This invention relates to thick butt sealed edge roofing elements and to a method of producing them.

Previously, attempts have been made to apply bitumen to the raw cut edge of shingle elements for the purpose of sealing them against deterioration by the weather. Such attempts are open to the objection that the coating as applied to the edge creeps or extends over the surface of the blank so that a black line is left, or if slatted, the coating at the extreme edge is too thin to hold slate satisfactorily, so that a distinct demarcation is observed between the original and second layer of coating. This cannot be eliminated only when the coating as applied to seal the edges is continuous and applied simultaneously with the coating for the weather surface so as to be an integral part thereof.

Another type of application involves the production of strip shingles in which the coating is applied to form a complete envelope about the butt so as to form a coating around the edges continuous with the coating on the weather face. This may be accomplished in various ways as by immersion in a bath of the coating material or otherwise. Such type of treatment is applicable only to shingles having rectangular butts, but is not applicable to that type of strips wherein a portion of the body, complementary to the tab, is exposed to form a geometrical design, as in the case of strips formed with equi-spaced semi-hexagonal tabs. This is so because the coating as applied by dipping would necessarily cover the entire area dipped instead of only those portions exposed to the weather.

I have discovered a very simple method whereby strips formed with tabs of such shape as to produce, when laid with other similar strips, hexagonal and other well known designs, can be treated in a manner such that only the exposed surface of the strip is coated and surfaced to produce a heavy shingle with its edges sealed by a layer of coating continuous with the coating which has been applied to the weather surface. At the same time, the strips produced according to my invention are extremely attractive.

The process of producing elements according to my invention and the elements so produced will be more fully understood from the following description and the drawings of which.

Figure 1 illustrates one method of arranging the strips for the coating and surfacing operation;

Figure 2 represents a finished element made according to the method illustrated in part by Figure 1;

Figure 3 illustrates a slightly different method of arranging the elements for the coating and surfacing operation;

Figure 4 represents a finished element produced by the arrangement as shown in Figure 3;

Figure 5 illustrates the method of carrying out the invention in conjunction with shingle strips of a design differing from Figure 1;

Figure 6 represents a finished element made according to the arrangement shown in Figure 5;

Figure 7 is a slightly different modification of the elements shown in Figure 6;

Figures 8 and 9 illustrate the appearance of the elements shown in Figures 6 and 7 respectively when laid on a roof;

Figures 10 and 11 illustrate one type of shield which may be used in conjunction with my invention;

Figure 12 is a plan view illustrating another type of shield which may be used to block out the portions of the shingle which is not desired to coat;

Figure 13 is a view looking underneath the shields of Figure 13;

Figure 14 is a diagrammatic side view of a portion of the shield device of Figure 13;

Figure 15 shows in perspective the individual shield elements shown in Figure 14.

Referring to Figure 1, numerals 1, 2, 3 and 4 represent a plurality of overlapping elements laid in a manner ready to be coated and surfaced. The superjacent element 2 is staggered in relation to the subjacent element 1 so that the butt edges 5 are in vertical alignment and parallel to the bottom edges 6 of the body portion 7 of the element 1. If desired, the edges 5 may be spaced a small distance from the edges 6. The element 3 is likewise staggered in relation to subjacent element 2 so that the tabs 8 are in vertical alignment with the tabs 9 of element 1. The bottom edges 10 of the tabs 8 are likewise spaced a small distance from the bottom edges 11 of the body portion of element 2. The elements are thus arranged in overlapping relation in a continually advancing series, or a plurality of such series of overlapping elements may be thus arranged side by side for conveying them through the coating and surfacing operation. A shield made of any suitable material such as metal or fabric sheet conforming in shape and size to the light shaded portions 12 and 13 is laid over these portions to prevent them from being coated and surfaced. The shielding device can
be either a form or template which is applied manually or may be a series of plates attached to a link belt travelling in the direction in which the elements travel on a conveyor belt. The elements are preferably placed in overlapping relation on a moving belt so as to make the operation continuous. The shingle strips are placed on the conveyor, by any suitable mechanical device, in spaced relation and held in place by pins on the conveyor belt and by the pressure of the shield travelling of the elements. The operation can be made intermittent by having forms of suitable length operating manually or mechanically so as to flap into position on the overlapped elements when the conveyor stops. The coating will then be done while the conveyor is motionless. After a group of elements have been coated the shields may be removed and the conveyor started in order to bring another group of elements into operating relation with the shields.

Referring to Figures 10 and 11, the numeral 15 indicates a conveyor belt on which the elements 16 are arranged in staggered overlapping relation ready to be coated and surfaced; 17, stationary rods upon which the sleeves 18 are rotatably mounted. The shields 19 are rigidly attached to the sleeves 18. The edges 20 conform to the zig-zag line denoting the demarcation between the surface to be coated and the end portions to be left uncoated. The shields are actuated by means of bars 21, acting through levers 22 and 23 and pins 24. It will be apparent that these shields may be operated manually or mechanically. If the shields are stationary, that is, have no longitudinal motion, they will have to be operated intermittently in coordination with the conveyor belt. If desired, the shield can be arranged to slide on the roll 17 to a suitable distance and then be lifted and returned to their initial position thereby enabling the operation to be carried on continuously. Figure 11 shows a shield after it has been lifted clear of a series of shingle strips.

Referring to Figure 12, the numerals 26 and 27 represent link chains, composed of links 28, 29, 30, 31, 32, 33, 34, located at opposite sides of the conveyor belt 15, adapted to travel over sprocket wheels not shown. Each link has attached thereto a shield 35 shaped to conform to the area of the sides of the overlapping shingle strips which are not to be coated. Each shield is attached to the chain by means of a pin 36, upon which the shield is free to rotate. Pins 37 and 38 are placed on each side of each shield to prevent the shield from turning. The chain is caused to travel at a distance above the conveyor belt such that the shields firmly contact with the overlapping shingle strips and hold them in place. The average speed of the conveyor belt. Each shield is thus caused to register with the portion along the side of the shingle strip which it is not desired to coat. It is apparent that if they do not register they can be made to do so by varying the speed of either the belt or the chain. By using this type of shield the operation can be made continuous.

