A. S. SPEER.

METHOD AND APPARATUS OF COATING MATERIAL.

APPLICATION FILED JUNE 10, 1919.

1,379,368. Patented May 24, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

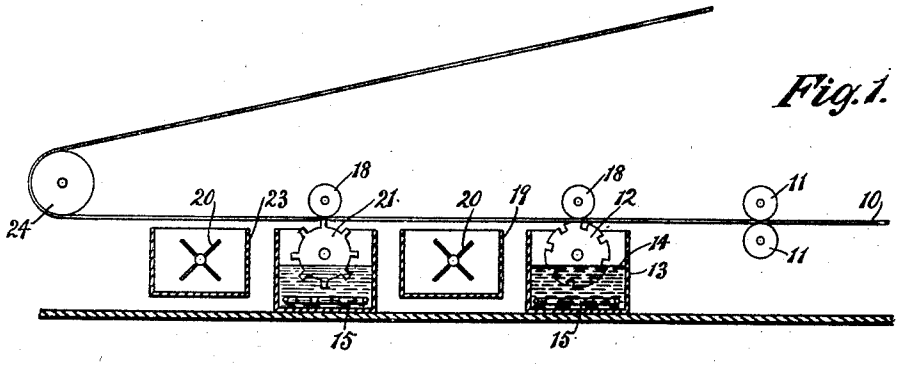

Fig. 2.

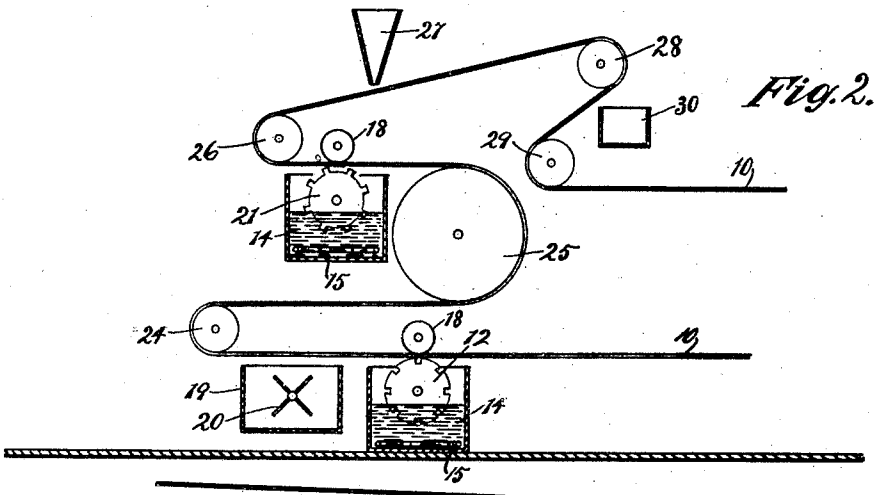

Fig. 3.

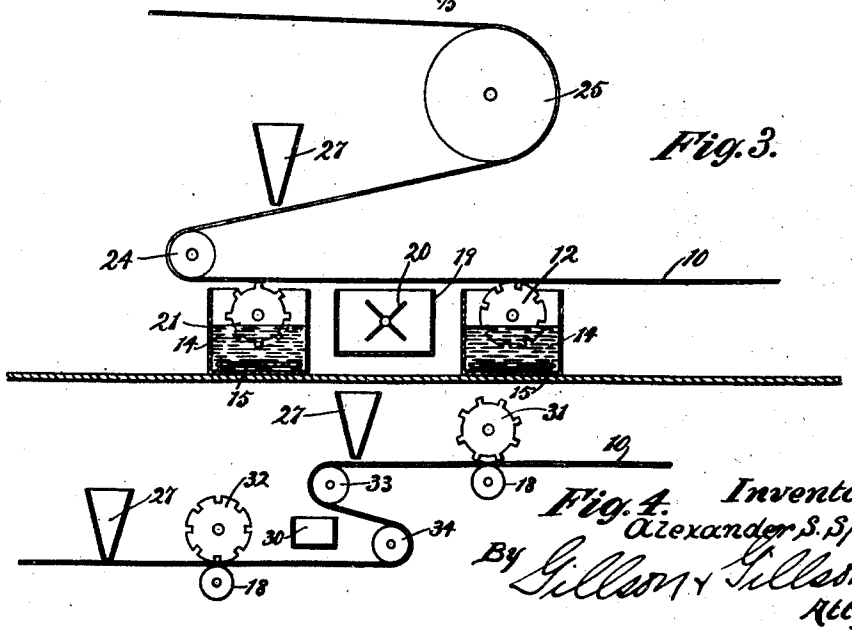

Fig. 4.

