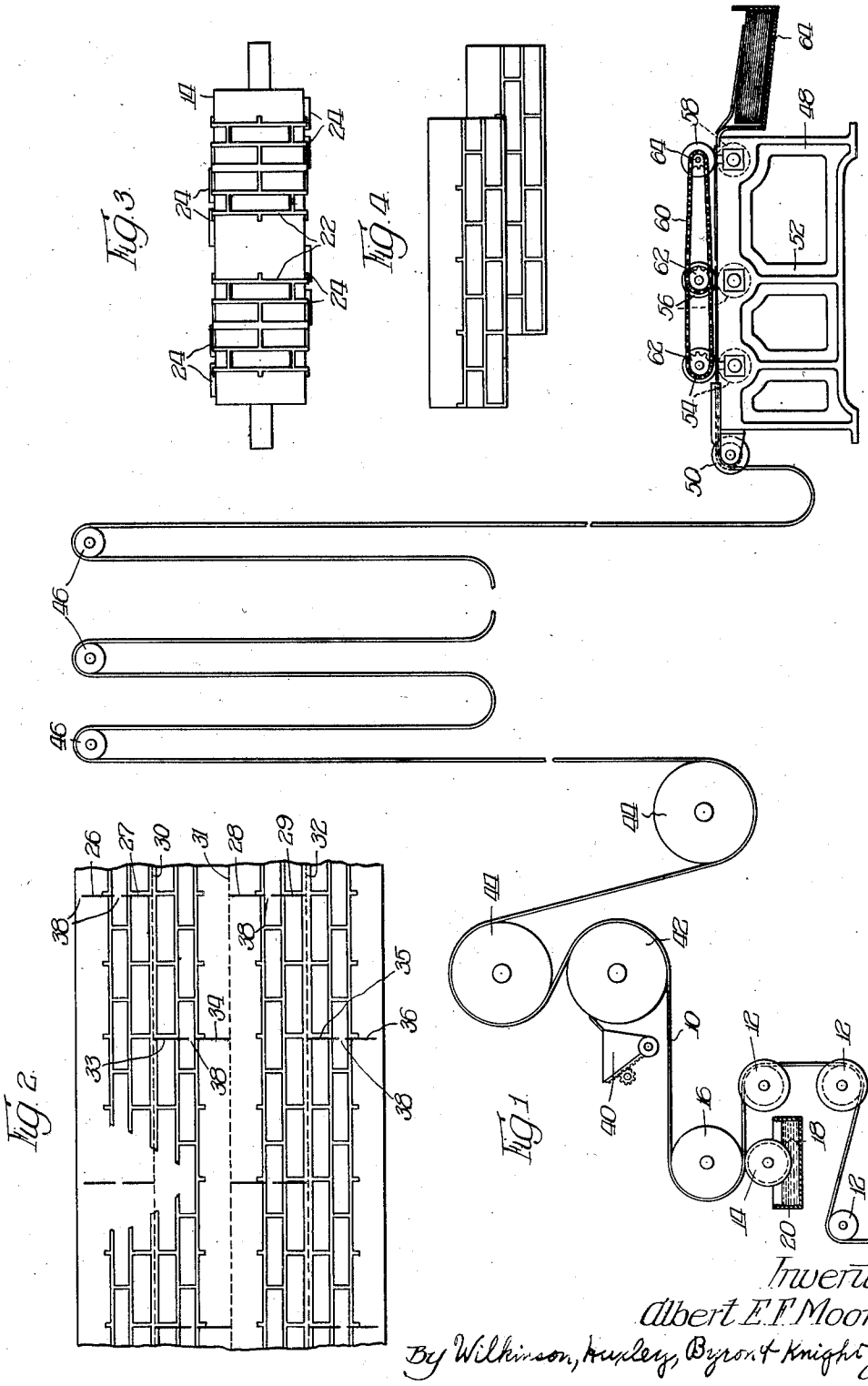
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PROCESS AND APPARATUS FOR MAKING BUILDING STRIPS

