet against the bands 29 and thus to provide a more distinct offset or shoulder 20 between the thicker and thinner portions of the top coat.

The sheet progresses over a scraper edge 30 that removes all of the back coating save for a uniform, thin seal coat 17, and then passes under a hopper 31 and granule feed roll 32 by which a layer of granules is deposited across the width of the top face of the sheet. The hopper is preferably divided by plates 33 into compartments corresponding in number and width to the thicker

and thinner portions of the top coat so as to deposit the granules 18 and 19 on said portions respectively. The plates are set against the drum 34 to direct the return flow of excess granules into the hopper. A coating of mica or the like may be applied to the back coat 17 from a mica box 35.

The sheet then advances over rolls 36 and 37 to a press section where the granules 19 are partially embedded in the thicker portions 16 of the coating. One form of press section is shown in Fig. 10 comprising a drum 38 against which the face of the molded granulated surfaced sheet is pressed by an endless blanket 39 traveling on rolls 40. Any other suitable means, such as tension rolls, or press rolls, may be used for this purpose.

After passing over cooling drums 41 the sheet travels between press rolls 42 and 43 that operate to press the granules 18 into the thinner coating portions 15, and by which the shoulders 20 are sharpened. To these ends the upper press roll 42 is formed with portions 44 of enlarged diameter corresponding in width and position to the thinner portions 15 of the top or front coating.

Finally, the sheet after having been textured, if desired, and further cooled by passing over loopers or otherwise, is cut into shingles of the desired shape and size. The means for texturing, looping, and cutting the sheet are not shown in the drawings since they are well known in the art.

Thick butt shingles measuring 12" by 36" and having three tabs along the exposed edge may be made by the present method to weigh from about 205 to 210 pounds per "square," and with a differential in thickness between butt and background portions of about .05". As hereinbefore noted, variations in the shape, size, weight, and relative thickness of the parts may be made.

The term "shingle" and "shingles" are used throughout the specification and claims in a comprehensive sense to include strip-shingles or multiple-unit shingles as well as individual shingles.

What we claim is:

1. A method of making thick butt shingles which comprises applying a layer of bituminous coating material of uniform thickness to the face and back of a web of roofing felt, shaping the back coat to form alternate thicker and thinner portions, thereafter, while the web is supported on the thicker portions of the back coat, shaping the face coat to form alternate thicker and thinner portions having a sharp line of demarcation between them, said thicker portions of the face coat constituting the butts of the shingles and being disposed above the thinner portions of the back coat, and then removing the thicker portions of the back coat to leave a seal coat of uniform thickness on the back of the web.

2. A method of making thick butt shingles which comprises applying a layer of bituminous coating material of uniform thickness to the face and the back of a web of roofing belt, shaping the back coat to form alternate thicker and thinner portions, thereafter, while the web is supported on the thicker portions of the back coat, shaping the front coat to form alternate thicker and thinner portions having a sharp line of demarcation between them, said thicker portions of the face coat constituting the butts of the shingles and being disposed above the thinner portions of the back coat, then removing the thicker portions of the back coat to leave a seal coat of uniform thickness on the back of the web, depositing granules on the face coat, and

partially embedding the granules separately in the thicker and thinner portions thereof.

3. A method of making thick butt shingles which comprises applying a layer of bituminous coating material of uniform thickness to the face and the back of a web of roofing felt, shaping the back coat to form alternate thicker and thinner portions, thereafter, while the web is supported on the thicker portions of the back coat, shaping the front coat to form alternate thicker and thinner portions having a sharp line of demarcation between them, said thicker portions of the face coat constituting the butts of the shingles and being disposed above the thinner portions of the back coat, then removing the thicker portions of the back coat to leave a seal coat of uniform thickness on the back of the web, depositing granules on the face coat, pressing the granules partially into the thicker portions of the face coat, and then pressing the granules partially into the thinner portions.

4. A method of making thick butt shingles which comprises coating the face and back of a

web of saturated felt each with a single layer of bituminous material of uniform thickness, shaping the back coat to form alternate thicker and thinner portions, thereafter, while the web is supported on the thicker portions of the back coat, depressing the face coat at intervals across the width of the web to form alternate thinner and thicker portions having a sharp line of demarcation between them, the thicker portions of the face coat constituting the butts of the shingles registering substantially with the thinner portions of the back coat and the thinner portions of the face coat constituting the laps of the shingles registering substantially with the thicker portions of the back coat, then scraping off the thicker portions of the back coat to leave a seal coat of uniform thickness on the back of the web, depositing granules on the face coat, and partially embedding the granules in the thicker and thinner portions respectively of the face coat.

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