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METHOD OF SURFACING ROOFING MATERIAL

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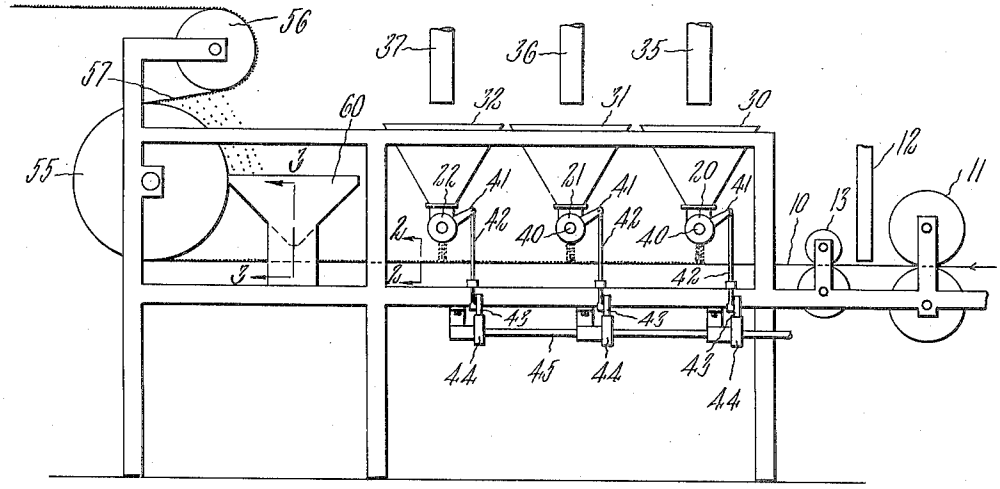


Fig. 1.

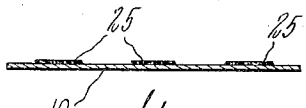


Fig. 2.

Fig. 4.

Fig. 3.

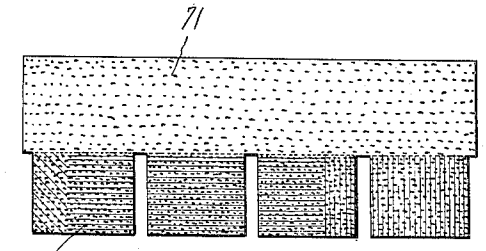


Fig. 5.

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METHOD OF SURFACING ROOFING MATERIAL

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5 Claims. (Cl. 91—68)

This invention relates to a method of applying granular surfacing material to a face of a sheet of roofing material or its equivalent.

It is an object of the invention to provide means for facilitating the manufacture of roofing elements such as strip shingles or individual shingles having areas of distinctive colors on the portion which is to be exposed to view when the element is laid with others in overlapping relation on a roof, and to provide for the economical employment of the surplus granular material which is deposited on such areas.

In manufacturing roofing units such as strip shingles, it is customary to saturate a sheet of roofing felt with asphalt of suitable characteristics. This saturated sheet is coated with an adhesive waterproof material such as blown or oxidized asphalt. While this coating layer is sticky, it is surfaced by the application of granular material such as crushed slate, sufficient of the granular material being partially embedded in the sticky asphaltic layer to form a practically continuous protective surface layer. In order to ensure the formation of such a surface layer, it is necessary to deposit on the coated face of the sheet an excess amount of the granular material. Where the surfacing material used on the sheet is of a single color, the excess grit which fails to adhere to the asphaltic layer is subsequently recovered and re-deposited upon the sheet so that there is substantially no loss of grit. Owing to a great demand for roofs of variegated colors, considerable quantities of roofing elements, such as strip shingles, are produced having on the exposed portions thereof areas of different distinctive colors, so that, when such roofing elements are laid upon a roof, the roof as a whole presents a vari-colored appearance. It is evident that, in order to produce areas of different distinctive colors on a roofing unit, it is necessary to apply separately to each area granular matter having the particular color desired for such area. This can be done with little difficulty, but, inasmuch as there must be deposited upon each such area more granular material than will adhere to the sticky face of the area, the problem of the ultimate disposition of the excess non-adhering granular matter from differently colored areas arranged longitudinally of the sheet has been a serious one since it is impractical to recover separately from each colored area the granular matter of the several colors. That is, in recovering loose grit from the surface of a sheet thus treated, the commingling of grits of the various colors cannot, as a practical matter, be avoided. It is an object of the present invention to utilize in a convenient and economical manner the commingled vari-colored granular matter recovered from the surface of a sheet of roofing material or the like. According to the invention, this object may be attained by depositing on predetermined areas of a sheet of sticky roofing grits of different colors for different areas comprising portions of the face of the sheet, recovering the excess non-adherent grit from these areas and depositing the recovered grit of commingled colors exclusively on the areas not previously covered.

