Aug. 10, 1937. J. A. TOPPING 2,089,312

COVERING MATERIAL

Filed July 25, 1933 2 Sheets-Sheet 1

Fig. 1.

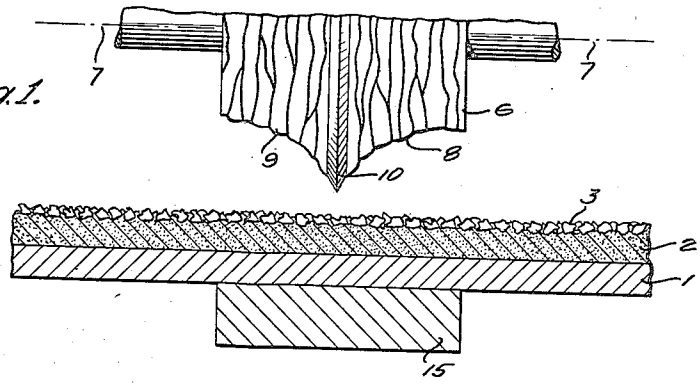


Fig. 2.

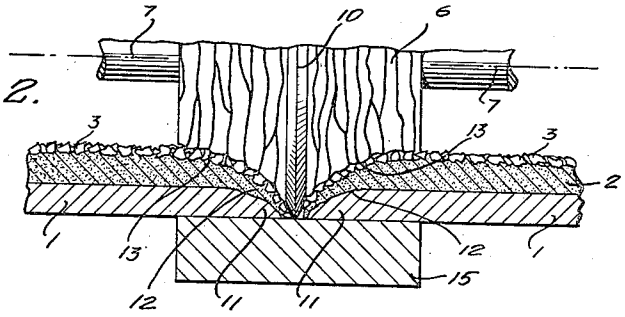
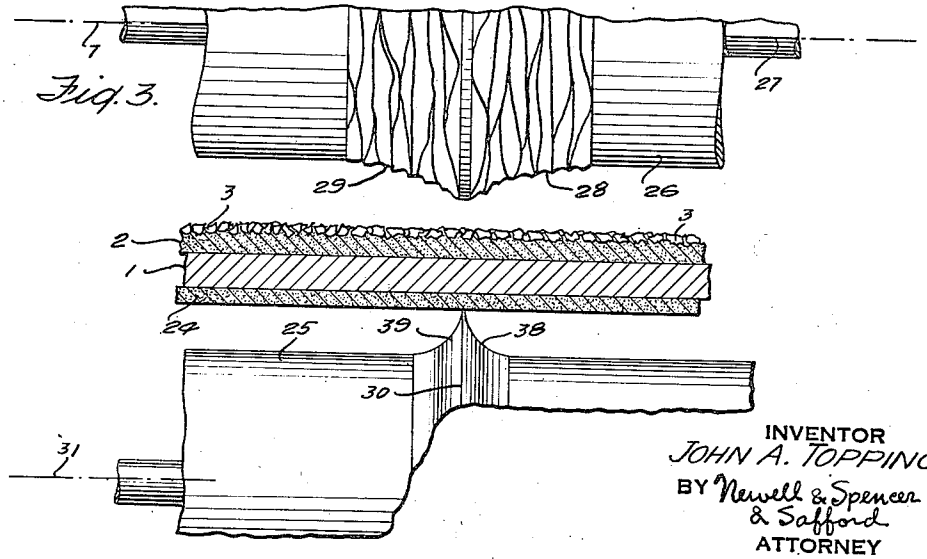


Fig. 3.



INVENTOR
JOHN A. TOPPING
BY Newell & Spencer & Safford
ATTORNEY

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Filed July 25, 1933 2 Sheets-Sheet 2

Fig. 4.

