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MECHANISM FOR PRODUCING ROOFING MATERIAL.

APPLICATION FILED MAY 25, 1914. RENEWED AUG. 5, 1918.

1,298,690.

Patented Apr. 1, 1919.

2 SHEETS—SHEET 1.

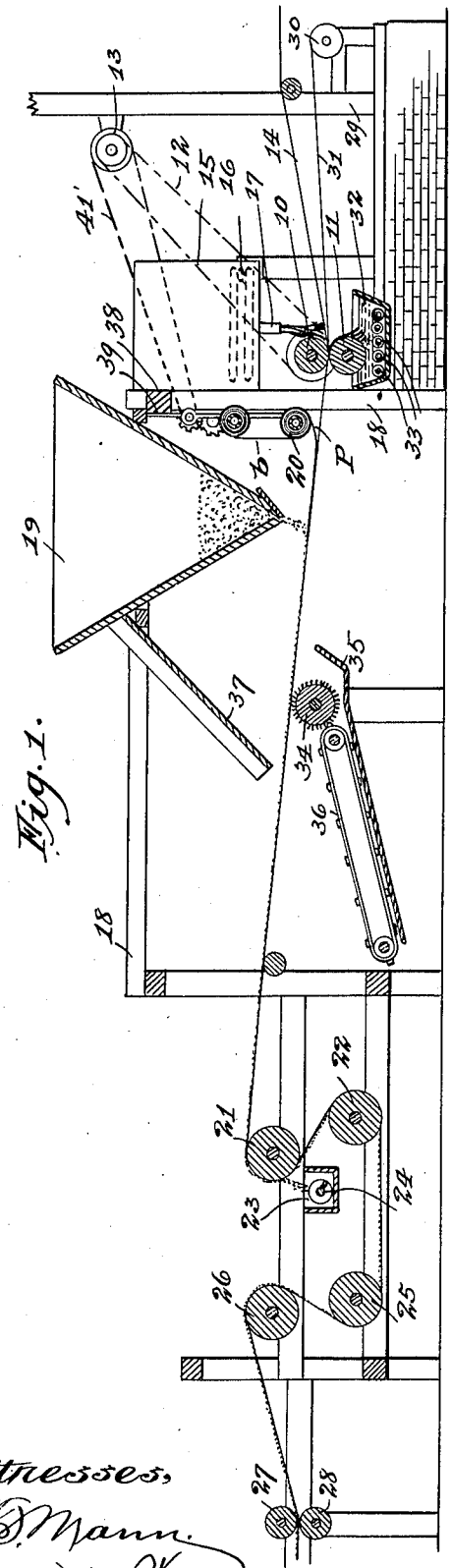


Fig. 1.

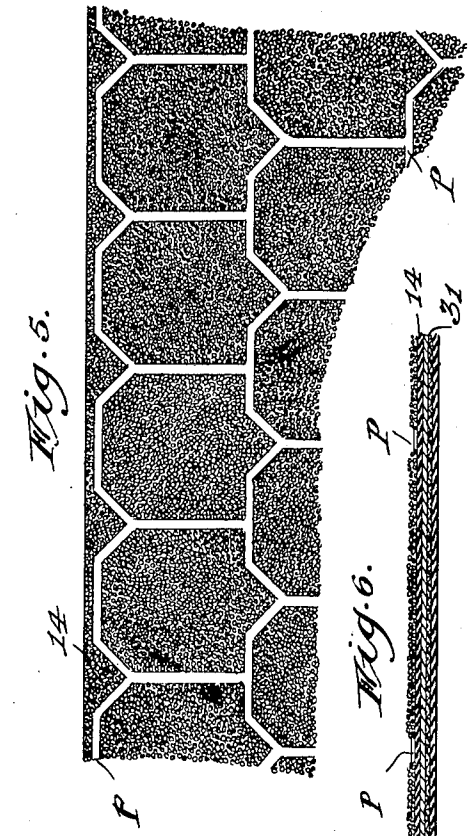


Fig. 5.

Fig. 6.