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PROCESS AND APPARATUS FOR MAKING BUILDING STRIPS

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This invention relates to a process and apparatus for making building strips such as siding or roofing. It has been illustrated as embodying a process and apparatus for painting or printing on a sheet of building material, which has preferably been pre-surfaced, some suitable design such as brick outlines, and simultaneously cutting transversely but with complete but non-continuous cuts at the exact position desired with respect to the design, surfacing the printed design, cooling the sheet in the usual way, slitting the sheet longitudinally and then completing the transverse severance as by pulling apart. By leaving the transverse cuts incomplete and delaying the longitudinal slitting the continuous strip is held intact and can be drawn through the surfacing and cooling apparatus in the old efficient manner. It would be impractical to leave the transverse cutting until after the surfacing and cooling, for the reason that it would then be very difficult to keep the transverse cuts coinciding with the design.

It is thus seen that my new process and apparatus accomplish the object of satisfactorily printing and cutting a continuous web of material into strips, having the cuts in a particular relation to the design. In a preferred use the strips run longitudinally of the continuous web so that they need not be limited in length to the width of the web.

In the drawing, which illustrates an embodiment of the device, and wherein like reference characters are used to designate like parts,

Figure 1 is a diagrammatic illustration of my new apparatus and process;

Figure 2 is a fragmentary view of the continuous web as it leaves the cutting and printing roll, showing the position of the transverse cuts;

Figure 3 is an elevation of the cutting and printing roll; and

Figure 4 is an elevation of the finished strips as laid.

Although my invention may take many forms, only one has been chosen for illustration. According to its preferred use the apparatus of this invention treats a continuous web which has previously been saturated and coated with a weather resisting material such as asphalt surfaced with granular material, usually of a single color, such as a brick red. This web 10 may be fed to the apparatus of this invention by the idler rollers 12, preferably coming directly from the initial surfacing machine. Some of the rollers 12 are preferably flanged in order to properly locate the web with respect to the adjoining apparatus.

From the feed rollers 12 the web passes between a printing and cutting roll 14 and its anvil roll 16. The printing and cutting roll 14 is partially submerged in a bath of asphalt paint 18 maintained in a suitable tank 20. As shown best in Figure 3 this roll 14 is supplied with raised printing surfaces 22 and transverse cutting knives 24. The printing surfaces may have any suitable design but have been illustrated as forming a die for printing outlines of bricks. The circumference of the roll 14 is preferably equal to several brick lengths and each strip as finally formed is equal to the circumference of the roll 14. The knives 24 are preferably located immediately adjacent certain transversely extending portions of the printing die. These knives are also staggered so that in the printed and cut web shown in Figure 2 the cuts of the knives on one side of the roll will lie along the lines 26, 27 in one zone, and 28, 29 in a spaced zone. It should be noted that the continuous web will later be slit along the dotted lines 30, 31 and 32 into four zones or strands of shingle strips, thus one set of plates partially cuts one zone transversely along the lines 26 and 27. The third zone is cut along the lines 28 and 29. The blades 24 on the other side of the roll will cut the second and fourth zones along the lines 33, 34, 35 and 36.

These transverse cuts are so arranged that they do not interfere with the continuous movement of the web 10. Thus each cut is spaced from the other cuts and from the edges to provide the connecting ties 38 which prevent a separation at the middle of the strip. By staggering cuts in adjacent zones the two strips in the first which will eventually be separated by transverse cuts 27 and 28 are held together by the adjacent strip of the next zone which at that point is uncut. Likewise the two strips of the second zone which will be severed by cuts 33 and 34 are held together not only by the web 38 but also by the adjacent first and third zone which are not cut on the line of cuts 33 and 34.