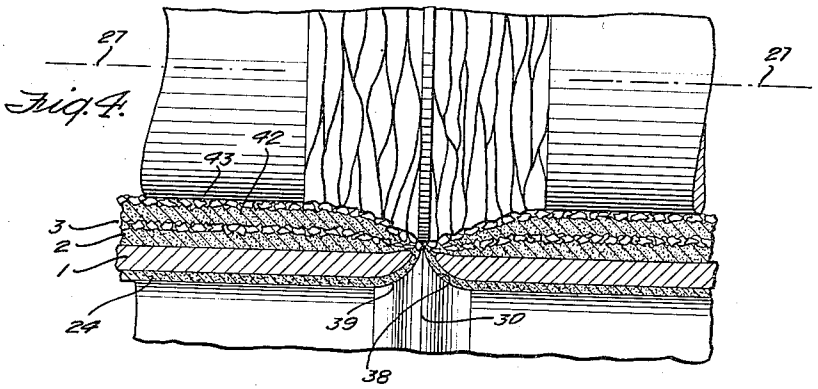


Fig. 5.

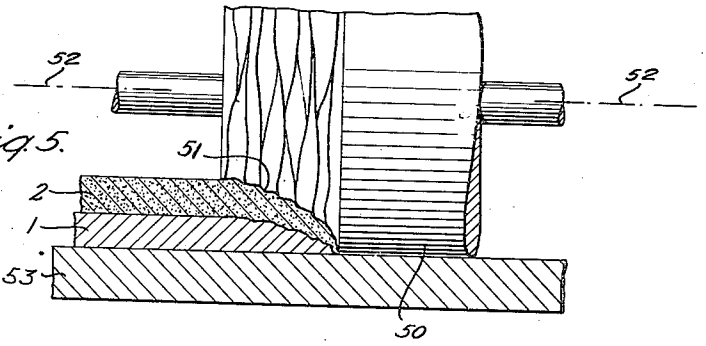
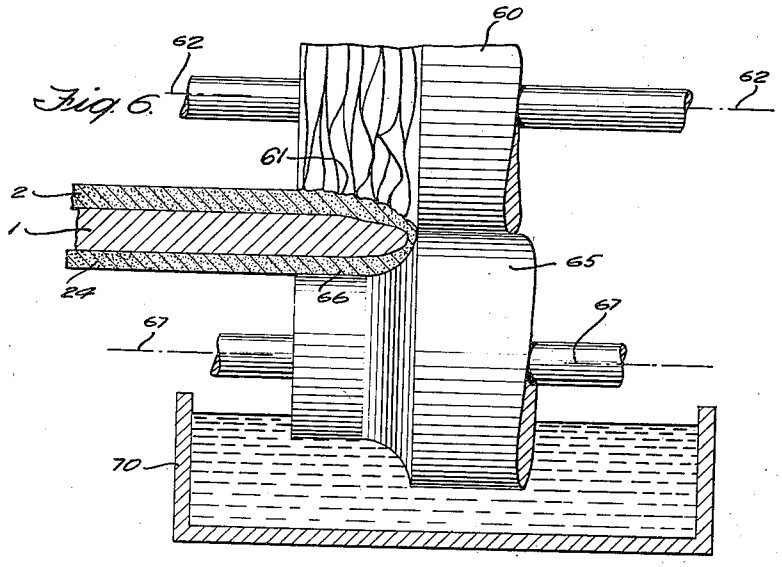


Fig. 6.



INVENTOR
JOHN A. TOPPING
BY Newell & Spencer & Safford
ATTORNEY

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UNITED STATES PATENT OFFICE

2,089,312

COVERING MATERIAL

John A. Topping, Bronxville, N. Y.

Application July 25, 1933, Serial No. 682,113

10 Claims. (Cl. 91—68)

This invention relates to elements for covering a surface and more particularly to shingles or shingle simulating units. The invention finds particular application in the manufacture of covering elements having a fibrous base with a water proofing coating thereon.

