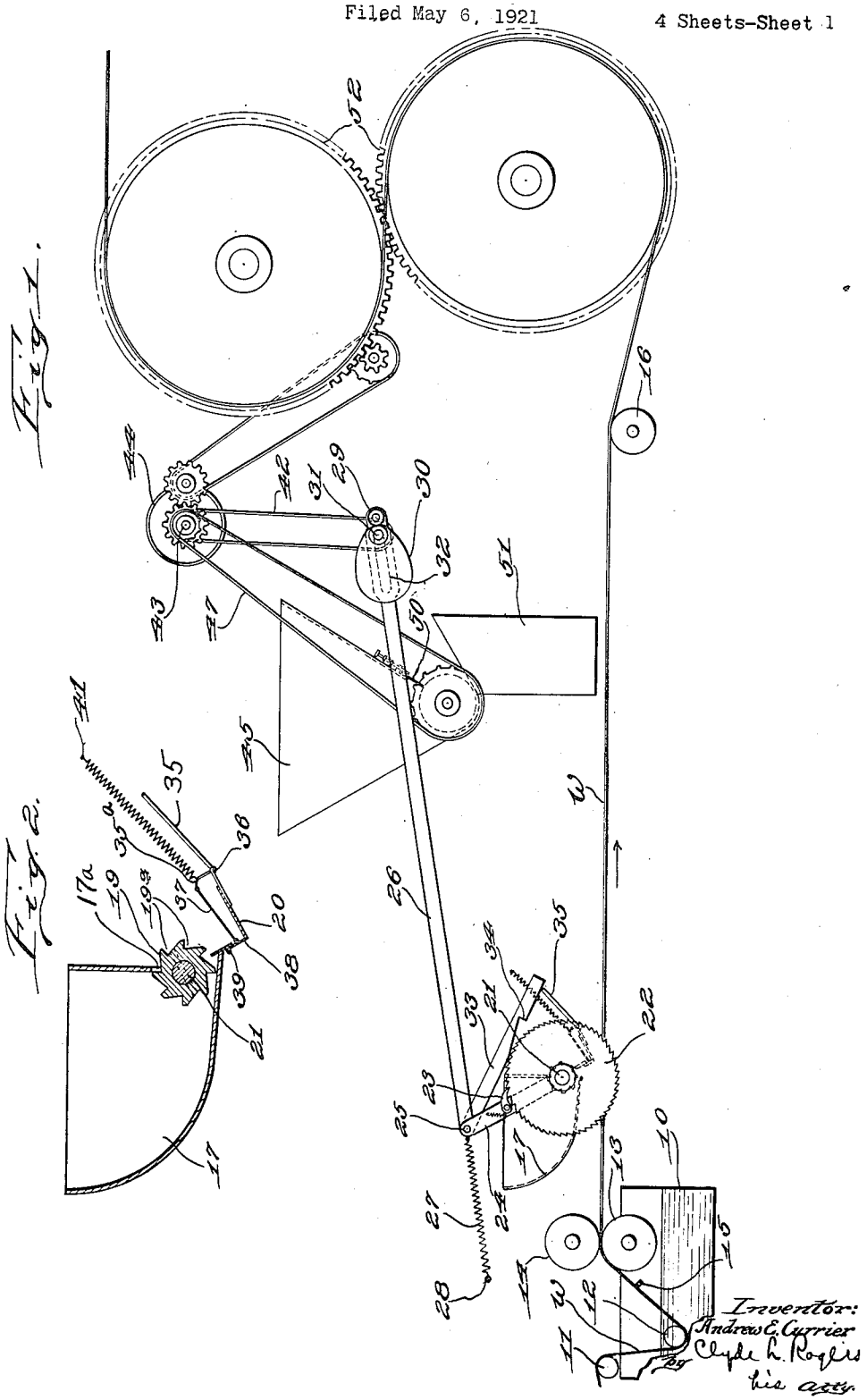
May 22, 1923. 1,456,224

A. E. CURRIER

METHOD AND MACHINE FOR MAKING PREPARED ROOFING

Filed May 6, 1921 4 Sheets-Sheet 1

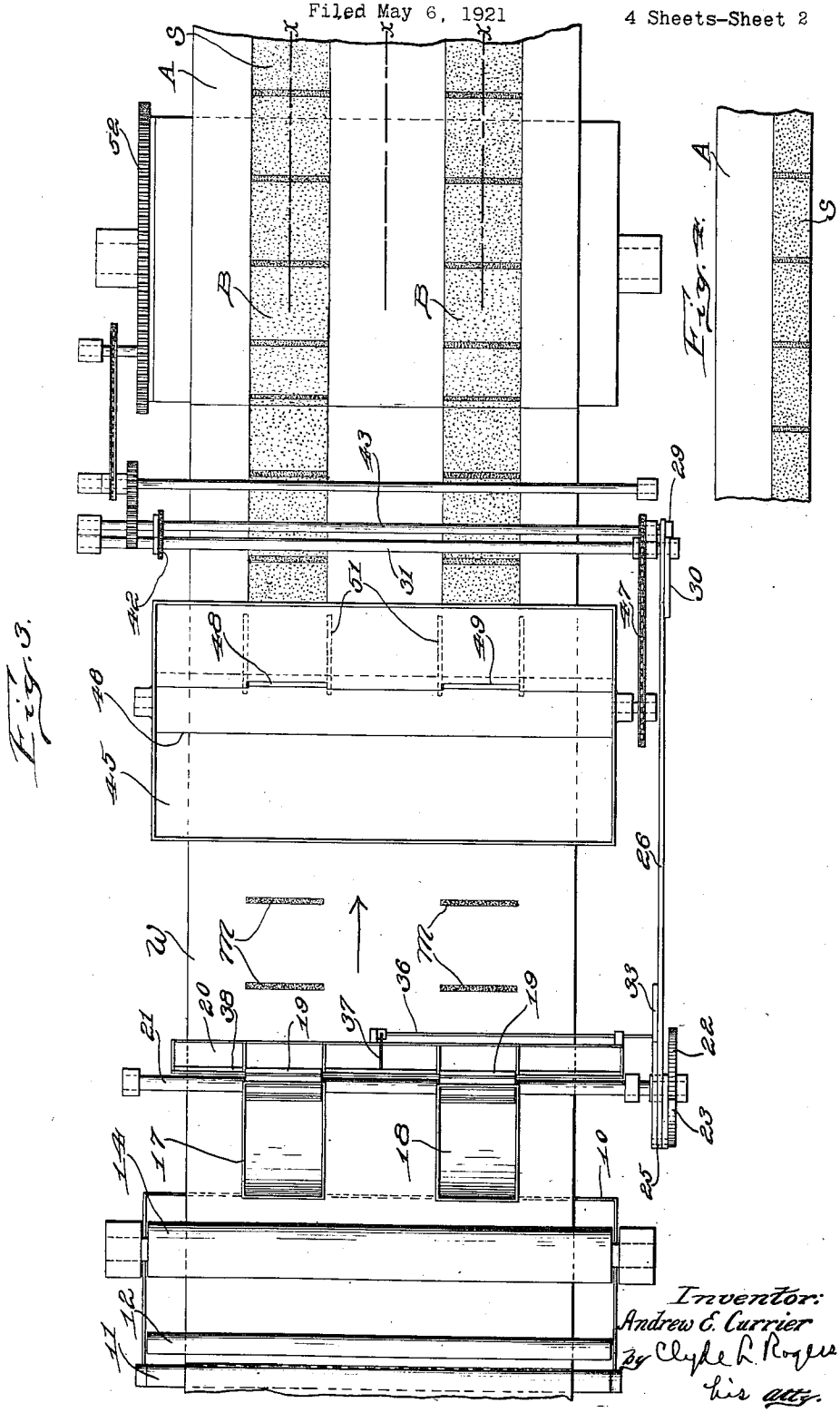


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METHOD