S. H. GOLDBERG.

APPARATUS FOR THE MANUFACTURE OF ROOFING MATERIAL.

APPLICATION FILED MAY 25, 1914. RENEWED NOV. 26, 1915.

1,250,577. Patented Dec. 18, 1917.

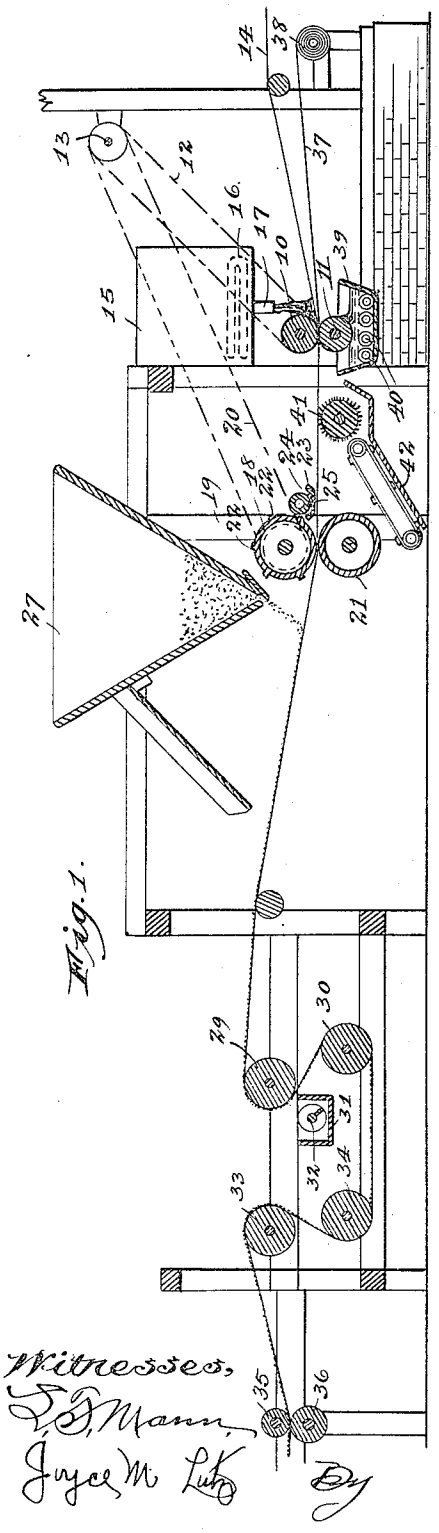


Fig. 1.

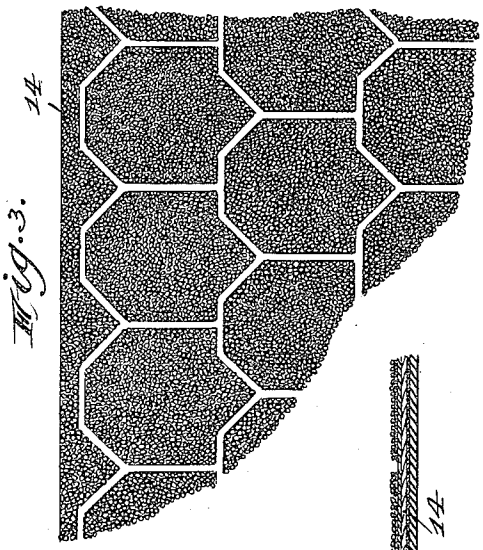


Fig. 3.

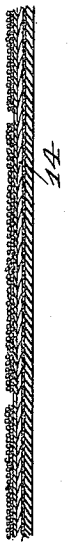


Fig. 4.

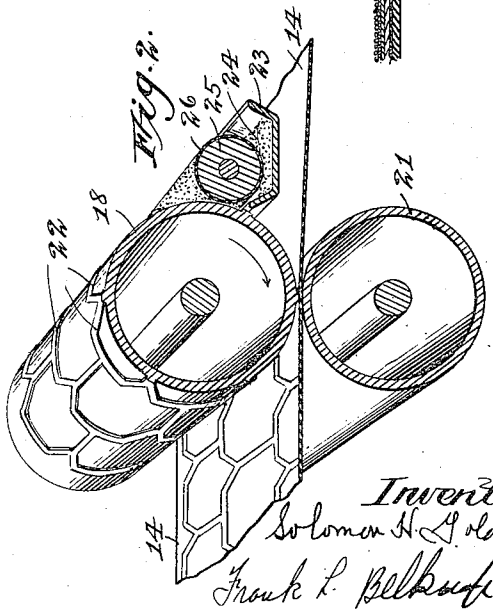


Fig. 2.