Covering elements, shingles and shingle strips heretofore have been produced by saturating a base of fibrous material and applying thereto a coating of plastic or of mastic material to make the covering weather proof and to provide one which is adaptable for surfacing in simulation of shingles of natural material such as wood or slate, as well as other construction material such as brick and masonry. Many attempts heretofore have been made also to simulate covering units of natural materials which have a thick butt for exposure in courses in overlapping arrangement, including covering elements and shingles tapering in thickness from the butt to the end or edge thereof to be overlapped by superimposed course. Such elements as heretofore produced have required special methods to produce the thick butt while using the fibrous base materials and plastic or mastic materials applied thereto. Such methods are expensive and require special care in the application of the materials to the base.

An object of the present invention is to produce a covering element the edge of which is so formed as to give the effect of a thick butt without substantially increasing the thickness of the materials applied to the base.

Another object of the invention is to produce an element formed to simulate the thick butt of a shingle while at the same time providing a sealing of the edge to be exposed of the element by the plastic coating.

A further object of the invention is to provide for the accentuation of the appearance of a thick butt by the production of a shadow or so-called shadow line by suitable formation of the base at the edge thereof.

Another object of the invention is to provide a method of producing the elements of the invention.

A still further object of the invention is to provide an apparatus for producing the elements of the invention.

To produce the shingle of my invention I provide a base material which is compactible or compressible. Such a base may be the usual base of fibrous material used in the manufacture of roofing and roofing elements, although within the scope of my invention other materials of compactible character may be used. The base, however, preferably should have such a coherence or interaction of its constituents as to retain its integrity upon being deformed and compacted or upon being flexed to form the covering element. Moreover, it should be of such materials as may be severed without great difficulty. Material such as the rag felts used in the roofing industry and felts and base materials formed of other fibres may be suitable. These materials are capable of being saturated with plastic or mastic materials or bituminous materials such as asphalt and also are capable of retaining upon their surface a coating of the mastic material, such as asphalt, as a weather proof coating and as a binder to bind upon the base wear-resisting materials such as granular slate or other granular surfacing material.

According to my invention I so press or compress a material of the type above described that the base is compacted without unduly reducing the amount or thickness of the coating applied thereto. I thus may deform a portion of the base without destroying or substantially reducing the protection afforded by the plastic coating while obtaining a form of said deformed portion such as will have a surface sufficiently transverse to the face of the coated covering to present the appearance of the edge of a covering or covering element of considerable thickness. I so carry out the method of compacting the base with a coating of the plastic material thereon that the plastic material is not pressed away from or spread upon the compacted area but is for the most part retained thereon and confined thereto. This I do by the confining action of the forming device which will be more clearly understood by the detailed description of the invention in connection with the drawings.

Other features of the invention including the severing of the sheet while carrying out the compacting and forming processes referred to above, will also be more clearly understood from the description to follow in connection with the figures of the drawings in which:

Figure 1 shows a coated base placed below a forming roll before compacting and cutting of the sheet.

Figure 2 shows the compacted base upon completion of the compacting and cutting operation with the forming roll against the surface thereof.

Figure 3 shows a coated sheet arranged between a forming roll on one side to form the surface thereof to be exposed and a forming and cutting roll on the opposite side of the sheet to

cut through the base and form the underside thereof.

Figure 4 shows a sheet formed on the upper side and cut through from the underside with the base formed at the cut edge.

Figure 5 shows a modified form of the forming roll.

Figure 6 shows a further modification and adaptation of the forming rolls.

In Figure 1 the compactible base is shown at 1. This base may be of fibrous material such as rag felt referred to above and may be saturated with a bituminous material such as asphalt. Upon the upper face of the base is applied a coating 2 of asphalt or similar plastic material to which adheres a layer 3 of granular surfacing material such as slate. Within the scope of my invention the thickness of the base 1 and of the coating 2 of plastic material and of the surfacing layer 3 may be such as are normally used in producing weather proof coverings or roofing materials. If desired, however, the thickness of the base 1 and of the coating 2 and of the layer 3 or any of them may be made greater than that normally used, the better to simulate elements of greater thickness such as thick butt shingles.