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2 SHEETS—SHEET 2.

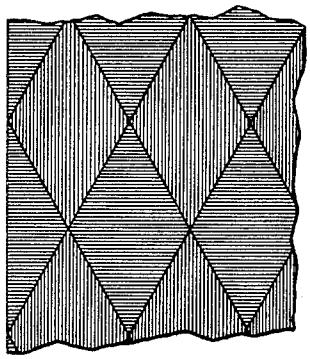

Fig. 5.

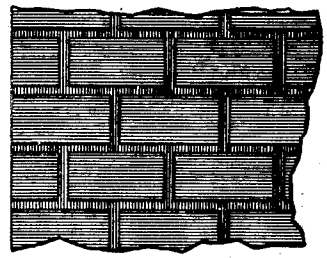

Fig. 6.

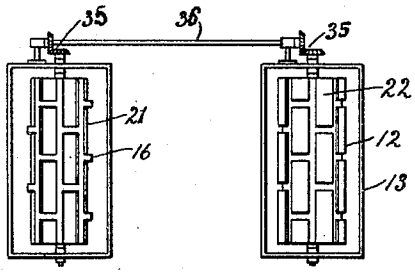

Fig. 7.

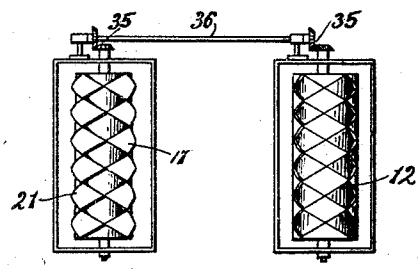

Fig. 8.

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UNITED STATES PATENT OFFICE.

ALEXANDER S. SPEER, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE ROOFING PATENTS COMPANY, A CORPORATION OF DELAWARE.

METHOD AND APPARATUS OF COATING MATERIAL.

1,379,368. Specification of Letters Patent. Patented May 24, 1921.

Application filed June 10, 1919. Serial No. 303,079.

To all whom it may concern:

Be it known that I, ALEXANDER S. SPEER, a citizen of the United States, and resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Methods and Apparatus of Coating Material, of which the following is a specification and which are illustrated in the accompanying drawings, forming a part thereof.

The object of the invention is the provision of a method and apparatus for coating material whereby a coating may be applied to the material comprising areas of definite shape and of distinctive appearance preferably forming a conventional pattern upon the surface of the material.

In the accompanying drawings;

Figures 1 to 4 inclusive are diagrammatical representations of different modifications of a machine for carrying out the method,

Figs. 5 and 6 represent different arrangements of conventional figures which may be applied to material,

Fig. 7 is a diagrammatical plan view of rollers adapted to produce the design shown in Fig. 6,

Fig. 8 is a diagrammatical plan view of rollers adapted to produce the design shown in Fig. 5.