By providing shields along the edges, the coating material which is preferably asphalt in melted state, is spread over the entire surface of the shingles which is not blocked out by the overlapping shingle and the shields. This can be done by a spray or other suitable mechanism to provide the desired thickness of coating. Emulsified asphalt of the character which produces on drying a non-flowing film may be similarly employed and operates advantageously both on account of ease of application and the excellent weather resistant and fire protecting properties of this type of coating.

The strips while still in overlapping relation are then passed under a surfacing device which spread granular material upon the asphalt coating on the exposed surface of the overlapping elements. The elements are thereafter separated either manually or by conveying mechanism and passed under pressure rolls to cause the granular material to adhere firmly to the elements. In this manner elements are produced which have designs formed by the tab and a portion of the body complements the tab as shown at 29 in Figure 2. When the overlapping arrangement is as shown in Figure 1, a strip along the lower edge of the body portion 40 also receives a layer of coating and surfacing material. This strip serves as additional protection at the points of overlap and also causes the butt ends of the element to appear thick and thereby add to the attractiveness of the roof. By coating and surfacing in this manner all the exposed edges of the elements are sealed and substantially only those of the body portion 41 of the element are coated and surfaced and the coating is continuous over the edges and exposed surface.

If it is desired to produce elements without the strip 40, the elements may be overlapped in the same manner as shown in Figure 3. Here the outer lower edges of the tabs and the lower edges of the body portion 41 of a subjacent element are coincident. The elements are staggered in the same manner as described in reference to Figure 1. In either case the elements as laid on the roof have the appearance shown in Figure 5. The finished element is shown as an element in Figure 3. The elements are coated and surfaced by the arrangement of Figure 3, have the appearance shown in Figure 4. The exposed portion of the shingle 42 will be thicker than the body portion 43 and may differ in color therefrom. An element of different design is shown in Figure 6. This element is made in substantially the same manner as shown in Figures 1, 2 and 4. Referring to Figure 6, the elements 44, 45, 46 and 47 are staggered in relation to each other so that the lower edge 49 of each tab is coincident with the inner edges 50 of the notches 50 of the subjacent tab. As set forth in connection with Figure 1, shields conforming in shape and size to the light shaded areas 51, 52, are placed over these areas in order to prevent coating material from adhering thereto. Coating and surfacing is then done in the same manner as described with reference to Figure 1. The finished element will have the appearance shown in Figure 6, having a portion of the body 53 coincidental to the tab 54 to give the desired design. The tongues 55 which will be exposed when the shingles are laid, are formed by coating material adhering to the body areas exposed beneath the notches 50 of succeeding overlapping strips. If it is desired to produce a shingle of this design without tongues, as shown in Figure 7, a shield conforming in shape to the light shaded area 56 can be placed over the strip and the strip then coated and surfaced.

Figure 8 shows the appearance of the elements shown in Figure 6 as laid upon a roof.

Figure 9 shows the appearance of elements made according to Figure 7, when laid in successive courses on a roof. As will be seen, the area...
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57 exposed under the notches will be of different color than the remainder of the area. The manner of laying these shingles is well known in the art and requires no detailed explanation.

It is obvious that many other designs can be produced in this manner. For example, elements with tab-defining notches and rectangular butts can be arranged in staggered overlapping relation to produce shingles with tongues extending into the body portion intermediate the notches. My method provides a rapid and convenient way of producing desirable designs on roofing elements while at the same time providing thickened exposed areas and sealing the exposed edges to prevent deterioration. By operating according to my method, only those portions of the elements which are to be exposed on the roof receive additional coating and surfacing, thereby enabling the product to be produced economically, with the optimum amount of asphalt and granular mineral applied to the portions of the strip which are exposed and unexposed to the weather.

The portions of the shingle which are not exposed when laid on the roof are preferably covered with a thin coating of asphalt while the exposed portions are covered with a comparatively thick coat. The unexposed portions may not be surfaced with granular material or may be surfaced with granular material of fine mesh. The granular material on the exposed portions will be coarser than that on the unexposed portions and may, if desired, differ therefrom in color. I claim as my invention:

1. The method of treating asphalt coated and mineral surfaced roofing elements of the type having body portions and tabs extending therefrom, said tabs being separated by spaces complementary to the tabs, comprising additionally coating the exposed surface of said tabs and portions of the body constituting substantially mirror images of said tabs with bituminous coating material, said coating extending over the cut edges of said tabs and being continuous and integral with said coating on the surface, and additionally surfacing the said coating with comminuted material.

2. The method of treating asphalt coated and grit surfaced shingle strips of the type having body portions and projecting tabs separated by spaces complementary to the tabs, which comprises overlapping a plurality of said strips in laterally staggered relation whereby to block off all but the tabs and areas of the body portions of the strips constituting substantially mirror images of said tabs, applying additional coating to the surfaces of said unblocked areas, said coating extending over the cut edges of the tabs and surfacing the thus coated areas with comminuted material.

3. A roofing element, composed of flexible fibrous material, saturated and coated with asphalt and surfaced with granular material, said element having a body portion and tabs extending therefrom, said tabs being separated from one another by spaces complementary to the tabs, said elements having an additional coating and surfacing layer on each tab and on localized portions of the body thereof constituting substantially mirror images of said tabs, the exposed edges of said elements being sealed with coating constituting an integral part of said additional coating on the tabs.

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