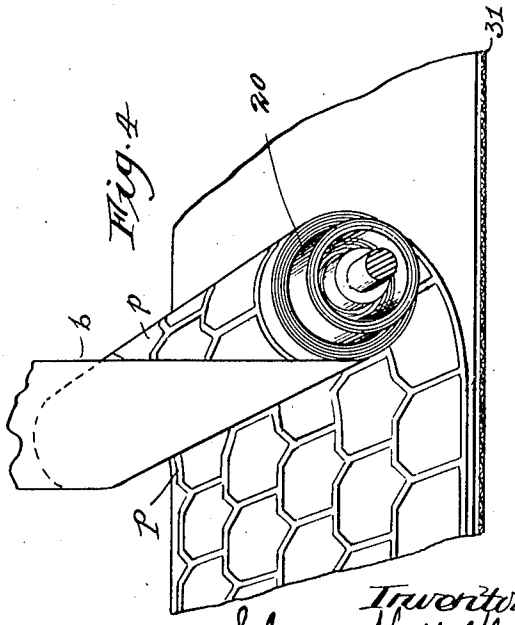


Fig. 4.

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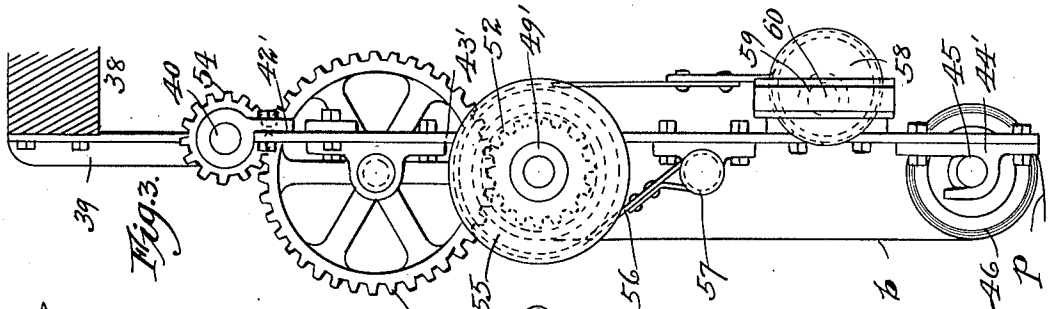


Fig. 3.