At 6 in Figure 1 is shown a forming roll which may be arranged to turn upon an axis 7. The meridian contour of the surface of the roll is shown in irregular outlines 8 and 9. At 10 is shown a cutting or severing edge raised above the contours 8 and 9 so as to sever the base when the roll 6 is pressed upon the sheet to compact the base and to form the portion thereof adjacent the edge of the severed sheet.

In Figure 2 the compacted portions of the base are shown at 11 and the plastic coating thereon is shown at 12, the granular surfacing material being shown at 13. The compacted portion of the sheet at the right-hand of the cutting edge 10 of Figure 2 has the coating 12 thereon of substantial thickness, the surfacing material 13 being not materially forced into the plastic coating. At the right-hand of the cutting edge 10 it will be noted that to some extent the meridian contour of the roll 6 is such that the surfacing material 13 is depressed in the plastic coating. The plastic coating 12, however, is retained in substantial thickness upon the compressed or compacted portion 11 of the base material.

The compacting and cutting operation may be carried out by moving the sheet 1 in a direction at right angles to the plane of the drawing in Figure 2 under the cutting roll 6 turning on the axis 7 and placing the sheet 1 against a counterplate 15. If desired, in place of the counterplate 15 a roller may be substituted against which at the point of its contact with the roller 6 may press the moving sheet 1. It thus will be seen that the operation of compacting and severing the sheet to produce the compacted edge portions may be carried out as a continuous process.

In many cases it is advantageous to use the method described in connection with Figures 1 and 2 in which the base is compacted by a combined forming and cutting roll which simultaneously compacts the base and cuts through the sheet while confining the plastic coating upon the compacted portions so as to prevent spreading thereof which would result in a thinning of the coating. In other cases I may use a forming roll on one side of the sheet to produce the compacting of the base and to confine the plastic coating upon the compacted portions and I may sever the sheet from the side opposite to that to which the compacting roll is applied. The second method not only has the advantage, in the case of mineral surfaced coverings, of avoiding applying the cutting edge 10 to the abrasive mineral surfacing upon the sheet which results in dulling the cutting edge 10, but also makes it possible to produce coverings embodying other features of the invention referred to above and illustrated in Figures 3 and 4. These features will be more clearly understood from the description to follow:

In Figure 3 the forming roll is illustrated at 26 having meridian contours 28 and 29. This roll, similar to the roll 6 of Figures 1 and 2 may be mounted upon a suitable shaft or other support to revolve about an axis 27. In Figure 3 the roll 26 is shown lifted clear of the sheet of material to be compacted. This material consists of a base 1 upon which is applied a plastic coating 2 having a surfacing layer 3 of granular material. Preferably on the material illustrated in Figure 3 is applied upon the lower side thereof an additional coating 24 of plastic material which may serve to seal the underside of the base but also has a function which will be apparent from the description to follow:

Upon the roller 25 suitably mounted to turn upon its axis 31 is provided a cutting edge 30. At either side of the cutting edge 30 are provided forming surfaces having meridian contours 38 and 39. The roller 25 is suitably positioned with respect to the roller 26 on the opposite side of the sheet so that the cutting edge 30 of the roller 25 is substantially opposite the high point or portion of the meridian contours 28 and 29 of the roller 26.

By suitable means the roller 26 is applied to the side of the sheet to which adheres the granular surfacing material in such a way as to produce the compression of the base and the confinement of the plastic coating upon the compressed portions thereof so as to prevent substantial spreading of said coating. At the same time on the opposite side of the sheet is applied the cutting edge 30 which not only cuts through the base material when the sheet is passed between the bight of the two rolls 25 and 26 but also serves to form the base 1 and its coating 24 on the underside thereof in accordance with the contours 38 and 39 of the cutting roll 25. Upon completely severing the sheet by the action of the rollers 25 and 26 the base 1 will be turned up at the severed edge but will be covered upon said turned up edge with the plastic coating 24 as shown in Figure 4.