In its incompletely cut form described, the web 10 is drawn over the end of the roller 16 and under the surfacing hopper 40. This surfacing hopper functioning in a manner well known sprinkles grit of a contrasting color uniformly over the web. The web then passes around pressure roll 42 which presses the grit into the asphalt paint. As the web leaves the pressure roll 42 the grit which does not contact with the paint falls off and returns to the hopper 40. This leaves the original surface ex-

posed except under the printed design which is coated with the new material. Thus if the original surfacing was brick red and the printed outline shown in Figure 2 is of a contrasting color the siding will have the appearance of bricks, it being understood that the blank portions would be hidden by the usual overlapping as shown in Figure 4.

From the guide rolls 44 the web is run over the usual loopers, indicated diagrammatically by 46, to the severing and stacking machine 48. The severing and stacking machine is provided with a flanged guide roller 50 separated by suitable frames 52. Adjacent the guide roll 50 are located the feed rolls 54 and adjacent to these are located the slitting discs 56. The feed rolls 54 and slitting discs 56 are preferably driven at substantially the same peripheral speed. A pair of pull rolls 58 are located a little further than a strip length from the slitting discs 56. These pull rolls 58 are driven slightly faster than the feed rolls 54 and slitting discs 56 as indicated by the chain 60, the larger sprockets 62 on the feed rolls and discs and the smaller sprocket 64 by which the pull rolls 58 are driven. The effect of the increased peripheral speed of the pull rolls 58 is to fully separate the strips transversely after they have been longitudinally separated by the slitting discs 56. In other words, the pull rolls 58 tear the ties 38 between the strips. The separated strips are then shoved out into a suitable rack 64 or passed on to some other suitable handling apparatus.

The operation of the apparatus and the performance of the process may be summarized as follows: The pre-surfaced web is printed with an asphalt paint in a particular design and cut-through along coinciding lines by the roll 14. The printed design is then surfaced as it passes under the hopper 40 and over the pressure roll 42 leaving the unprinted portions exposed. The web is then cooled in the usual manner as by running through loopers. As the web is drawn from the looper, its movement at a given speed is compelled by the feed rollers 54 and it is slit longitudinally by the slitting discs 56. At this point the strips are completely separated except for the ties 38. The pull rolls 58 then pull apart the strips, tearing the ties 38, and then shove the severed strips out, stacking them in the rack 64 or passing them on to some special handling apparatus.

It is to be understood that I do not wish to be limited by the exact embodiments of the device shown, which are merely by way of illustration and not limitation, as various and other forms of the device will of course be apparent to those skilled in the art without departure from the spirit of the invention or the scope of the claims. It should especially be noted that the incomplete severance may take the form of deep scoring rather than spaced complete cuts, and that the final tearing apart may be performed in several manners.

I claim:

1. The method of making strips of building material comprising cutting a web transversely partially across one zone, printing a design on said web in a particular and predetermined relation to the cut, cutting the web transversely partially across an adjacent zone at a staggered position with respect to said cut, further treating said web while maintaining the web intact between said staggered cuts, and subsequently severing the zones of said web from one another in a line extending from the first cut to the second cut, and completing the transverse severance of each zone into small strips.

2. The method of making building strips and the like comprising making transverse substantially straight line cuts through an elongated web in each of several contiguous zones extending lengthwise of the web, the cuts in each zone being spaced apart the length of a shingle strip and being staggered with respect to the cuts of any adjacent zone, said cuts leaving the edges of the web intact; substantially simultaneously printing a design with hot asphalt in register with said cuts; maintaining the web intact between said staggered cuts while suspending said web and drawing it along by its own tensile strength for further treatment including cooling, there being no further asphalt treatment in the vicinity of said cuts prior to complete severance of the web; subsequently severing said web longitudinally between said zones along a line to substantially connect the transverse cuts along either side of the line of longitudinal severance and completing the transverse severance of the portions thus formed by pulling them apart longitudinally into small strips.