AND MACHINE FOR MAKING PREPARED ROOFING

Filed May 6, 1921 4 Sheets-Sheet 2



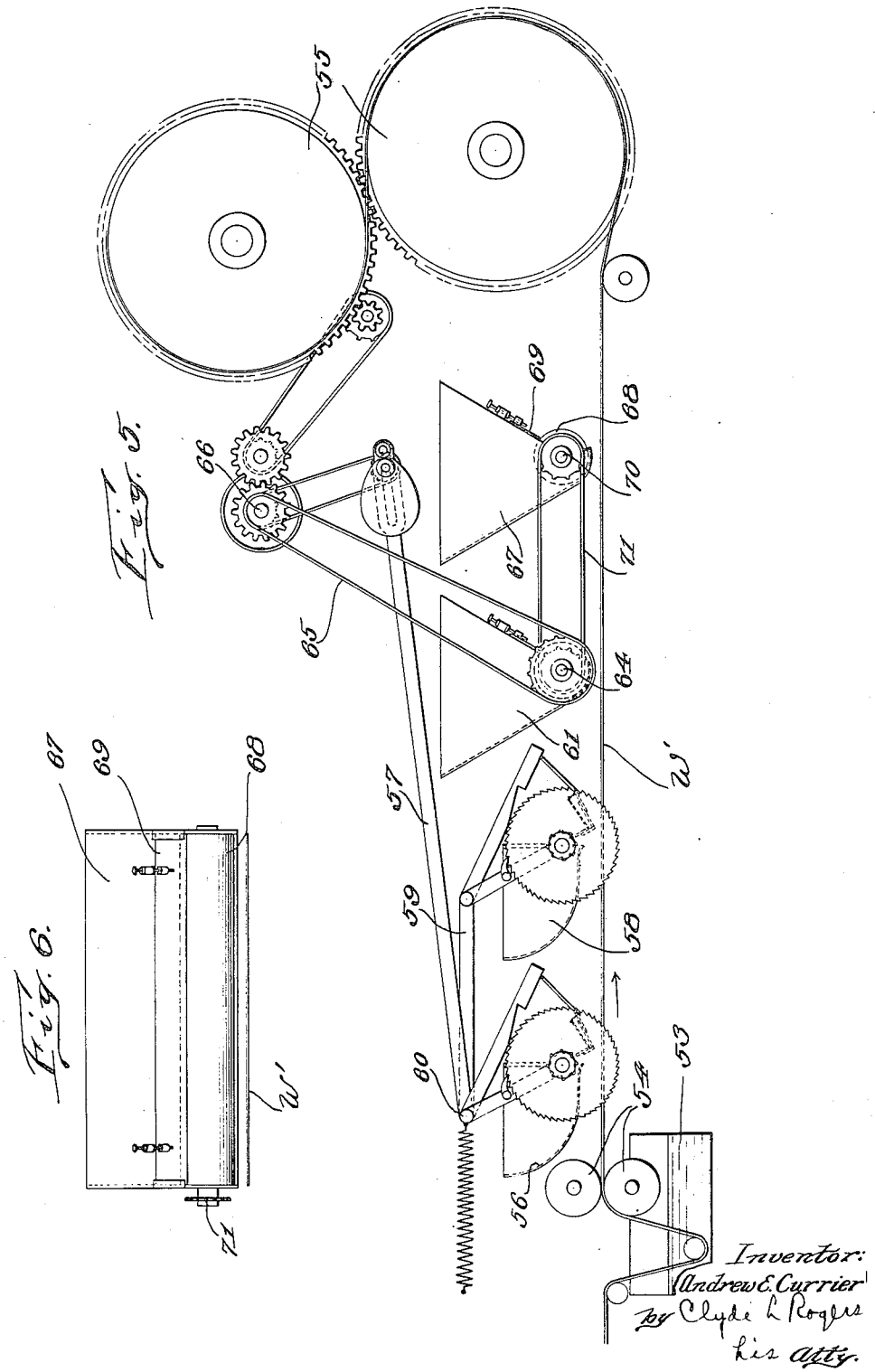
Inventor:
Andrew E. Currier
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May 22, 1923. 1,456,224

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METHOD AND MACHINE FOR MAKING PREPARED ROOFING

Filed May 6, 1921 4 Sheets-Sheet 3



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METHOD AND MACHINE FOR MAKING PREPARED ROOFING

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Fig. 7.