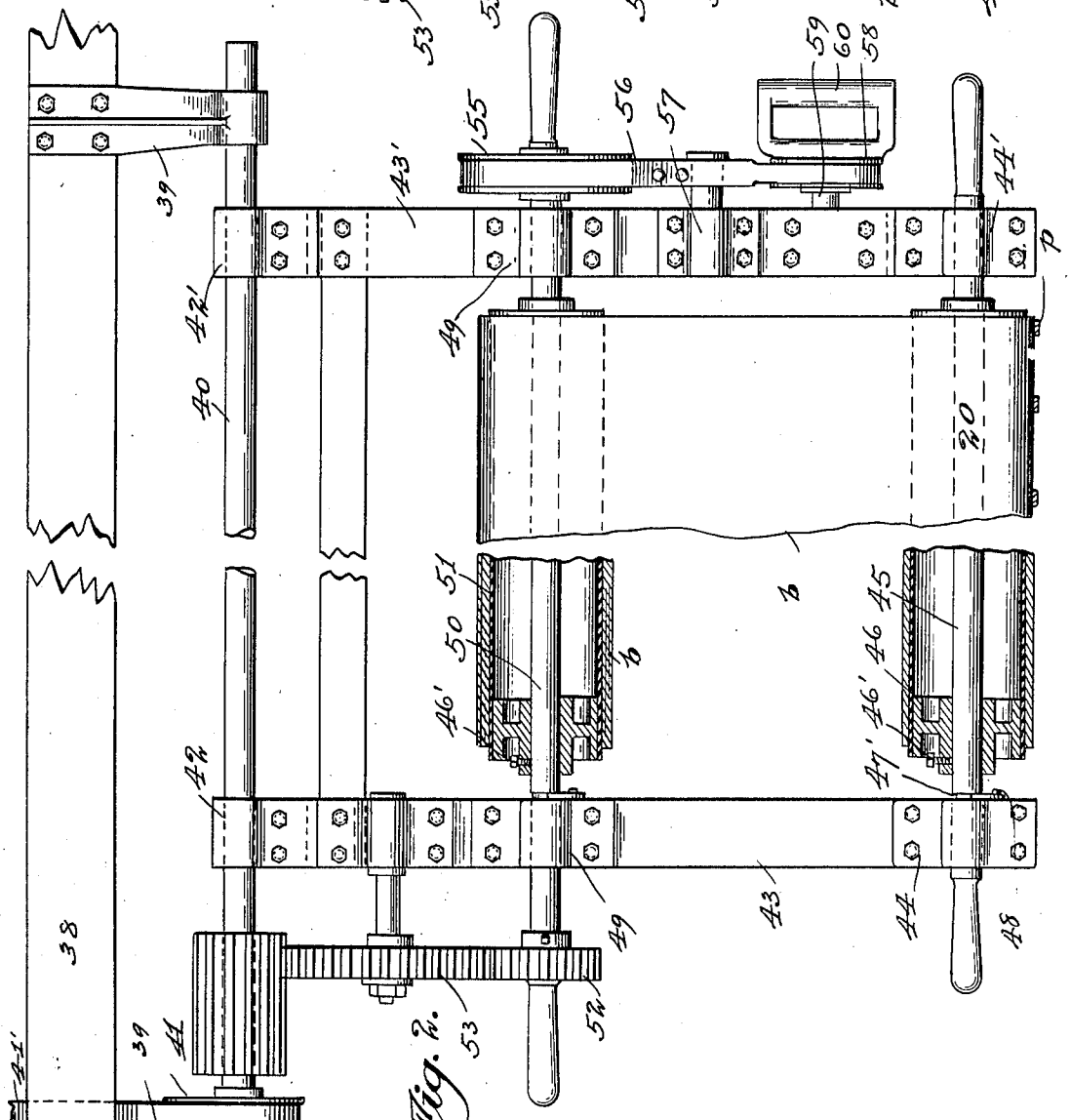


Fig. 4.

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UNITED STATES PATENT OFFICE.

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MECHANISM FOR PRODUCING ROOFING MATERIAL.

1,298,690. Specification of Letters Patent. Patented Apr. 1, 1919.

Original application filed December 26, 1912, Serial No. 738,612. Divided and this application filed May 25, 1914, Serial No. 840,854. Renewed August 5, 1918. Serial No. 248,461.

To all whom it may concern:

Be it known that I, SOLOMON H. GOLDBERG, of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mechanism for Producing Roofing Material, of which the following is a specification.

My invention relates to mechanism for producing roofing material, and more particularly to mechanism adapted to produce a roofing material having designs upon one of its surfaces, and is a divisional application of my original application No. 738,612, filed December 26th, 1912. This original application relates particularly to a roofing and a process for producing such roofing material in the form of lengths of backing material such as paper or felt treated or saturated with asphaltic compounds or other material and to one of whose surfaces gravel, grit, sand or other comminuted or granular surfacing material is applied.

In roofing material of the type mentioned it is extremely desirable that a more or less ornamental effect is produced, as for example, imitation of shingling or tiling. Such shingling or tiling effect has heretofore been produced in some cases by applying coloring matter to the finished roofing lengths, and in other cases areas of the roofing material have been depressed in order to give the desired effect. In the present construction I avoid the necessity of either the coloring or depressing operation, and it is one of the salient objects of the invention to provide a simplified means for producing such ornamental effect whereby large quantities of the ornamented roofing can be rapidly and economically produced.