3. Apparatus for making building strips and the like including means for partly severing a web transversely positioned to act on the web subsequently to any and all treatment of the web in asphalt sprays or baths prior to final severance, means for printing a design on said web with hot asphalt in registry with the cuts formed by said cutting means, means for drawing said sheet along and suspending it by its own tensile strength for further operations, said cutting means including knives which as a group extend the entire width of the web except for slight gaps two of which are left at the positions of the edges of the web, said knives being arranged and operated to cut in substantially straight lines substantially across each of several longitudinally extending zones, the cuts in each zone being sufficiently spaced from each other and sufficiently staggered from the cuts in adjacent zones to leave the web with enough strength to be supported and drawn along by its own tensile strength; means for subsequently slitting said sheet in a straight line or straight lines between said zones, means for registering said web in its transverse position with respect to said slitting means, means for restraining the movement of the slit web at one point, and means for moving a portion of said web beyond said point at a faster speed to complete the severance of said portions by drawing one part longitudinally from another.

4. Apparatus for making building strips and the like including a printing and cutting cylinder for partly severing a web transversely and for printing a design on said web with hot asphalt in registry with the cuts formed by said cutting means, means for drawing said sheet along and suspending it by its own tensile strength for further operations, said printing and cutting cylinder including knives which as a group extend the entire width of the web except for slight gaps two of which are left at the positions of the edges of the web, said knives being arranged and operated to cut in substantially straight lines substantially across each of several longitudinally extending zones, the knives for each zone being sufficiently spaced from each other and sufficiently staggered from the knives for adjacent zones to leave the web with enough strength to be supported and drawn along by its own tensile strength; means for subsequently slitting said sheet in a straight line or straight lines between

said zones, means for registering said web in its transverse position with respect to said slitting means, means for restraining the movement of the slit web at one point, and means for moving a portion of said web beyond said point at a faster speed to complete the severance of said portions by drawing one part longitudinally from another.

5. Apparatus for making strips of building material comprising means for cutting a web transversely partly across one zone, means for printing a design on said web with uniformity in a particular and predetermined relation to the cuts formed by said means, means for cutting the web transversely partly across a chosen zone at a position sufficiently staggered with respect to said cuts to leave the web with enough strength to be reliably self-supporting for further treatment, means for further treating said web while maintaining said web intact between said cuts, means for subsequently severing the zones of said web from one another in a line extending from the first of said cuts to the latter of said cuts, and means for completing the transverse severance of said zones into similar strips.

6. Apparatus for making strips of building material comprising means for cutting a web transversely partly across one zone, means for printing a design on said web with uniformity in a particular and predetermined relation to the cuts formed by said means, means for cutting the web transversely partly across a chosen zone at a position sufficiently staggered with respect to said cuts to leave the web with enough strength to be reliably self-supporting for further treatment, both said cutting means being positioned to cut the web subsequently to all treatment of the web in asphalt sprays or baths prior to final severance, means for further treating said web while maintaining said web intact between said cuts, and means for subsequently severing the zones of said web from one another in a line extending from the first of said cuts to the latter of said cuts, and means for completing the transverse severance of said zones into similar strips.

7. Apparatus for making strips of building material comprising means for cutting a web transversely partly across one zone, means for printing a design on said web with uniformity in a particular and predetermined relation to the cuts formed by said means, means for cutting the web transversely partly across a chosen zone at a position sufficiently staggered with respect to said cuts to leave the web with enough strength to be reliably self-supporting for further treatment, both said cutting means being positioned to cut the web subsequently to all treatment of the web in asphalt sprays or baths prior to final severance, means for further treating said web while maintaining said web intact between said cuts, means for subsequently severing the zones of said web from one another in a line extending from the first of said cuts to the latter of said cuts, and means for completing the transverse severance of said zones into smaller strips by pulling them apart along the line of the original cuts.