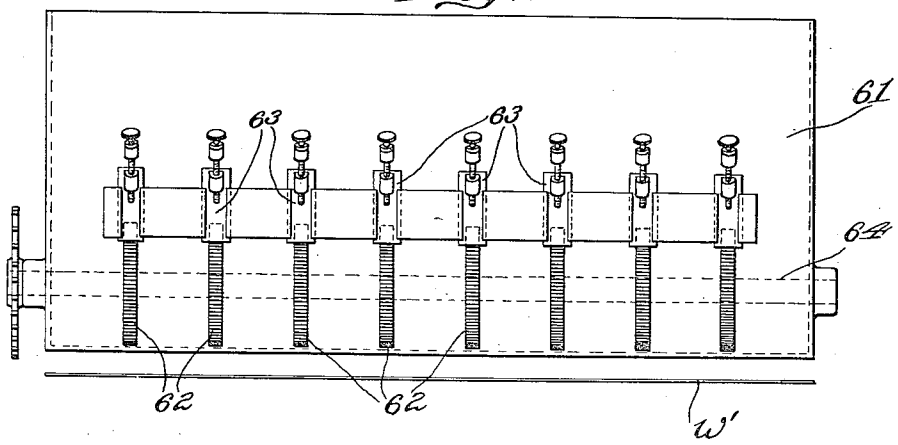
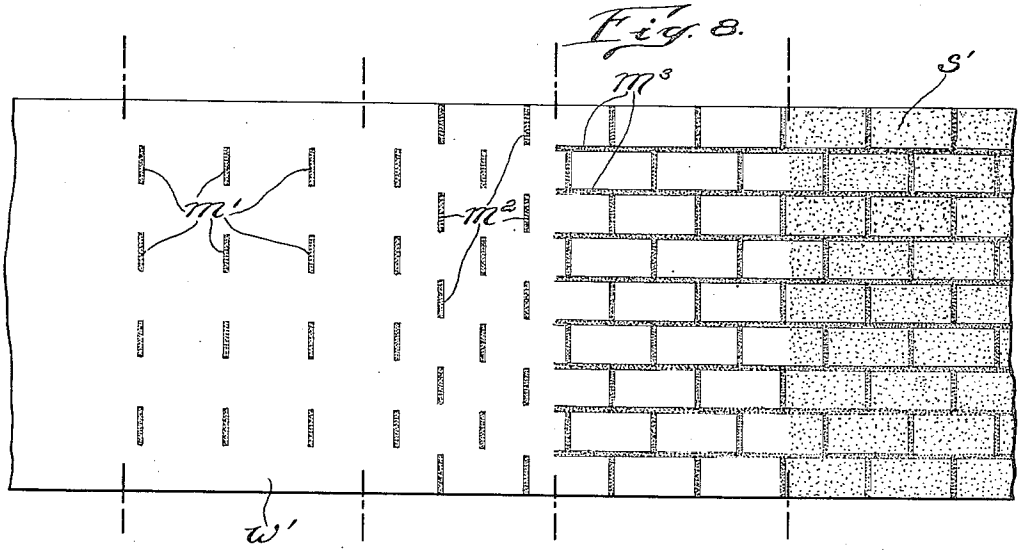


Fig. 8.



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Patented May 22, 1923. 1,456,224

UNITED STATES PATENT OFFICE.

ANDREW E. CURRIER, OF MILLIS, MASSACHUSETTS, ASSIGNOR TO BAKER RUBBER CEMENT CO., OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

METHOD AND MACHINE FOR MAKING PREPARED ROOFING.

Application filed May 6, 1921. Serial No. 467,329.

To all whom it may concern:

Be it known that I, ANDREW E. CURRIER, a citizen of the United States, and resident of Millis, county of Norfolk, Commonwealth of Massachusetts, have invented an Improvement in Method and Machine for Making Prepared Roofing, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts in each of the several views.