My improved mechanism is adapted to apply continuous pattern lengths to roofing material backing lengths on which one surface is made adhesive so that the pattern lengths will cling to the backing lengths and arrange themselves smoothly thereon. After application of the pattern lengths, the backing lengths receive an application of gravel or other granular or comminuted material which material will cling and adhere to the adhesive areas but will not adhere to the intermediate areas or lines formed by the pattern. After the loose surfacing material is removed from the pattern lines, the finished stock has a wear surface which gives the appearance of shingling or tiling, the pattern lines representing the outlines of shingles or tiling or any other desired ornamental use.

In my pending application, Serial No. 736,611, filed December 26th, 1912, I have disclosed an apparatus for cutting pattern lengths and for protecting the pattern lengths thus cut, it being practically impossible to apply the delicate pattern lengths by hand to the roofing material backing length or to apply it directly from the roll. The delicate pattern lengths are therefore wound up on a roll with a length of backing material, which rolls are applied to deliver the pattern length to the roofing material backing length in such manner that the backing material will retain control of the pattern length practically up to the time of its application to the backing length in order that smooth and accurate application of the pattern lengths will result.

My invention further relates to the mechanism for feeding these pattern lengths from the backing lengths into smooth, accurate and intimate engagement with the roofing material backing lengths.

Other objects of the invention are to provide an improved means for producing a roofing by the process disclosed in my original application above referred to; to provide an improved mechanism for feeding the pattern lengths to the traveling roofing backing material; to permit of the uniform feeding of the roofing material to receive its facing of granulated or comminuted material; to prevent distortion and tearing of the delicate pattern and to insure its accurate and uniform application to the roofing stock; and in general to provide an improved mechanism for producing roofing having designs applied to one surface thereof.

The invention further resides in various features of construction and combinations of parts described and shown in the accompanying drawings in which—

Figure 1 is a more or less diagrammatical layout, in vertical section, of the improved apparatus.

Fig. 2 is an enlarged front elevational view of the pattern roll supporting mechanism and the adjusting mechanism for controlling the feed of the pattern lengths.

Fig. 3 is a side elevational view of the mechanism of Fig. 2.

Fig. 4 is a perspective view showing a

portion of the mechanism for applying the pattern lengths.

Fig. 5 is a plan view of a section of finished roofing product, and

Fig. 6 is a section taken on plane 6—6, Fig. 5.

Referring to Fig. 1, 10 and 11 represent upper and lower rolls, the upper roll being driven in a suitable manner as by belt 12 driven from shaft 13. The body or backing 14 of the roofing material is propelled through these rollers and has a suitable coating applied thereto to cause its upper surface to be adhesive in order to receive the pattern lengths. Accordingly, a tank 15 is mounted in a suitable manner above the upper roll and in which asphaltum or other suitable material is heated, as by means of steam coil 16, the spout 17 delivering the heated material to the roofing backing 14, this material being distributed evenly and uniformly across the backing 14 by the upper roll 10. On a suitable structure 18 is mounted a hopper 19 for delivering gravel, grit, sand, or other surfacing material to the backing 14. Between the outlet of the hopper and the roll 10 the supporting mechanism for the pattern lengths is positioned, this mechanism being represented as a whole F. In this mechanism a roll 20 on which a pattern length *p* is wound, is adapted to be driven to unroll the pattern so that it may travel with the roofing backing 14. Where shingle or tile effect is desired to be produced, the patterns consist of interconnected lines or ribbons of thin stock, such as paper, as clearly illustrated in Fig. 4. The pattern, upon reaching the traveling backing 14, adheres to the sticky surface thereof and by gravity will arrange itself and adhere to the backing and will then present a smooth, non-adhesive surface or lines representative of shingles, tiles or the like, and to which surfacing material will not adhere. Therefore, when the backing together with the pattern superposed therein receives gravel or other surfacing material from the hopper 19, it will retain the surfacing material only at the sticky areas and the gravel deposited on the pattern lines will fall off or can be readily brushed off. Preferably, however, the backing 14 with its charge of coating material is given a reverse bend about the upper and lower rollers 21 and 22 in order that the loose surfacing material may drop therefrom into a receptacle 23 from which it is conveyed away as by means of a screw 24. The surfacing material is also preferably forced more intimately into engagement with the sticky areas and after passage about rolls 21 and 22 the roofing stock may pass about rollers 25 and 26 and between the compression rollers 27 and 28.

