

Aug. 13, 1935.

R. MACLEAN
WEB SURFACING APPARATUS

2,011,006

Filed Sept. 10, 1928 3 Sheets-Sheet 1

Fig. 4

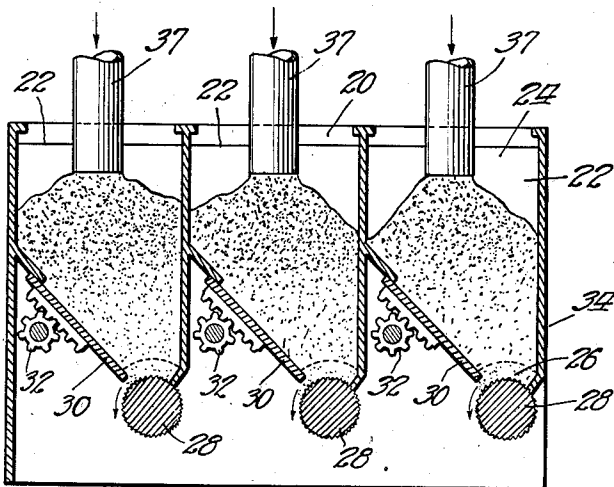
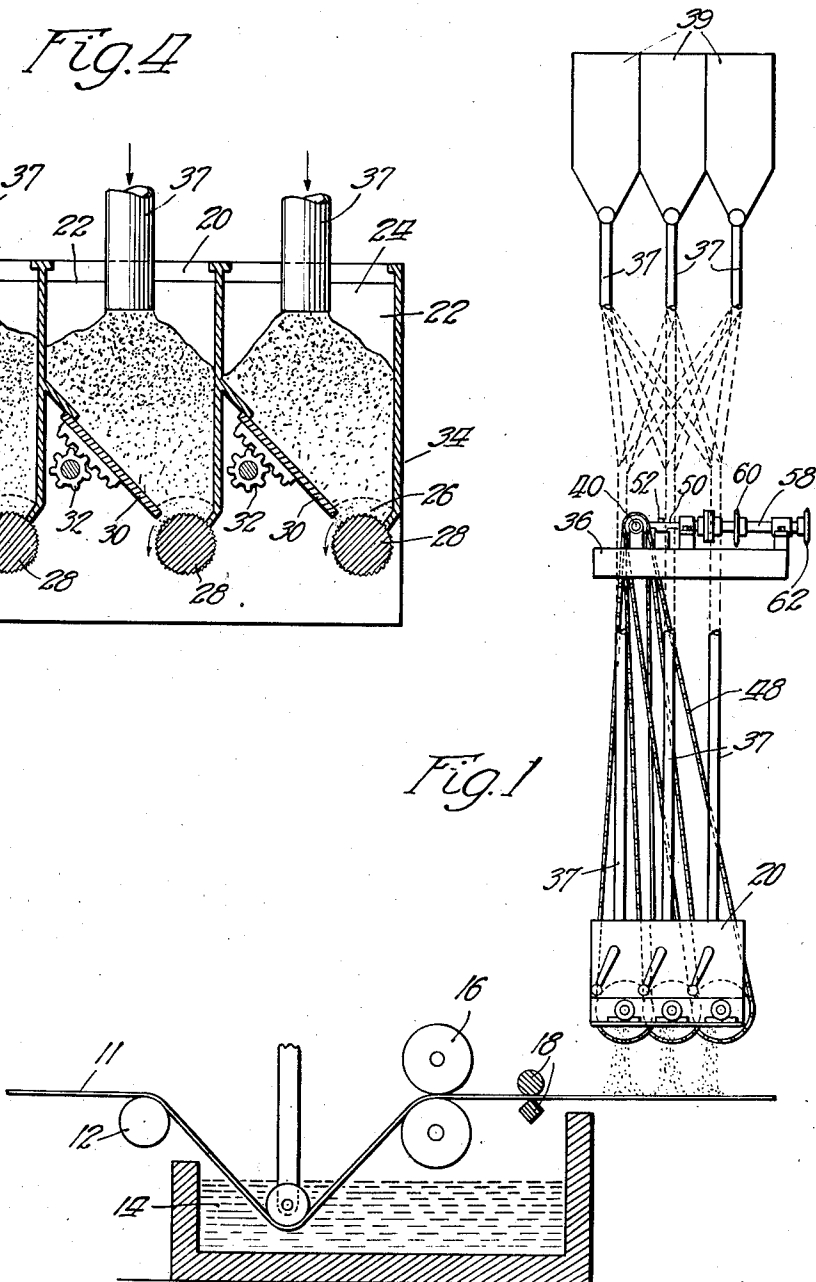