The invention is especially adapted to operate upon what is known as composition roofing which comprises a layer or layers of fabric, usually felt, saturated with asphalt. Preferably the strip of material fed into the machine, as illustrated in Figs. 1 to 3, will have already upon its surface a light coating of asphalt in order that the coating applied by the invention, supplemented by the preliminary light coating, shall give sufficient body to the finished roofing. The material to be operated upon is represented at 10, and is shown as passed between feed rollers 11, Fig. 1, and over a print roller, as 12, revolving in a vat 13, containing bituminous or other sticky material, as 14, of rather a heavy consistency. If bituminous material is used the same should be heated to keep it in liquid form. To keep the material in a heated condition there is indicated a steam coil, as 15, in the bottom of the vat. The roller 12 will have upon its surface projecting areas which may take the form shown in Fig. 7 at 16, or that shown at 17 in Fig. 8. Roller 12 revolving in the sticky material will have the projecting areas coated therewith and will therefore deposit areas of the same upon the strip of material 10 corresponding to the shape of the projections. An abutment roller, as 18, is used over each print roller to hold the material in contact therewith. Strip 10, after passing over the roller 12, is carried over a sand box, as 19, in which is a revolving wheel provided with paddles, as 20. Paddles 20, by their revolution, throw a granular material against the whole surface of the strip 10. This granular material will have some definite appearance as designated in Fig. 6. For instance, the net work of strips may be in red and one of the sets of alternate figures or diagrams in Fig. 5 may be in red with the complemental figures in blue. The granular material, which may be finely crushed rock, or sand, or slag, which strikes strip 10 where the soft material has been deposited thereon will adhere, and the remainder will fall back into the box. The strip 10 continuing its movement is passed over a roller 21. This roller, in the case of each design, will have its projecting surface complemental to those upon roller 12. In the case of the design of Fig. 6, roller 21 having the projections 16 to produce the net work of spaces to simulate the joint between blocks or tiling, roller 12 will have its projections, as indicated at 22, of a shape and size to produce the blocks or tiles themselves. In the case of the design of Fig. 5, the projections on roller 21 will be of the same shape and size of those upon roller 12, but will be so arranged as to contact with strip 10 in the spaces left by the projections on roller 12. The projections on roller 21 having applied sticky material to the surface of the strip in the required places, the strip passes over a second sand box, as 23, whereby granular material of a different appearance will be applied to the strip. As shown, in Fig. 1, the strip is then passed about a roller, as 24, and is conducted away to be formed into rolls.

In the modification of Fig. 2, the material is passed over roller 12 and sand box 19 then about roller 24 after which it passes about pressing and cooling roller 25. It will be noted that the surface of the mate-

rial which has received an application of sticky and granular material will come in contact with this roller 25, the result being to press the granular into the sticky material and to cool the same prior to its treatment by roller 21 over which the strip next passes. In this modification, after roller 21, the strip is passed over a bearing roller 26 and under a hopper, as 27, from which granular material is allowed to sprinkle upon the strip in lieu of using a sand box, as 23. The material is then led about a pair of rollers 28 and 29 and after passing roller 28 the granular material which does not adhere is free to drop off into a receptacle, such as 30, the surface which has been treated being pressed and cooled by roller 29.

In the modification of Fig. 3 the two print rollers 12 and 21 are upon the same level and after the strip has passed around rollers 24, thus bringing the treated surface upward, it passes under hopper 27 and then about pressing and cooling roller 25. It will be obvious that more than two print rollers may be used if a more complicated pattern is desired, but in any case the result of the entire series of rollers should preferably be a single treatment of the entire surface of the material.

In the modification of Fig. 4 the material 10 is brought into the machine already coated with the entire amount of sticky material which it is intended should be applied. The rollers 31, 32, in this modification are constructed as are the rollers 12 and 21 in the other modifications, but instead of revolving in a vat these rollers are heated and therefore will soften the material already in place upon the strip 10 only in those portions where they contact with the strip. After passing in contact with roller 31, the strip is shown as passed under a sand hopper 27 and about rollers 33 and 34, the sand which falls off the strip at the lower side of roller 33 dropping into a receptacle 30. Roller 34 will cool and press the treated surface after which the strip will pass under roller 32 and receive its complemental treatment by having the remainder of its surface heated and the material softened so that granular material from the second hopper 27 may adhere thereto.

A desirable means for driving the print rollers is diagrammatically illustrated in Fig. 7. It is important that the revolution of the successive print rollers should be properly synchronized in order that their complemental raised surfaces may contact with the strip in the proper location. By driving them by positive gearing, as 35, operated by a single shaft, as 36, the proper relation, having been once established, will be preserved.

Many modifications may be made in the embodiment of the machine or in the steps of the method of carrying out the invention without departing from the spirit thereof.