It may also be desirable to face the lower side of the roofing backing for strengthening purposes. For this purpose a support 29 is provided for pivoting a supply roll 30 of facing material 31, such as burlap, this burlap passing between the rolls 10 and 11 and below the backing 14 to be pressed against the backing. In order to cause the facing to adhere to the backing, the lower roll 11 may dip into a pan 32 containing material such as asphaltum which may be heated as by means of steam coils 33. As the rolls 10 and 11 are now rotated, the asphaltum or other material is spread over the top of the backing 14 and the material from pan 32 is carried up by roller 11 and squeezed through the porous burlap and against the bottom of the backing, the burlap being thus caused to adhere firmly and smoothly to the backing and being saturated at the same time with material from pan 32. Before the backing, with the facing and pattern applied thereto, reaches the dumping rolls and compression rolls, the asphaltum or other material applied thereto should be sufficiently cool so as not to stick to the rolls. To assure that the plastic coating will not stick to these rolls, a rotary dusting brush 34 may be mounted below the roofing stock as it comes from the gravel hopper, suitable dust or powder being fed to the brush from pan 35 which is replenished by means of a conveyer belt 36. If necessary, the top of the roofing stock may also be powdered or dusted and to this end a chute or duct 37 is provided for delivering powder or dust. Upon passage of the material about the dumping rolls, the surplus powder will be thrown off so that after the material emerges from the pressure rolls 27 and 28 all interposed sticky surfaces will have been powdered. Of course, instead of powder or dust, other material such as grit or sand may be applied to cover the sticky interposed surfaces. The appearance of the finished product is clearly represented in Fig. 5 and also in Fig. 6.

The mechanism for controlling accurately the feeding of the patterns, is shown in detail in Figs. 2 and 3. A beam 38 supports hangers 39 in which is journaled a shaft 40, this shaft supporting a pulley 41 driven by belt 41′ from the main drive shaft 13. Secured to and extending downwardly from bearing frames 42 and 42′ on shaft 40 is a supporting structure comprising side frames 43 and 43′. At the bottom these side frames support bearing brackets 44 and 44′ for journaling shaft 45 which supports the roll 46 on which a pattern length *p* is wound together with a length *b* of backing material. The bearing boxes of the bearing brackets are open at the top as shown in Fig. 3 so that the shaft may be lifted therefrom in

order that the empty roll may be removed and a fresh one applied, and to prevent endwise play of the shaft an annular groove 47′ therein is engaged by a plate 48 secured to the bracket side. Above the brackets 44 and 44′ other brackets 49 and 49′ support a shaft 50 for mounting a take-up roll 51 for taking up the backing material *b*. In the co-pending application referred to is described the manner in which pattern lengths are wound up on rolls each with a strip of backing material, and it is these filled rolls which are applied to the shaft, the rolls being adapted to be slid off and to be secured thereto as by a set screw 46′. The rolls 51, after winding thereon of the backing material from one of the rolls 46, become the feed rolls in the machinery described in the co-pending application referred to and the backing material thereon is fed to the take-up rolls to be used over again in connection with other pattern lengths.

The shaft 50 supporting the take-up rolls 51, supports at one end the gear 52 meshing with the transmission gear 53 supported from the shaft 43 and which is driven by a gear 54 on shaft 40. The supporting frame for the rolls is bodily shiftable along shaft 40 and the gear 54 is sufficiently wide so as to mesh at all times with the transmission gear 53. The backing band *b* acts as a belt for driving the roll 46 which delivers to the roofing backing 14 the pattern lengths. The pattern should of course travel at all times at the same speed as the backing in order that it may accurately and smoothly adhere thereto. A friction wheel 55 is secured to the shaft 50 and is engaged by a friction band 56 secured at one end to a bracket 57 and at its other end looping about a disk 58 eccentrically mounted on a stub shaft 59 extending from frame part 42′. A grip frame 60 is secured to the disk so that it may be rotated to adjust the frictional engagement of the band with the wheel, clamping of the wheel 55 resulting in more or less slip of the driving belt 42. By means of a handle 60 the supporting frame structure may also be readily moved bodily along the shaft 40.