For the protection of the outer face of a roofing unit, such as a strip shingle or individual shingle, it is desirable that the entire outer face, i. e. the face which is uppermost when the element lies on a roof, be entirely covered with grit or equivalent granular matter. However, as far as color effects are concerned, the only portion of the outer face of the roofing unit which matters is that portion which is exposed to view when the roofing element is laid with others in overlapping courses on a roof. Hence, according to the present invention, these portions of each roofing element may be treated differently from the portions of the element which are covered and hidden from view when laid. Thus the exposed portions of the roofing element are surfaced in such a way as to provide areas of distinctive colors, the commingled excess grit being employed to surface the covered or hidden areas of the roofing unit where the matter of color is of no importance. Furthermore, if desired, some of the mixed grit may be used on areas to be exposed to provide an additional color for such areas.

For a more complete understanding of the invention, reference may be had to the detailed description thereof which follows and to the disclosure thereof on the drawing, of which

Figure 1 is a side elevation of mechanism embodying the invention.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a section on the line 3—3 of Figure 1.

Figure 4 is a perspective view of a sheet of roofing material, together with portions of the apparatus illustrated in Figure 1.

Figure 5 is an elevation of a strip shingle made in accordance with the invention.

In the drawing, a sheet of roofing material is indicated at 10, this sheet being of any suitable material such as the customary roofing felt which has been impregnated with asphalt or other water-resistant material. The sheet 10 may be a

single continuous sheet or may be a series of separate blanks for roofing units laid edge to edge in a plane and supported suitably as by a conveyer belt (not shown). As employed in the specification and claims, the word "sheet" is intended to cover both an integral sheet of roofing or a composite sheet consisting of separate pieces of roofing arranged edge to edge. The sheet may be passed between a pair of rolls 11, and may be coated on its upper face with asphalt or other suitable waterproof material supplied as by a coating device 12. A spreading roll or doctor 13 may be provided to ensure an even distribution of the coating over the face of the sheet. The sheet then passes beneath a series of sets of spouts 20, 21 and 22. As indicated in Figure 4, each set of spouts may include a plurality of individual spouts spaced from each other across the width of the sheet, so that, if the spouts of any single set were continuously open, they would be capable of depositing on the traveling sheet 10 spaced bands 25 of granular matter or the like. The spouts, in addition to being alined in parallel lines across the sheet, are also alined in parallel rows extending in the direction of travel of the sheet so that all the spouts in any one row can deposit grit only on an area defined by one of the bands 25. Above the spouts are respective hoppers 30, 31, 32, these hoppers being supplied with grit or equivalent granular material as by suitable pipes 35, 36 and 37, respectively. Figure 4 illustrates three spouts in each set, but it is evident that a greater or lesser number may be employed. A single hopper may be employed for each set of spouts, or, if desired, a separate hopper may be provided for each individual spout. Thus the hoppers 30, 31 and 32 may extend from across the sheet 10 from side to side thereof. Each of these hoppers may hold grit of a single color, or may be divided with suitable partitions into compartments for grits of different colors. Grit may be intermittently showered from these hoppers on a sheet traveling therebeneath by any suitable mechanism such as that described and illustrated in Letters Patent No. 1,791,560 granted to Heppes on February 10, 1931, the mechanism for controlling the grit being per se no part of the present invention.

As indicated on the drawing, valves or equivalent closure means are provided for the several spouts. For convenience, the valves in the spouts of each series are mounted on a common shaft **40** so as to operate in unison. Each shaft **40** may be rocked by suitable mechanism such as a lever arm **41** which extends radially from the shaft **40** and is connected by a rod **42** to a cam follower **43** riding on a cam **44**, there being a separate cam for each of the shafts **40**. The cams **44** may be mounted on a common shaft **45** which is rotated by any suitable mechanism in synchronism with the driving means by which the sheet **10** is advanced. By means of the cams **44** and the apparatus operated thereby, the spouts **20**, **21** and **22** can be intermittently operated by their cams in such a manner as to cause the granular matter in the corresponding hoppers to be deposited in separate areas on the moving sheet, the areas of grit, formed by spouts which are alined in the direction of movement of the sheet, being contiguous so as to form a continuous grit band **25** on the surface of the sheet, as indicated in Figure 4. Thus each band **25** is composed of successive contiguous areas of different colors, the several bands **25** being spaced from each other by intermediate areas **50** on which no grit is deposited by the spouts 20, 21 and 22. The sheet 10 passes to a roll 55, which, as shown in preferable above and tangent to the direction of travel of the sheet so that the upper face of the sheet comes into contact with the surface of the roll. A guide roll 56 is provided so that the sheet is in contact with substantially half of the roll 55. Excess colored granular material, which is applied through the spouts 20, 21 and 22 to certain areas of the upper face of the sheet, falls clear of the sheet when the latter is inverted as at 57 in passing from the roll 55 to the roll 56. This excess grit, being non-adherent to the face of the sheet, falls into a suitable hopper 60 which extends across the sheet adjacent to the roll 55. Within this hopper are deflecting vanes 61 arranged over the stripes 50 on the face of the sheet. These deflecting vanes 61 thus cause the commingled excess grits of various colors from the inverted portion 57 of the sheet to fall exclusively on the previously coated areas 50 which have not been grit-surfaced by the spouts 20, 21 and 22. Thus the hopper 60 completes the grit surfacing of the coated face of the sheet 10 which was begun by the intermittently operating spouts 20, 21 and 22 so that the entire face of the sheet is covered with grit when it reaches the roll 55. As is evident from Figures 3 and 4 the deflecting vanes 61 in the hoppers 60 form a series of spaced spouts 65 which may, as shown, be constantly open, and which are laterally offset from the alined spouts in the series 20, 21 and 22. The width of the several spouts 20, 21 and 22 are such as to form bands 25 having a width equal preferably to twice the height of the exposed portion of the roofing element which is to be cut from the sheet. The bands 50 between the bands 25 are preferably of a width equal to twice the height of the portion of the roofing unit which is to be overlapped when on the roof. Thus, if the sheet **10** is to be cut into multi-tab strip shingles of convenient shape, suitable slots **65** may be cut across each band **25** to form cut-outs in the finished strip shingle which will define the shingle-simulating tabs along the weather edge of the strip shingle. The operation of the spouts **20**, **21** and **22** can be synchronized with the operation of the slot-cutting mechanism in such a manner that the slots will coincide with the color boundaries between successive color areas in each of the bands **25**. In such case each tab of the strip shingle will present a single solid color area. On the other hand, the color areas may be formed without regard to the location of the slots which either have been or are to be cut in the sheet, in which case the resulting strip shingle may have some such appearance as that indicated in Figure 5.