This turned up edge of the base serves not only to accentuate the appearance of the thick butt elements but also serves to present a "shadow line" effect which in many cases is desirab'e in covering units. It is a feature of the invention that this "shadow line" effect and this thick butt simulation is accomplished without destroying the protection of the plastic coating upon the surfaces to be exposed, including in the particular embodiment of the invention shown in Figure 4, the exposed underside of the covering.

The compacting of the base is accomplished in the embodiment shown illustrated in Figures 3 and 4 in the same manner as that illustrated in Figures 1 and 2 and a substantial thickness of the plastic coating is retained upon the surface of the compacted or compressed portions of the base. The action of the forming roll 26 in cooperation with the cutting and forming roll 25 is such that the severed edge of the base may be substantially surrounded by the plastic coating and said sev-

ered edge may thus be sealed against the action of the weather in the same manner that the faces of the base are sealed by the plastic coatings thereon.

It will be noted that in Figure 4 is illustrated a covering having a base 1 with a coating 2 of plastic material thereon and a layer 3 of granular surfacing material adhering to said coating 2. The covering shown in Figure 4 also has applied to said granular surfacing material a second coating 42 of plastic material applied to said layer 3 of granular material. Upon said second coating 42 is applied a second layer 43 of surfacing material such as granular slate. The compacting process described above in connection with Figures 1, 2 and 3 may be carried out in connection with a covering of the type illustrated in Figure 4 having the second plastic coating and the second layer of surfacing material. The process of confining the plastic coating upon the compacted areas so that it will not be spread out and substantially reduced in thickness, being confined between the contours 28 and 29 of the roll 26 and the formed surfaces 38 and 39 of the roll 25, may be carried out with the double coated and surfaced covering material shown in Figure 4 as well as in the single coated and surfaced material illustrated in Figures 1 to 3.

It will be understood that it is within the scope of the invention to utilize a forming roll 50 such as shown in Figure 5 which is provided with a meridian contour 51, said roll being arranged to revolve upon an axis 52, but which is without the cutting edge 10 shown in Figures 1 and 2. A suitable backing plate 53 placed thereunder may be used to compact the base and to form the edge of an element or a covering, previously severed from a sheet, by pressing the edge of said element or covering against the contour 51 while resting upon the backing plate 53. Similarly as shown in Figure 6 the compacting and the formation of the edge may be accomplished by pressing the edge of an element or of a covering sheet against a pair of rolls 60 and 65 turning respectively upon axes 62 and 67 as illustrated in Figure 6 in which the roll 60 provides by its contour 61 the compacting and the forming of the exposed edge of the element and the roll 65 provides by its contour 66 for turning up and exposing the underside of the exposed edge of the base as described in connection with Figure 4.

If desired the coating 24 illustrated in Figures 4 and 6 may be applied to the turned up edge of the covering or element by running the roll 66 in a bath of material contained in a vat or tank 70, such as heated asphalt which when cool assumes a plastic state. However, this coating upon the underside of the turned up edge may be applied by other methods and means such as spraying the turned edge as it is formed. The coating applied on the underside and on the turned up edge may be covered with a mineral material such as ground clay, slate-like substances, mica, soapstone or other materials which are commonly used to prevent the plastic coatings from sticking to the materials which they touch. In some cases, however, it will be desirable to omit the mineral surfacing so that the superimposed element having a coating 24 upon the underside thereof may adhere more readily to the subjacent element or to the surface upon which it is laid.