The details of operation of the pattern feeding mechanism can be clearly understood from the above description. When a filled roll 46 is applied to shaft 45 the end of the backing to the in-take roll 51 and the end of the pattern length *p* is applied to the roofing backing 14. By shifting the pattern roll supporting structure back and forth along shaft 40 and by operating the brake mechanism, the pattern can be caused to accurately and smoothly adhere to the adhesive surface of the backing without being subjected to strain of any kind, the pattern being fed fast enough that it will at all times be slightly slack that it may be free to fall by gravity into proper position on the backing. It will be noted that the pattern supply roll 46 is close to the roofing backing so that the guiding and smoothing effect of the backing material is maintained practically up to the time that the pattern engages with the backing. After one pattern length is unrolled, a fresh roll is applied to shaft 45 and the filled roll 51 is transferred to another machine to be wound up on an in-take roll together with another pattern length.

Fig. 5 shows one design of finished roofing product, the uncovered pattern ribbons outlining the covered sections which are representative of shingles or tiles.

By means of my improved apparatus, surfacing can be very quickly and efficiently applied to roofing backing in any desired design, and the accurate application of the pattern to the backing will cause the designs to be accurate and symmetrical.

While I have shown and above described an apparatus capable of producing the roofing and carrying out the process defined in my original application, I do not desire to limit my invention to the particular embodiment shown.

I claim:

1. In machinery for coating roofing material, the combination of means for supporting the roofing material and for causing travel thereof, means for applying adhesive substance to one surface thereof, a receptacle for surfacing material, a pattern roll disposed before said surfacing material receptacle and after said means for applying the adhesive substance, means for effecting unrolling of said pattern rolls at a rate corresponding to the rate of travel of said roofing material whereby said pattern material is progressively applied to the sticky surface of the coating material and whereby surfacing material as fed from said receptacle will adhere only to exposed sticky areas of said roofing material.

2. In machinery for surfacing roofing material, the combination of a receptacle for feeding surfacing material, means for propelling a length of roofing material below said receptacle, means in advance of said receptacle for applying adhesive substance to said roofing material, supporting mechanism interposed between said receptacle and the adhesive substance applying means and supporting a continuous flexible pattern strip, means for actuating said supporting mechanism to feed said pattern strip to the traveling roofing material whereby said pattern strip will adhere to the sticky surfaces to form non-adhesive lines and areas for preventing adhesion of the surfacing material except at the exposed sticky areas.

3. In machinery for surfacing roofing material, the combination of a receptacle for feeding surfacing material, means for propelling a length of roofing material below said receptacle, means in advance of said receptacle for applying adhesive substance to said roofing material, supporting mechanism interposed between said receptacle and the adhesive substance applying means and supporting a continuous flexible pattern strip, means for actuating said supporting mechanism to feed said pattern strip to the traveling roofing material whereby said pattern strip will adhere to the sticky surface to form non-adhesive lines and areas for preventing adhesion of the surfacing material except at the exposed sticky areas, means for removing the loose surfacing material from the roofing material, and means for compressing the adhering surfacing material into intimate association with the roofing material.

4. In machinery for surfacing a strip of roofing material, the combination of means for propelling the roofing material strip, means for feeding surfacing material to said roofing length, means in advance of said surfacing material feeding means for coating the surface of said roofing strip with adhesive substance, a supporting structure between said surfacing material feeding means and said adhesive substance applying means, a continuous pattern strip supported on said structure, means for effecting progressive feed of said pattern strip to the adhesive surface of said roofing strip whereby non-adhesive lines or areas are interposed between said adhesive surface and the surfacing material applying means and whereby the surfacing material will adhere only to the exposed adhesive surfaces, and means for controlling the feed of said pattern strip.