After the slotting operation, the sheet **10** may be longitudinally slit, some of the slits **66** being cut so as to intersect the rows of slots **65**, other slits **67** being cut on the median lines of the bands **50** between successive bands **25**. The strip shingles may then be severed from the sheet as by transverse cuts **68**. It is evident that the strip shingles thus cut from the sheet will be substantially as illustrated in Figure 5, the exposed portion of the strip shingle having areas of distinctive colors thereon, the upper or covered portion **71** being surfaced with grit in which the colors are commingled. The particular shape of roofing element illustrated in Figures 4 and 5 is by way of illustration only, it being evident that the process of the invention can be similarly employed in the manufacture of individual shingles or multiple shingles of other shapes, the inven-

tion being characterized by the application of differently colored granular material to form areas of different colors on the exposed portion only of the roofing element, and the application to the covered portion of the roofing element of granular material of commingled colors consisting of excess material recovered from the differently colored areas.

The invention may also be applied to the manufacture of cross-cut strip shingles from sheet roofing, as by depositing different grits of different colors in longitudinally extending, spaced bands or lanes on the face of the sheet, each band or lane preferably consisting of successive areas of different colors, recovering the excess grits and depositing the recovered grits of commingled colors exclusively on the intervening bands or lanes to complete the surfacing of the sheet, the sheet being thereafter cut transversely to form shingles or other equivalent roofing units. In such roofing units, some of the exposed areas would show the mixed or neutral color which would be different from any of the colors originally applied and which would therefore add to the variety of colors exhibited by the roofing units when laid.

It is evident that various modifications and changes may be made in the method and apparatus described without departing from the spirit or scope of the invention as defined in the following claims.

I claim:

1. A method of applying colored granules to asphaltic roofing, which comprises depositing on said roofing spaced parallel bands of colored granules so as to form areas of different colors, collecting and mixing the excess granules from the spaced bands, and depositing the collected granules exclusively on the remaining areas of said roofing adjacent to said bands.

2. A method of applying colored granules to asphaltic roofing, which comprises depositing on said roofing spaced parallel longitudinal lanes of granules, each of said lanes having areas of different colors, collecting and mixing the excess granules from the spaced lanes, and depositing the mixed excess exclusively on the areas adjacent to said lanes.

3. A method of applying colored granulated surfacing material to asphaltic roofing, which comprises depositing an excess of surfacing material of different colors on predetermined areas of only those portions of the roofing which are to be exposed to view when laid on a roof, removing from said areas only the granules non-adherent thereto, and mixing and applying the removed granules to the remaining areas of said roofing.

4. Steps in a method of making asphaltic roofing elements, which comprise advancing a sheet of adhesively coated roofing material, depositing an excess of granular surfacing material of different colors on predetermined areas only of the portions of said sheet which are to be exposed to view when the roofing elements cut therefrom are laid on a roof, progressively depositing on the remaining areas only of said sheet mixed granules recovered from preceding portions of the sheet, pressing the granular matter against the face of the sheet, and recovering from the pressed face of the sheet and mingling together the non-adherent granules thereon.

5. Steps in the method of making roofing elements, which comprises advancing a sheet of adhesively coated asphaltic roofing material, showering on parallel spaced areas of said sheet excess granular grit of different colors so as to form bands consisting of successive contiguous patches of distinguishing colors, said bands alternating with bands of adhesive surface, collecting and showering the excess grit on the bands of adhesive surface to complete the surfacing of the adhesive face, pressing the surfaced sheet, recovering the loose granules from the pressed face for recirculation, splitting the sheet along the median line of each of said bands, and severing individual elements from the slitted sheet.

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