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METHOD OF AND MACHINE FOR EDGE COATING ROOFING ELEMENTS

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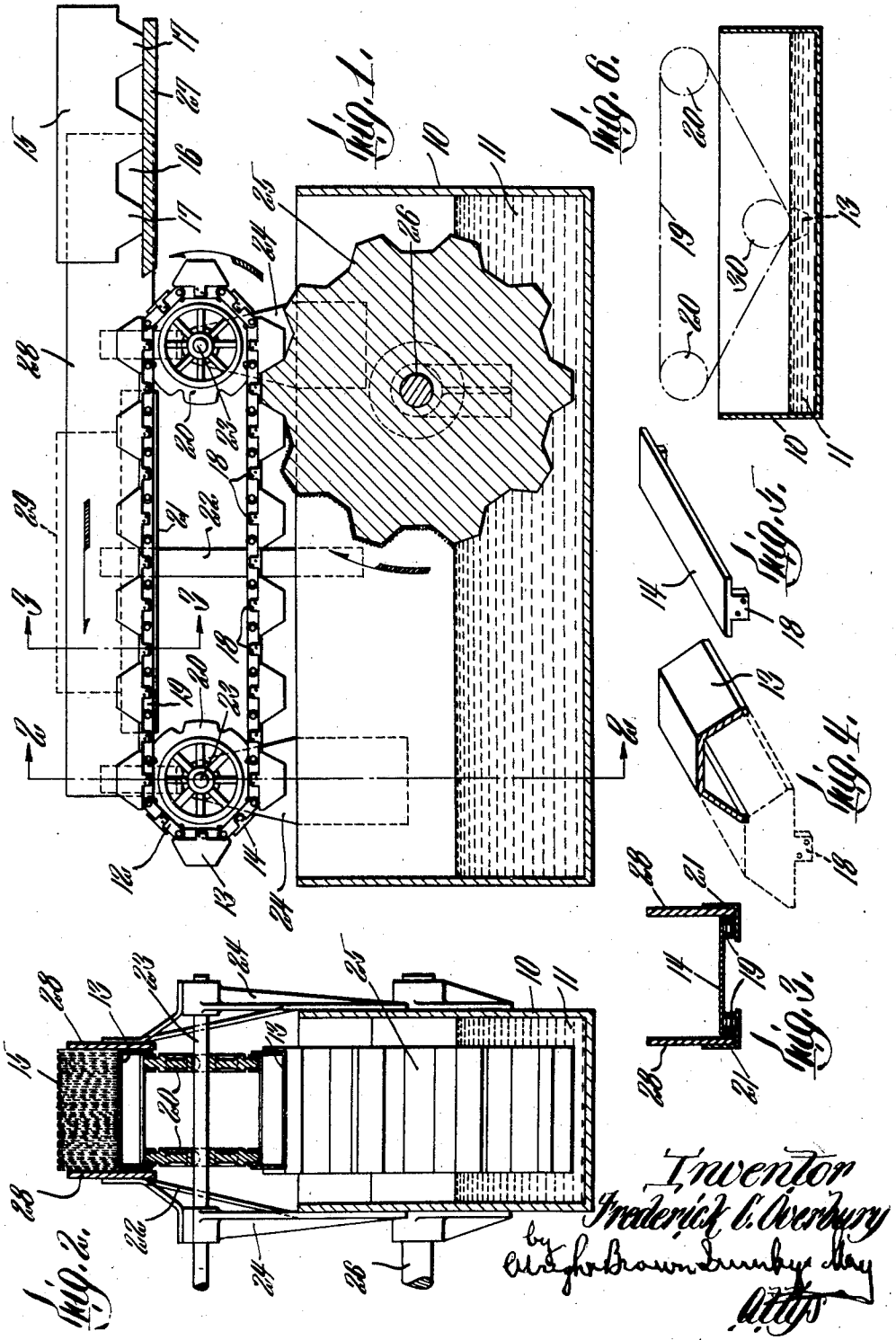