5. In machinery for surfacing a strip of roofing material, the combination of means for propelling the roofing material strip, means for feeding surfacing material to said roofing strip, means in advance of said surfacing material feeding means for coating the surface of said roofing strip with adhesive substance, a supporting structure between said surfacing material feeding means and said adhesive substance applying means, a continuous pattern strip supported on said structure, means for effecting progressive feed of said pattern strip to the adhesive surface of said roofing strip whereby non-adhesive lines or areas are interposed between said adhesive surface and the surfacing material applying means and whereby the surfacing material will adhere only to the exposed adhesive surfaces, and means for controlling the rate of feed of said pattern strip to conform with the rate of travel of said roofing length, and means for effecting transverse adjustment of said pattern strip to cause accurate alinement thereof with said roofing strip.

6. In machinery for surfacing a strip of roofing material, the combination of means for propelling the roofing material strip, means for feeding surfacing material to said roofing length, means in advance of said surfacing material feeding means for coating the surface of said roofing strip with adhesive substance, a supporting structure between said surfacing material feeding means and said adhesive substance applying means, a continuous pattern strip supported on said structure, means for effecting progressive feed of said pattern strip to the adhesive surface of said roofing strip whereby non-adhesive lines or areas are interposed between said adhesive surface and the surfacing material applying means and whereby the surfacing material will adhere only to the exposed adhesive surfaces, means for adjusting the rate of feed of said pattern strip to conform with the rate of travel of said roofing material, and means for effecting bodily adjustment of said supporting structure to enable transverse adjustment of said pattern strip and accurate alinement thereof with said roofing strip.

7. In machinery for surfacing strips of roofing material, the combination of means for propelling a strip of roofing material, means for applying a coating of adhesive substance to the upper surface of said roofing strip, a supporting structure, a roll mounted on said supporting structure adjacent the exit of said adhesive substance applying means, a strip of backing material and a pattern strip superposed thereon wound together on said supporting roll, a take-up roll on said structure, means for driving said take-up roll to take up the backing strip, said pattern strip being progressively fed to the adhesive substance during un-winding therefrom of its backing material, means on said structure for adjusting the rate of unwinding of the backing material whereby the rate of feed of said pattern strip may be adjusted to accord with the rate of travel of said roofing strip, and surfacing material supply mechanism for feeding surfacing material through the pattern strip covered surface, the surfacing material adhering only to the exposed surface and prevented from adhesion elsewhere by the pattern strip material.

8. In machinery for surfacing strips of roofing material, the combination of means for propelling a strip of roofing material, means for applying a coating of adhesive substance to the upper surface of said roofing strip, a supporting structure, a roll mounted on said supporting structure adjacent the exit of said adhesive substance ap-

plying means, a strip of backing material and a pattern strip superposed thereon wound together on said supporting roll, a take-up roll on said structure, means for driving said take-up roll to take up the backing strip, said pattern strip being progressively fed to the adhesive substance during unwinding therefrom of its backing material, means on said structure for adjusting the rate of unwinding of the backing material whereby the rate of feed of said pattern strip may be adjusted to accord with the rate of travel of said roofing strip, means for effecting shifting of the pattern strip roll transversely of the roofing strip whereby to effect perfect registration of the pattern strip with the roofing strip, and surfacing material supplying mechanism for feeding surfacing material to the pattern strip covered roofing strip surface, said surfacing material adhering only to the exposed adhesive areas and not to the areas covered by the pattern strip material.

9. In a machine for making ornamental flexible roofing material, the combination with means for applying a coating of adhesive material to a sheet of backing material, of means for delivering a pattern sheet to the adhesive surface of the backing material, and means for applying surface material to the portions of the adhesive surface intermediate the portions covered by said pattern sheet.

10. In a machine for making ornamental flexible roofing material, the combination with means for applying a coating of adhesive material to a sheet of backing material and means for supplying surfacing material to the adhesively coated surface of the backing material, of means for delivering a pattern sheet to the adhesively coated surface of the backing material for preventing the surfacing material adhering to portions of the coated surface of the backing material corresponding to the pattern sheet.

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