This invention relates to apparatus for the manufacture of prepared roofing of a type composed of paper or felt impregnated with waterproofing substance such as asphalt and surfaced on its weather-exposed portion with weather resisting material such as crushed slate. A principal object of the invention is to provide improved means wherein the crushed slate or like comminuted mineral surfacing may be applied in distinctively arranged and colored designs which may be of a character adapted to give a continuous roofing strip the appearance of individual shingles. A further object is to provide improved means for surfacing predetermined and definite portions of a roofing strip or web with crushed slate or the like, while providing and leaving other longitudinally extending portions of the web or strip unsurfaced with the slate, but coated with asphalt. A still further important object is to provide improved means for applying crushed slate or the like of a distinctive color to certain portions of the coated sheet for producing the required design, such as a shingle effect, and then coating the other portions of the roofing sheet or web with crushed slate or like material of a different color. The foregoing and other objects and advantages of the invention will more fully appear from the following detailed description taken in connection with the accompanying drawings, and the distinctive features of novelty will be pointed out in the appended claims.

Referring to the drawings:

Fig. 1 is a side elevation showing the essential features of a machine embodying one form of the invention;

Fig. 2 is a detail vertical section of a hopper and feed device for delivering the material which constitutes the design markings;

Fig. 3 is a plan view of the apparatus of Figure 1;

Fig. 4 is an elevation of a roofing strip produced in accordance with the apparatus of Figures 1 and 3;

Fig. 5 is a side elevation showing the invention in another embodiment;

Fig. 6 is a detail vertical section showing a hopper and feed device employed for delivering the main surfacing material;

Fig. 7 is a front view of the mechanism for delivering the material for the longitudinal markings; and

Fig. 8 is an elevation of a roofing web or sheet illustrating diagrammatically the successive steps in the surfacing thereof with the crushed slate.

10 indicates a tank containing asphalt which is kept in a fluid condition, preferably by heat continuously applied thereto. Through this tank the web W of paper or felt to constitute the base of the roofing strip is drawn being guided around rolls 11, 12. Thence the web coated on both sides with asphalt is drawn upward between a pair of press rolls 13, 14. A scraper bar 15 may be mounted in position so as to scrape off a part of the asphalt from the lower side of the web so that this emerges from the coating station thus constituted with a relatively thin coating of asphalt, while the upper side of the web has a relatively heavy coating. The web upon leaving the bite between the rolls 13, 14 extends in a relatively long stretch to a supporting and guiding roll 16, this stretch being sufficient to leave room for the operative instrumentalities to be described, for surfacing the upper side of the web while the relatively thin coating on the under side is permitted to strike into the web and set. The mechanism of this embodiment of the invention is designed to produce a roofing strip of the character shown in Figure 4 with a slate surfaced portion S and an unsurfaced, asphalt coated portion A, this portion A being the part of the strip which the next succeeding strip overlaps in use, and the asphalt loaded surface of this unslated portion uniting cementitiously with the next overlapping strip so as to constitute a continuous roof covering sheet. The web W handled by the present apparatus is preferably of a width to provide a plurality of these roofing strips, the illus-