Witnesses,
L. D. Mann,
Joyce M. Lutz

Inventor,
Solomon H. Goldberg
Frank L. Bellamy
Atty

UNITED STATES PATENT OFFICE.

SOLOMON H. GOLDBERG, OF CHICAGO, ILLINOIS.

APPARATUS FOR THE MANUFACTURE OF ROOFING MATERIAL.

1,250,577. Specification of Letters Patent. Patented Dec. 18, 1917.

Original application filed December 19, 1912, Serial No. 737,652. Divided and this application filed May 25, 1914, Serial No. 840,855. Renewed November 26, 1915. Serial No. 63,677.

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 Apparatus for the Manufacture of Roofing Material, of which the following is a specification.

My invention relates to improved apparatus for producing roofing material and more particularly to a roofing material having designs applied to one surface thereof, and this application is a division of my pending application, Serial No. 737,652, filed December 19th, 1912. The apparatus of the present invention is particularly adapted to manufacture a roofing comprising a strip of backing or foundation material such as paper, felt or the like, treated or saturated with asphaltum or other binder material, and to one of whose surfaces a granular or comminuted facing of material such as sand, gravel, crushed material or the like, is applied and more specifically applied in designs, as for example, in imitation of shingles, tiles, or the like.

In the roofing and process of making the same which form the basis of the original application above referred to, non-adhesive pattern lines or areas of comminuted material are applied to the saturated and adhesive felt or other backing before application thereto of the surfacing material, so that the latter will adhere only to the surface exposed between the pattern lines. I preferably employ some non-adhesive substance, such as powdered or flaked mica, graphite, pumice stone or the like, to form the pattern lines or areas, this non-adhesive material being applied to the desired portion of the adhesive substance of the roofing backing in designs.

The salient objects of the present invention are to provide an improved apparatus for constructing roofing particularly of the type above referred to; to provide a mechanism in which the non-adhesive substance is preferably applied by means of a printing roll having the pattern raised or embossed on its periphery; to provide a printing roll on which the surfaces of embossed lines or areas are adapted to carry the non-adhesive substance to the adhesive surface of the backing, such as forming the surfaces of the embossed lines or areas somewhat roughened or otherwise treated so that the mica or like non-adhesive substance will stick thereto; to construct a roller or other means of applying the non-adhesive substance so that it will form a continuous strip of the non-adhesive substance along one edge of the backing to allow for over-lapping of adjacent lengths when said lengths are applied on a roof; and in general to provide an improved apparatus for rapidly and economically forming roofing, particularly of the type mentioned.

In the accompanying drawings—

Figure 1 is a view in vertical section, and partially diagrammatic, of the invention.

Fig. 2 is an enlarged perspective view of the printing and abutment rolls between which the backing material passes after an application thereto of the adhesive surface.

Fig. 3 is a plan view of a section of the finished product; and

Fig. 4 is a sectional view of such product.

Referring to Fig. 1, 10 and 11 represent upper and lower rolls, the upper roll being driven in any suitable manner, as by a belt 12 driven from the shaft 13. The body or backing of the roofing material 14 is propelled through these rollers and has a coating of adhesive material applied to its upper surface thereby. This coating material is shown as contained in a tank 15 in which it is heated by steam piping 16, a spout 17 delivering the material to the backing in advance of the upper roll so that as the rolls revolve this coating material is spread uniformly over the backing material so that an even coating results. Adjacent the outlet end of the rolls 10 and 11 and in front of the backing emerging from such rolls is the printing roll 18, this roll being journaled in suitable supporting framework 19, and the roll being driven as by belt 20 passing around a suitable pulley on drive shaft 13. Below this printing roll and below the backing is the abutment roll 21 also journaled in the framework 19. The printing roll has on and about its periphery the embossed or raised lines 22 representative of the outline of a pattern, the raised areas forming in this case outlines of shingles or tiles. Adjacent the printing roll is a trough 23 for containing the non-adhesive material 24 which may be powdered or flaked mica, graphite, pumice stone or any other non-adhesive material. Mounted to revolve in

this trough is a roll 25 which dips into the material of the trough and also engages against the outer surfaces of the raised portions of the printing roll in order that the material will better cling to the embossed surfaces, these surfaces may be roughened or otherwise treated and the roll 25 may have a coat 26 of felt or bristles for better carrying the material against the embossing surfaces. When the backing 14 emerges from the rolls 10 and 11 the asphaltic sticky coating which was applied thereto by the rolls will be engaged by the embossed surfaces of the printing roll and the non-adhesive material on these surfaces will be printed or impressed on the sticky surface to form the pattern outlines.