I claim as my invention:

1. The method of coating material which comprises bringing the surface to be coated into contact with surfaces on an apparatus adapted to produce separated areas of sticky material on the surface, applying granular material of a distinctive character to the surface whereby the granular material will adhere only to the separated areas, allowing the non-adhering material to fall off, bringing the surface under treatment into contact with surfaces on a second apparatus complemental to said first named surfaces whereby the area of the surface under treatment not yet affected will have sticky material applied thereon, and applying granular material of a different distinctive character to said complemental surfaces.

2. The method of coating material which comprises successively bringing the surface to be coated into contact with apparatus adapted to produce separated areas of sticky material thereon, and alternating said contacts by application to said surface of granular material of varied distinctive characteristics.

3. The method of coating material which comprises successively bringing the surface to be coated into contact with apparatus adapted to produce separated areas of soft asphalt thereon, said areas being complemental, whereby the final result will be a single treatment of all parts of the surface, and alternating said contacts by application to said surface of granular material, the granular material used for each application having different characteristics from that used for each of the other applications, whereby a coating over the whole surface of uniform thickness will result, said coating having areas of respectively varying appearance.

4. The method of coating material which comprises bringing the surface to be coated successively into contact with a plurality of pieces of apparatus, each piece adapted to apply soft asphalt to different definite portions of the surface, and alternating said contacts with applications to the surface of granular material of varying distinctive characteristics, whereby each kind of granular material adheres only to different definite portions of the surface.

5. The method of claim 4, wherein the respective portions of the surface treated are complemental each of the remainder, whereby a single coating of substantially uniform thickness is applied to the entire surface, definite areas of the surface having granular material of characteristics differing from that on adjacent definite areas.

6. The method of coating roofing which

comprises passing a strip of fabric over a roller bearing on its surface a series of raised portions, said roller revolving with its lower portion in soft asphalt, whereby patches, where the fabric contacts with the raised portions of the roller, receive an application of soft asphalt, sprinkling granular material on the surface of the fabric, allowing the non-adhering granular material to fall off, passing the fabric over a second asphalt applying roller having raised portions complemental to the first named raised portions, again sprinkling the fabric with granular material of different appearance from that first applied, and allowing the non-adhering material to fall off.

7. The method of applying a coating to roofing material having adjacent different colored figures on its surface which comprises passing a strip of roofing fabric over a roller, the surface of which has areas of definite shape raised above the general surface thereof, applying sticky material to the raised areas as the roller revolves whereby corresponding areas of sticky material will be applied to the fabric, sprinkling colored granular material on the surface of the fabric, allowing the non-adhering matter to fall off, passing the fabric over a second roller having raised areas complemental in shape, extent and location, to the first named raised areas thereby applying sticky material to the surface of the complemental areas as the second roller revolves, sprinkling granular matter differing in color from the first named granular matter on the fabric, allowing the non-adhering matter to fall off and pressing and cooling the thus coated fabric.

8. Material coating mechanism comprising a series of rollers, each of said rollers having raised areas projecting from its surface, the raised areas on each roller being complemental in area, shape and location to the areas on the remainder of the rollers, means to apply sticky material to the surfaces of the raised portions of each roller, and means between each pair of rollers of the series to apply granular material to roofing fabric passing in contact with the successive rollers.

9. The method of coating prepared roofing comprising bringing a strip of roofing material into contact with separated surfaces adapted to produce corresponding areas of soft asphalt thereon, sprinkling granular matter on the material, allowing non-adhering matter to fall off, cooling and pressing the material, bringing the material into contact with surfaces complemental in area and location with the first named separated surfaces adapted to produce areas of soft asphalt over the portions of the material not affected by the first named surfaces, sprinkling granular matter differing in appearance from that first applied, to the surface of the material and allowing the non-adhering matter to fall off.

10. Material coating apparatus comprising means to produce separated areas of soft asphalt of definite location, size and configuration upon the material under treatment, means to apply granular material to said material, means to produce on the material other areas of soft asphalt complemental in location, size and configuration to the areas produced by said first named means, and means to make a second application of granular material to said material.

ALEXANDER S. SPEER.