trative showing being of a web adapted to be severed longitudinaly along the lines *x* to produce four of these roofing strips. For this purpose slate surfaced bands B are produced intermediate the width of the web of a width double the width required for the surfaced portion of a finished roofing strip, and these surfaced bands are spaced so that when the web is severed also midway of its width, the required dimension of unsurfaced area will be left associated with each strip. In producing these surfaced bands upon the web the first step is to deposit thereon at definite intervals in the area to be surfaced, relatively narrow applications of crushed slate or the like indicated at M of a color distinctive from, and to some extent contrasting with that of the main surfaced portion of the bands B to produce the required design in the surfaced portions of the strip, these markings as shown being of a character to divide the surfaced bands B at intervals to give the effect of individual shingles. For this purpoe I provide spaced apart hoppers 17, 18 mounted over the path of the roofing web and in the lower portion of each of these hoppers is mounted a feed wheel 19 equipped with ratchet-like grooves in its periphery constituting a series of shallow buckets 19ª adapted to take up a definite quantity of the comminuted slate or the like from the hopper and deliver it into a trough 20 directly in front of the bottom of the hopper, the forward portion of the feed wheel for this purpose projecting outward through a slot 17ª in the lower front portion of the hopper. The two feed wheels 19 for the respective hoppers are both fixed upon a shaft 21 which is turned intermittently by means of a ratchet wheel 22 fixed on a projecting end thereof and engaged by a pawl 23 borne by a rock arm 24 pivoted to the shaft 21 and having its outer end pivotally engaged at 25 by a bar 26 this outer end of the arm 24 is also engaged by a tension coil spring 27 with its other end stationarily anchored at 28, the action of this spring tending to draw the arm 24 backward or reverse clockwise as seen in Figure 1 to permit the pawl 23 to take a fresh hold on the ratchet wheel. The other end of the bar 26 is equipped with a roller 29 which by means of the spring 27 is held against the periphery of a cam 30 fixed on a shaft 31. The portion of the bar 26 adjacent its extremity which bears the roller 29 as a yoke formation 32 through the slot of which the shaft 31 passes, so that thereby this end of the bar 26 is held for rectilinear movement. The outer end of the arm 24 also has pivoted thereto a bar 33 equipped with a notch presenting a ledge 34 which when the arm 24 is moved forward is adapted to engage with one arm 35 of a bell crank lever which is pivoted at 36 to the trough 20 and has its other arm 35ª connected by a link 37 to operate a gate 38 pivoted at 39 to the trough 20 and adapted to open the bottom thereof when it is pressed outward, such gate being normally held closed by a tension spring 40 the other end of which is stationarily anchored at 41. With this construction it may be understood that each time the bar 26 is drawn to the right as seen in Fig. 1 by the action of the cam 30, the wheels 19 will be turned sufficiently so that one of the buckets 19ª thereof will deposit its contents in the trough 20, and that the gate 38 of this trough will be open to permit the discharge of the required measured quantity of the comminuted material to constitute the markings M. The shaft 31 is driven by suitable means, shown as a belt 42 from a prime drive shaft 43, equipped with sutable means for receiving power such as a belt pulley 44. For depositing the slate surfacing to constitute the main portions of the surfaced bands B, a relatively large hopper 45 is provided mounted over the path of the web in advance of the hoppers 17, 18. This hopper 45 has mounted in the lower portion thereof a feeding-out roll 46, one side of which extends outward of the hopper. This roll is driven by suitable means, shown as a sprocket chain or belt 47 from the shaft 43. The forward side of the hopper 45 in the direction of rotation of the roll 46 is formed with slots 48, 49 of a length corresponding to the desired width of the surfaced bands B to be produced, and located so as to feed out the material over the proper transverse portions of the web to constitute these surfaced bands. To regulate the amount of comminuted material thus fed out through the slots 48, 49, adjustable gates or doctors 50 are provided to co-operate therewith and regulate the widthwise dimension of these slots. To insure that the surfacing material thus dropped upon the moving web W is deposited only upon the correct band areas to be surfaced, i. e. that it shall not spread laterally over the adjacent portions of the web, baffle plates 51 are provided extending downward from the hopper to a point closely adjacent the surface of the web. It is to be understood that the amount of surfacing material deposited to constitute the markings M is gauged so as to provide all the crushed comminuted material that will be held by the asphalt coating. Thus as the main surfacing material is deposited from the hopper 45 it will adhere only to the portions of the web on which it is deposited, which are not already covered by the markings M, i. e. so much of the deposit from the hopper 45 as may fall upon the markings M will not adhere thereto or obliterate the same, since the adhesive capacity of the asphalt coating at these points has already

been exhausted by the material deposited for the markings. Thus the markings M will appear as a clearly distinguishable and distinctive design upon the completed roofing strip as shown. The roofing web thus produced is led around a system of steam heated drums 52 to press the surfacing thoroughly into the asphalt coating so that it is strongly adherent thereto. The web is then ready to be divided along the lines x to produce the individual roofing strips.