After the pattern outlines have been applied to the adhesive surfaces as described, the backing is ready for receiving the wearing surfacing material, the asphaltic coating being still warm and sticky. Mounted over the backing where it emerges from the printing roll is a hopper 27 for containing surfacing sand, gravel, crushed material or the like, and this material falls on the backing to progressively cover the entire top surface thereof, but such material will adhere only to the areas surrounded by the non-adhesive pattern or design lines. After receiving the wearing surfacing coating, the backing travels along a distance until the adhesive coating has cooled and hardened sufficiently, the backing then being given a reverse bend about the upper and lower rollers 29 and 30 in order that the loose surfacing material may drop therefrom into the receptacle 31 from which it is conveyed away as by means of a screw 32. The backing then passes about lower and upper rolls 33 and 34 and then between pressure rolls 35 and 36, such pressure rolls forcing the wearing surfacing material more intimately into engagement with the sticky areas. After this latter treatment, the finished product may be rolled up into marketable rolls. Fig. 2 shows more in detail the operation and effect of the printing roll mechanism, and Figs. 3 and 4 show sections of the finished product.

It may be desirable to face the lower side of the roofing backing for strengthening purposes, as for example by the application thereto of burlap. Such application may be simultaneously performed with the other steps described above. The strengthening material 37 may be fed from a supplying roll 38 to the underside of the backing to pass therewith between the rolls 10 and 11. Below the roll 11 a trough 39 contains adhesive material, such as asphaltum, which is heated as by means of steam pipes 40. As the rolls 10 and 11 rotate, the material from the pan 39 is carried by the rolls 11 against the under side of the material 37 and is forced through the pores of said material against the under surface of the backing 14, the burlap or other strengthening material then securely and smoothly adhering to the backing. Before the backing 14 with the strengthening material 37 thereon reaches the printing roll, the outer face of the material 37 is preferably treated with some non-adhesive substance in order that it will not stick to the abutment roll. A rotary brush 41 is therefore arranged between the rolls 10 and 11 and the abutment roll 21 for brushing non-adhesive substance against the material 37. This substance may be the same substance that is used for forming the pattern lines, and is contained in a suitable trough 42 into which the brush dips.

I thus provide very simple and efficient mechanism which can be readily applied to roofing material machines to apply pattern or design outlines or areas to the coated surface of the roofing backing before application of the wearing surfacing material thereto. The printing and abutment rolls may be so adjusted that the non-adhesive material carried on the surfaces of the projections will just touch the adhesive coating to stick to this coating; or the adjustment of these rolls can be such that more or less pressure will be applied to the backing so that the non-adhesive substance will be impressed into the adhesive coating.

While I have shown a practical embodiment of my invention, it is obvious that various changes can be made from the mechanism shown and described without departing from the scope of my invention.

I claim:

1. In a roofing material producing machine, the combination of means for propelling a length of backing material, means for progressively applying adhesive substance to one surface of said backing, a printing roll having printing projections representing pattern outlines and adapted to engage with said adhesive coating, means for feeding non-adhesive substance to said printing projections whereby pattern outlines of non-adhesive material will be applied to said coating, and means for progressively applying surfacing material to said coating to adhere to the uncovered adhesive areas bounded by said non-adhesive lines.

2. In a machine for producing ornamental flexible roofing material, the combination with means for applying adhesive material to one side of a backing sheet, of means for rendering a portion of the adhesive surface non-adhesive, and means for applying surfacing material to adhere to the remaining areas of the adhesive coating.

3. In a machine for making roofing material, the combination with means for applying surfacing material to an adhesive sur-

face of a roofing sheet, of means for applying in advance of such surfacing material a coating of non-adhesive particles to a predetermined portion of the adhesive surface.

4. In a machine for making roofing material, the combination with means for applying adhesive material to one side of a backing sheet, of means for applying non-adhesive particles to the adhesive surface in regular pattern form, and means for applying surfacing material to adhere to the uncovered areas of the adhesive coating.