8. Apparatus for making strips of building material comprising means for cutting a web transversely partly across one zone, means for printing a design on said web with uniformity in a particular and predetermined relation to the cuts formed by said means, means for cutting the web transversely partly across a chosen zone at a position sufficiently staggered with respect to said cuts to leave the web with enough strength to be reliably self-supporting for further treatment, both said cutting means being positioned to cut the web subsequently to all treatment of the web in asphalt sprays or baths prior to final severance, means for further treating said web while maintaining said web intact between said cuts, means for subsequently severing the zones of said web from one another in a line extending from the first of said cuts to the latter of said cuts, and means including two sets of rolls, the second of which moves peripherally faster than the first for completing the transverse severance of said zones into smaller strips by pulling them apart along the line of the original cuts.

9. Apparatus for making strips of building material comprising means for cutting through a web transversely partly across one zone, means for printing a design on said web with uniformity in a particular and predetermined relation to the cuts formed by said means, means for cutting through the web transversely partly across a chosen zone at a position sufficiently staggered with respect to said cuts to leave the web with enough strength to be reliably self-supporting for further treatment, both said cutting means being positioned to cut the web subsequently to all treatment of the web in asphalt sprays or baths prior to final severance, means for further treating said web while maintaining said web intact between said cuts, means for subsequently severing the zones of said web from one another in a line extending from the first of said cuts to the latter of said cuts, and means for completing the transverse severance of said zones into smaller strips.

10. Apparatus for making strips of building material comprising means for cutting a web transversely partly across one zone, means for printing a design on said web with uniformity in a particular and predetermined relation to the cuts formed by said means, means for cutting the web transversely partly across a chosen zone at a position sufficiently staggered with respect to said cuts to leave the web with enough strength to be reliably self-supporting for further treatment, both said cutting means being positioned to cut the web subsequently to all treatment of the web in asphalt sprays or baths prior to final severance, means for further treating said web while maintaining said web intact between said cuts, and means for subsequently severing the zones of said web from one another by slitting in a line extending from the first of said cuts to the latter of said cuts, and means for completing the transverse severance of said zones into smaller strips.

11. The method of making strips of building material comprising cutting a web transversely, partially across one zone, printing a design on said web in a particular and predetermined relation to the cut, cutting the web transversely partially across an adjacent zone at a staggered position with respect to said cut, further treating said web while maintaining the web intact between said staggered cuts there being no further application of asphalt to said cuts prior to complete severance of the web, and subsequently severing the zones of said web from one another in a line extending from the first cut to the second cut, and completing the transverse severance of each zone into small strips.

12. The method of making strips of building material comprising cutting a web transversely partially across one zone, printing a design on said web in a particular and predetermined rela-

tion to the cut, cutting the web transversely partially across an adjacent zone at a staggered position with respect to said cut, further treating said web while maintaining the web intact between said staggered cuts there being no further application of asphalt to said cuts prior to complete severance of the web, subsequently severing the zones of said web from one another in a line extending from the first cut to the second cut, and completing the transverse severance of each zone into small strips by pulling said strips apart.

13. The method of making strips of building material comprising cutting through a web transversely partially across one zone, printing a design on said web in a particular and predetermined relation to the cut, cutting through the web transversely partially across an adjacent zone at a staggered position with respect to said cut, further treating said web while maintaining the web intact between said staggered cuts there being no further application of asphalt to said cuts prior to complete severance of the web, and subsequently severing the zones of said web from one another in a line extending from the first cut to the second cut, and completing the transverse severance of each zone into small strips.

14. The method of making strips of building material comprising cutting a web transversely partially across one zone, printing a design on said web in a particular and predetermined relation to the cut, cutting the web transversely partially across an adjacent zone at a staggered position with respect to said cut, further treating said web while maintaining the web intact between said staggered cuts by slitting there being no further application of asphalt to said cuts prior to complete severance of the web, and subsequently severing the zones of said web from one another in a line extending from the first cut to the second cut, and completing the transverse severance of each zone into small strips.

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