The form of the invention shown in Figures 5 to 7 is designed for producing roofing of the type shown in Figure 8 wherein the roofing is supplied and applied as a full width web W'. In this case means is provided for producing distinctively colored markings of a given design, preferably to simulate individual shingles throughout the width and length of the web which is thereafter surfaced throughout the extent thereof with crushed slate or the like. In this case the felt or paper web is drawn through a coating station 53 and coating and press rolls 54 corresponding to the coating rolls 13, 14 already described. It is thence drawn across a stretch sufficient to apply the markings and surfacing thereto and led on to steam heated drums 55 corresponding to the drums 52. In this case a transverse series of hoppers 56 are provided corresponding to the hoppers 17 and equipped and operated in like manner to deposit a series of transverse markings M' upon the web at intervals. These hoppers are controlled by bars 57 corresponding to the bars 26. Another series of hoppers 58 are mounted in advance of the hoppers 56 and are arranged to deliver another series of intermediate markings M^2 in alternating relation widthwise of the web with respect to the markings M'. These hoppers are operated by linkage connections 59 from the link bars 57 being connected thereto at the points 60. In advance of the hoppers 58 in the direction of web movement is a hopper 61 extending across the web and equipped with a series of relatively narrow feeding out discs 62. These discs extend outward from the hopper and the amount of material fed out thereby is controlled by adjustable gates 63. These discs are mounted on a shaft 64 actuated by a belt 65 from the prime drive shaft 66 which corresponds to the shaft 43. The action of these discs 62 is to deposit upon the web a series of longitudinally extending markings M^3 of the distinctively colored granular material, this completing the shingle design as will be seen from Figure 8. In advance of this hopper is another hopper 67 extending across the web equipped with a feeding out roll 68, the output of which is controlled by an adjustable gate 69. This roll is mounted on a shaft 70 driven by a belt and sprocket connection 71 from the shaft 64. The action of this roll is to apply a surfacing S' of crushed slate or the like over the entire extent of the web surface, this surfacing, however, adhering only to the intermediate portions of the web not already surfaced by the design markings M', M^2, M^3. A roofing web or sheet is thus produced surfaced throughout with the crushed slate or like comminuted weather resisting material and bearing a distinctively colored design, such as a shingle effect, as herein illustratively shown, wherein the design may be produced of the same surfacing material laid on in the same way and of the same thickness as used to cover the other portions of the web, except for the distinctive coloring. I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The herein described method which consists in applying cementitious binder to a continuously moving backing web, applying comminuted material at intervals in the length of the web and also at intervals transversely thereof, and applying surfacing material of another color continuously lengthwise of the web and at intervals widthwise thereof.

2. The herein described method which consists in applying cementitious binder to a continuously moving backing web, applying comminuted material at intervals in the length of the web and also at intervals transversely thereof, and severing the web longitudinally at intervals widthwise thereof to produce a plurality of roofing strips each having a longitudinally extending surfaced portion and an unsurfaced portion coated with binder, at one side of such surfaced portion.

3. Apparatus of the kind described comprising means for continuously advancing a web of felt or the like, means for applying cementitious binder to the entire surface of the web, means for depositing comminuted material upon the web at predetermined intervals both lengthwise and widthwise thereof as markings to constitute a given design, and means for continuously applying surfacing material of another color over continuously extending lengthwise portions of the web, while leaving adjacent lengthwise extending portions unsurfaced but coated with such cementitious binder.

4. Apparatus of the kind described com-

prising means for continuously advancing a web of felt or the like, means for coating the web with cementitious binder, means for applying comminuted material at intervals in the length of the web and also spaced apart widthwise of the web as markings of a given design, and means for applying surfacing material of another color in continuous bands lengthwise of the web with said bands spaced apart widthwise of the web and including the areas to which said markings are previously applied.

In testimony whereof, I have signed my name to this specification.

ANDREW E. CURRIER.