5. In a machine for making roofing material, the combination with means for applying adhesive material to one side of a backing sheet, of means for printing upon the adhesive surface a pattern of non-adhesive material in comminuted form, and means for applying surfacing material to adhere to the remaining uncovered areas of the adhesive surface.

6. In a machine for producing roofing material, the combination with means for causing the travel of a backing sheet, of means for progressively applying adhesive material to one side of the backing sheet, means for progressively printing a pattern of non-adhesive substance upon the adhesive surface of said backing sheet, and means for progressively applying surfacing material to adhere to the remaining adhesive areas not covered by the pattern.

7. In a machine for making roofing material, the combination with means for applying a strengthening sheet to one side of a backing sheet, of means for applying an adhesive coating to the other side of said backing sheet, means for printing upon the adhesive surface of the backing sheet a pattern of comminuted non-adhesive material, and means for applying surfacing material to adhere to the remaining uncovered areas of the adhesive surface after the pattern of non-adhesive material has been applied.

8. In a machine for making roofing material, the combination with means for applying adhesive material to one side of a backing sheet, of a printing roll having a design or pattern embossed thereon, means for feeding a non-adhesive substance to the printing roll, means for traversing the backing sheet with respect to and in contact with the printing roll whereby the adhesive surface of the backing sheet is partly covered with an open-work pattern of non-adhesive substance, and means for applying surfacing material to adhere to the remaining uncovered adhesive areas of the backing sheet.

9. In a machine for making roofing material, the combination with means for applying adhesive material to one side of a backing sheet, of a printing member with a pattern embossed thereon adapted to pick up a quantity of comminuted non-adhesive material and apply the latter to the adhesive surface of the backing sheet whereby a definite open-work pattern outline of non-adhesive material is formed thereon, and means for applying surfacing material to adhere to the uncovered areas of the adhesive coating.

10. In a machine for making roofing material, the combination with means for propelling a length of backing material, of means for progressively applying adhesive material to one side of said backing material, means for progressively printing upon the adhesive surface a pattern of non-adhesive material in comminuted form, and means for progressively applying surfacing material to adhere to the remaining uncovered areas of the adhesive surface.

11. In a machine for making roofing material, the combination with means for applying adhesive material to one side of a backing sheet, of means for applying non-adhesive particles to the adhesive surface in regular pattern form, means for applying surfacing material to adhere to the uncovered areas of the adhesive coating, and means for pressing the surfacing material into intimate engagement with the adhesive surface of the backing sheet.

12. In a machine for making roofing material, the combination with means for coating one side of a backing sheet with adhesive material, of a printing roll with a pattern embossed thereon, means for applying comminuted non-adhesive substance to the surface of the printing roll, means for engaging the printing roll with the backing sheet whereby a pattern of non-adhesive comminuted material is applied to the adhesive surface of the backing sheet, means for applying surfacing material to the adhesive surface of the backing sheet after the pattern has been applied, means for removing the surplus of surfacing material, and means for embedding the surfacing material into the adhesive surface.

13. In a roofing machine, the combination of means for applying adhesive material to a length of flexible backing, of means for feeding said backing material to said adhesive applying mechanism, means for applying comminuted granular material to spaced apart selected areas of the adhesive coating, and means for applying a comminuted granular material of a different appearance than the first granular material to the uncovered spaces of said coating.

14. In a roofing machine, the combination of means for applying bituminous adhesive material to a length of flexible backing, of means for feeding said backing material to said adhesive applying mechanism, means for applying comminuted granular material to spaced apart selected areas of the adhesive coating, and means for applying a comminuted granular material of a different color

than the first granular material to the uncovered interposed spaces of said coating.

15. In an apparatus for making flexible roofing, the combination with feeding mechanism, of adhesive coating applying mechanism, mechanism for feeding comminuted granular material to predetermined spaced apart areas or fields of the coating, and mechanism for feeding comminuted granular material of a different color than the first granular material to the areas of the coating not covered by the first comminuted material.

16. In an apparatus for making flexible roofing, the combination with means for applying an adhesive coating to one face of a backing material, of means for applying comminuted granular material to said adhesive coating in predetermined spaced apart outlines, means for applying a second comminuted material of different colors than the first comminuted material to the spaces uncovered by the first comminuted material and means for feeding the length of backing past said operating mechanism.

SOLOMON H. GOLDBERG.

Witnesses:
F. L. BELKNAP,
MARK D. GOODMAN.