Having thus described my invention, I claim:

1. The process of producing a covering material which comprises coating a compactible base material with a coating of plastic material and so compacting a portion of said coated base along the edge to be exposed in the completed covering as to maintain a substantial thickness of the coating upon the surface of said compacted portion of the base, also coating the underside of the said ultimate edge portion of said material and bending said coating into meeting relation to the exposed coating at said edge.

2. The process of producing a covering element which comprises the steps of coating a compactible base material with a coating of plastic material, so compacting a portion of said coated base along the ultimate exposed edge thereof as substantially to maintain the thickness of the coating upon the surface of said compacted portion of the base, coating and indenting the opposed face of said ultimate exposed edge portion of said material and cutting said base in said coatings portion to form the element with said compacted meeting upon the edge to be exposed of said element.

3. The process of producing a covering material which comprises coating a base sheet with a plastic coating, pressing said plastic coating to produce therein depressions to simulate the form of the edge of a covering element of natural material, and cutting said base adjacent the portion thereof on which the depressions in the coating are made, said cut being made from the side of the sheet opposite the face upon which said coating is applied.

4. The process of producing a covering material which comprises coating a base sheet with a plastic coating, pressing said plastic coating to produce therein depressions to simulate the form of the edge of a covering element of natural material, and cutting said base adjacent the portion thereof on which the depressions in the coating are made, said cut being made from the side of the sheet opposite to the face upon which said coating is applied, and forming the portion of said base adjacent said cut to turn said portion toward the coated face of the covering material.

5. The process of producing a covering material which comprises coating both faces of a base sheet with a plastic coating, pressing said plastic coating on one face to produce therein depression to simulate the form of the edge of a covering element of natural material, cutting said base adjacent the portion thereof upon which is the coating having the depression therein, said cut being made from the side of the sheet opposite to the face upon which is the coating having the depressions therein, and forming the base and the coatings thereon to turn up the cut edge thereof toward the face having the depressions in the coating to expose a portion of the opposite face adjacent the edge of the element.

6. The process of producing a covering element which comprises coating both faces of a base sheet with a plastic coating, pressing said plastic coating on one face to produce therein depressions to simulate the form of the edge of a covering element of natural material, cutting said base adjacent the portion thereof upon which is the coating having the depression therein, said cut being made from the side of the sheet opposite to the face upon which is the coating having the depressions therein, forming the base and the coatings thereon to turn up the cut edge thereof toward the face having the depressions in the coating to expose a portion of the opposite face adjacent the edge of the element, and

squeezing the plastic coatings over the turned up cut edge to seal the same.

7. Process of forming the edge portion of a sheet of covering material having a plastic coating thereon which comprises passing said edge portion between a roller having a design impressing form upon a portion thereof and a backing member to hold the sheet against said design impressing portion of the roller while moving said edge portion under said roller lengthwise of said edge of the sheet and so pressing the sheet into the space between the roller and the backing member as to impress the design in the plastic coating while preventing substantial spreading of the plastic coating.

8. Process of forming the edge portion of a sheet of covering material having a base with a plastic coating on each side thereof which comprises pressing said edge portion between a roller having a design impressing form upon a portion thereof and a backing member to hold the sheet against said design impressing portion of the roller while moving said edge portion under said roller lengthwise of said edge of the sheet, and so squeezing said edge portion between said roller and said backing member as to force said mastic coatings together to seal the end edge surface of the base material of the sheet.

9. Process of producing a covering material which comprises the steps of forming the edge of the covering material in such a way as to turn up said edge toward the face to be exposed of said covering material to expose the underside of the edge portion of the material, applying to said underside of said turned up portion of the material a coating of plastic material.

10. Process of producing a covering material which comprises the steps of forming the edge of the covering material in such a way as to turn up said edge toward the face to be exposed of said covering material to expose the underside of the edge portion of the material, simultaneously applying to said underside of said turned up portion of the material a coating of plastic material, and then applying to said coated underside of the turned up portion of the material a layer of wear-resisting surfacing material.

JOHN A. TOPPING.