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

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METHOD OF AND MACHINE FOR EDGE-COATING ROOFING ELEMENTS

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This invention relates to a method of and apparatus for applying coating material, preferably of a waterproofing nature, such as asphalt, to edges of roofing elements such as strip shingles. Roofing elements of the type contemplated by this invention are customarily made with a foundation of felted fibrous material made in sheet form on a paper-making machine, the materials employed usually being rag or asbestos fiber or a mixture of these or other suitable fibers. The resulting sheet is preferably of a somewhat bibulous structure capable of taking up and holding a relatively large amount of saturant. In the manufacture of roofing of this type, the felted sheet is customarily saturated as thoroughly as possible with a suitable waterproofing material such as low melting-point asphalt which can be heated to a comparatively high degree of fluidity to insure rapid and thorough penetration of the pores and voids of the sheet without overheating and injuring the fibers of the sheet itself. This saturant, however, does not protect the fibers fully from absorption of atmospheric moisture, so that the saturated sheets are customarily supplied with a coating of waterproofing material having somewhat different and more weather-resistant characteristics, this coating overlying and completely covering the face of the sheet which is to be exposed to the weather and being in turn protected by a masking layer of grit particles or other similar material which are applied to the coating while the latter is still hot and sticky and which are partially embedded in the coating so as to be held firmly thereby and to completely cover the coating layer. A similar coating of waterproofing material may also be applied, if desired, to the opposite side of the sheet to protect the fibers more thoroughly from the access of moisture. From the sheet so prepared, roofing elements of any desired size and shape are cut and collected for packaging and shipment. It is, however, desirable to protect the fibrous base of such roofing elements further by sealing the cut edges of the elements which will be exposed to the weather when laid on a roof. Various means have been devised to apply such an edge coating to such roofing elements, each means having certain inherent disadvantages as well as advantages. The purpose of the present invention is to provide apparatus by which such edge coating can be effected in a convenient, economical and superior manner. The invention consists briefly in providing a member having a surface shaped to conform to the edges of the roofing elements which are to be coated, combined with means for applying to such a surface a film of coating material of predetermined thickness, the apparatus being so arranged that the surface after receiving its film of coating material may transfer it to the edges of roofing elements which are to be coated.

Various advantageous features and combinations inherent in my invention will be apparent to one skilled in the art from the disclosure of the invention in the following description and on the drawings, of which,—

Figure 1 is a side elevation, partly in section, of apparatus constituting an embodiment of the invention.

Figure 2 is a view of the apparatus from an end thereof, partly in section, the section being taken on the line 2—2 of Figure 1.

Figure 3 is a section on the line 3—3 of Figure 1.

Figure 4 is a fragmentary perspective of an element of the coating member shown in Figure 1.

Figure 5 is a perspective of another element of the coating member in Figure 1.

Figure 6 is a diagrammatic view of a slight modification of the apparatus shown in Figure 1.

Referring to the drawing in detail, 10 represents a tank or container having a pool 11 of coating material such as high melting-point asphalt. The coating material may be heated to a sufficient degree of fluidity or may be mixed with suitable solvents for cold application. An endless edge-coating member 12 is conveniently located over the tank 10, this member comprising successive sections 13, 14 which are suitably shaped to combine in forming a surface which is complemental to the edges of the roofing elements which are to be coated. Figure 1 illustrates a

particular form 15 of strip shingle for the coating of which the apparatus illustrated is especially adapted, but it is obvious that many other varieties of shapes can be coated with equal facility by this type of apparatus. The sections 13, 14 of the coating member 12 are shaped to conform to the edges of the strip shingle 15. For this particular shape, it is obvious that the coating member 12 may be built up of sections of only two shapes, but it is obvious that in order to coat some other shapes of strip shingles, it may be necessary to build up the coating member 12 of sections of three or more shapes. As shown, the sections 13 have the shape of ribs with a semi-hexagonal cross section, the outer surface of these ribs being adapted to fit into the semi-hexagonal cut-outs 16 between the tabs 17 of the strip shingles. Between the sections 13 the sections 14 are located, each consisting of a flat plate adapted to engage the butt ends of the tabs 17. The sections 13, 14 are provided at their ends with suitable ears 18 by which they are adapted to be secured to successive links of a pair of conveyor chains 19 which are passed over spaced sprocket wheels 20. The pairs of sprocket wheels 20 are preferably arranged in horizontal relation over the tank 10 so that a horizontal stretch of the coating member 12 is thus presented for engagement with roofing elements to be coated. In order to maintain this stretch of the member 12 in a substantially straight line so as to keep the coating surface in contact with the edges of the roofing elements which are carried along therewith, I may provide a support therefor comprising a pair of angle irons 21 to serve as tracks upon which the conveyor chains 19 may slide, the angle irons 21 being supported from the sides of the tank as by suitable uprights 22. Each pair of sprocket wheels 20 is mounted on a suitable shaft 23 which may be journaled in standards 24, one of these shafts being preferably driven by any convenient source of power (not shown). In order to apply coating material to the surfaces of the sections 13, 14, I may provide a feed wheel 25 which may be suitably mounted on a shaft 26 and driven either by contact with the elements 13, or independently, but in timed relation with the motion of the conveyor 19, so that the peripheral speeds will be equal. The wheel 25 is shaped so that every portion of the coating surfaces of the sections 13, 14 will contact with the periphery of the wheel 25 as they pass thereover. The wheel is adapted to dip a portion of its periphery into the pool 11 of asphalt or coating material. A film of the coating material adheres to the peripheral surface of the wheel and is carried up and transferred to the coating surfaces of the sections 13, 14. These sections, after receiving a film of coating material from the wheel 25, are at once carried around to the upper stretch between the wheels 20 where they are in a position to be engaged by the edges of the roofing elements to be coated. Any suitable method or means may be employed for bringing the roofing elements 15 into contact with the coating sections 13, 14, and for subsequently removing the roofing elements therefrom. As shown, a table 27 is located approximately on a level with the upper stretch of the conveyor and suitable guards or guide members 28 are provided to maintain the roofing elements in proper upright position during their passage across the machine. While the coating member 12 may be made narrow enough to receive a single strip shingle 15, it is preferably made wide enough to receive batches or groups of any desired number thereof as indicated in Figure 2. In operating this machine, an operator collects a sufficient number of strip shingles 15 together and places them butt edge down on the table 27 as indicated in Figure 1. From this position they may be slid toward the left until a section 13 passing up around the sprocket wheel 20 engages in a cut-out 16 of the group of shingles 15 and thereupon feeds the shingles across the machine on the stretch supported by the track 21, the coated surfaces of the sections 13, 14 engaging the butt edges of the elements throughout their entire extent and transferring thereby a complete coating to the butt edges owing to the adhesive quality of the waterproofing material. The stretch of conveyor between the wheels 20 is preferably of sufficient length to permit the shingles to be in contact with the coated surface for a substantial interval of time. A group of shingles in the course of passing through the machine is indicated in dotted lines as at 29. When the shingles reach the left hand end of the machine as illustrated in Figure 1, they may be removed from the conveyor manually or by any convenient mechanism (not shown). The shingles thus removed from the machine may be further treated as desired. In order to protect the asphalt on the coated edges from defects of the weather, particularly rays of sunshine, the coating on the edges, while still sticky and adhesive, may be covered with a surfacing and masking layer of grit particles of the same or different kind as that used for the exposed face of the shingles.

As illustrated in Figure 1, a feeding wheel 25 is used to pick up coating material and to deposit it upon the coated surface of the sections 13, 14. The particular manner in which coating material is applied to the sections 13, 14 before they come in contact with the edges of the shingles is however not material. I may apply asphalt or other coating material to the conveyor by playing a jet or jets of asphalt thereagainst from below, by running a portion of the conveyor through the pool 11, by repeatedly dipping the whole conveyor in the pool 11, or in any other desired manner.

In Figure 6 is diagrammatically illustrated mechanism for carrying out one other such method, a third sprocket wheel 30 being provided for the conveyor 19, this third wheel being positioned within the container 10 in such a manner that the sections 13 and 14 at one point in their path of travel will be immersed in the bath 11. A single section 13 is shown by way of illustration in the position of immersion.

Having thus described certain embodiments of my invention, it should be evident to those skilled in the art that various changes and modifications may be made therein without departing from its spirit or scope as defined by the appended claims.

I claim:—

1. The method of coating the butt edges of a roofing element, which comprises forming a layer of coating material on a surface complemental to said edges, moving the element in the direction of its length and applying the coated surface to the edges while the element is thus in motion.

2. The method of coating the butt edges of a roofing element, which comprises forming a layer of coating material on a surface complemental to said edges, and contacting said surface with said edges while moving said element and surface in the same direction and at substantially the same speed.

3. The method of edge-coating roofing elements, which comprises assembling a plurality of elements with butt edges together forming a surface to be coated, forming a layer of coating material on a surface complemental to the surface to be coated, and bringing the two said surfaces together while moving said elements in the direction of the length thereof.

4. The method of edge-coating roofing elements, which comprises assembling a plurality of elements with butt edges together forming a surface to be coated, depositing a layer of coating material on a surface complemental to the surface to be coated, and contacting said surfaces while moving them in the same direction and at substantially equal speeds.

5. Apparatus for coating edges of roofing elements, which comprises a flexible endless member having a surface shaped to be conformable to the edges to be coated, a pair of spaced rotatable means for supporting and feeding said member with a stretch thereof between said means, means for maintaining said stretch substantially straight to conform to the entire extent of the edges to be coated, and means for applying to said member a film of coating material.

6. Apparatus for coating edges of roofing elements, which comprises means for simultaneously both feeding said elements and coating the edges thereof, said means having a surface conformable to the edges to be coated, and means for applying a film of coating material to said surface to be transferred to said edges.

7. The method of coating the butt edges of a roofing element, which comprises forming a layer of coating material on a surface complemental to said edges, and transferring the coating material from said surface to said edges by contacting said surface and edges while conveying said element in a direction longitudinally of said edges.

8. The method of coating the butt edges of a roofing element, which comprises feeding said element in the direction of the length of said element, applying coating material to a surface complemental to said edges and moving said surface in contact with said edges at a linear speed substantially equal to the linear speed of travel of the element.

9. The method of edge-coating roofing elements, which comprises assembling a plurality of elements with butt edges together forming a surface to be coated, forming a layer of coating material on a surface complemental to the surface to be coated and bringing the two said surfaces together while moving said surfaces in a direction longitudinally of said edges and at substantially equal linear speeds.

10. Apparatus for coating edges of roofing strips comprising means for moving roofing strips in the direction of their length when presented thereto, said means including a flexible endless member having a surface complemental to the edges to be coated, and means for covering said surface with a film of coating material prior to its engagement with strip edges, whereby coating material is applied to said edges as the strips are moved along in contact therewith.

In testimony whereof I have affixed my signature.

FREDERICK C. OVERBURY.