Fig. 1



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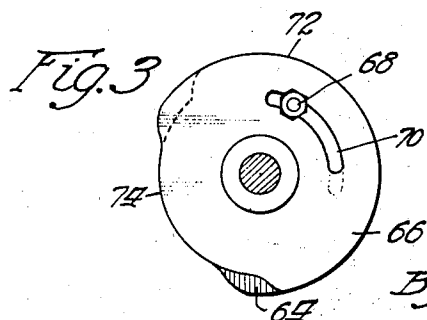
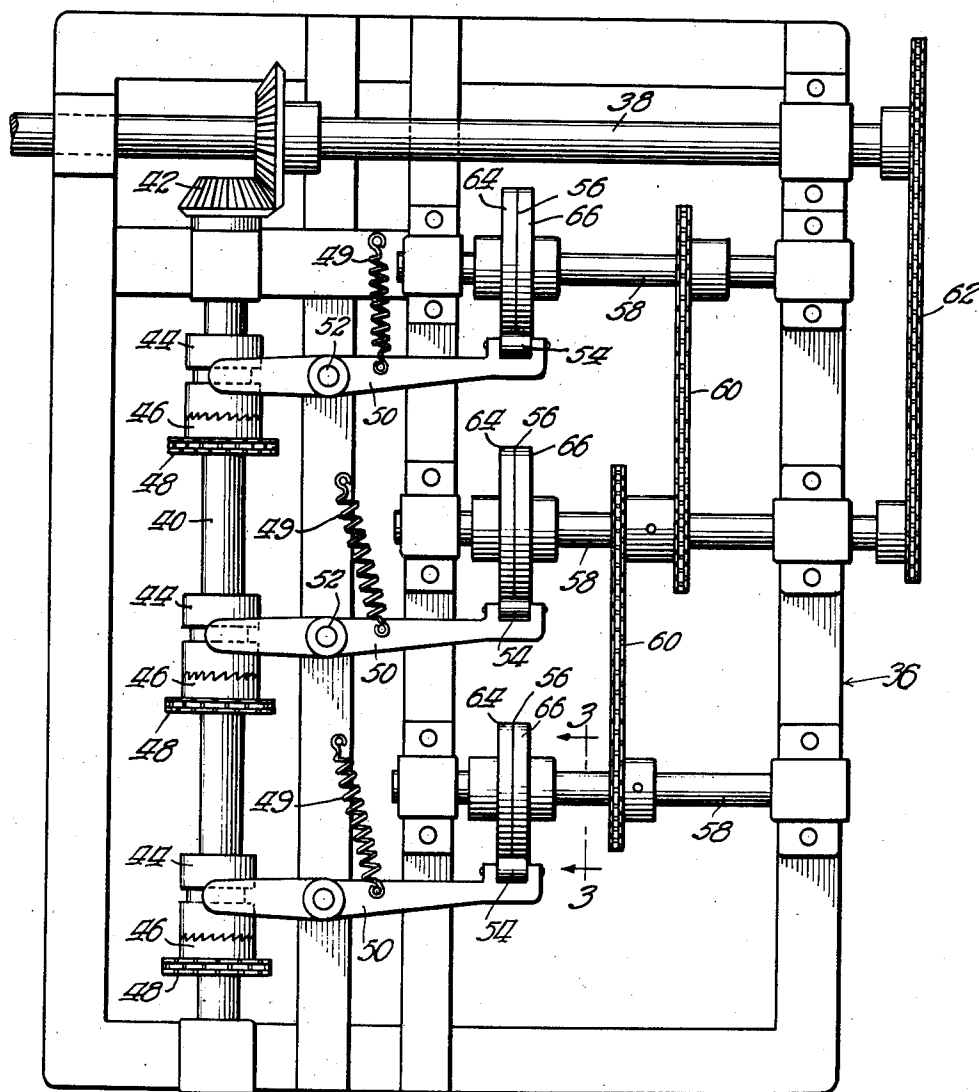
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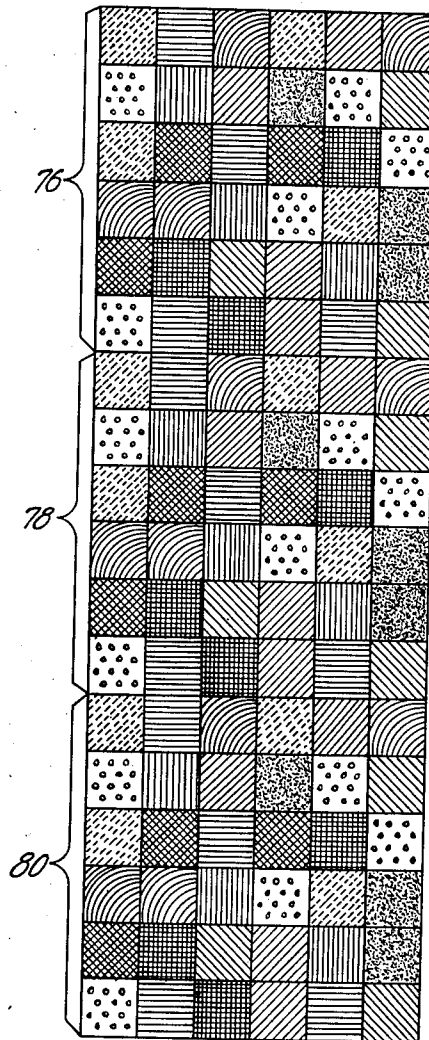
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Fig. 5

7	2	10	7	3	10
9	1	3	8	9	4
7	5	2	5	6	9
10	10	1	9	7	8
5	6	4	3	1	8
9	2	6	3	2	4

Fig. 6



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UNITED STATES PATENT OFFICE

2,011,006

WEB SURFACING APPARATUS

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Application September 10, 1928, Serial No. 304,882

3 Claims. (Cl. 91—43)

My invention relates to surfacing and includes among its objects and advantages an improvement in the application of surfacing materials and in the product resulting from such application. It has been exemplified in connection with apparatus of the type commonly employed for producing flexible roofing material.

In the accompanying drawings:

Fig. 1 is a partly diagrammatic side elevation of a surfacing means and some associated devices.

Fig. 2 is a plan view of a timing transmission.

Fig. 3 is a detail as on line 3—3 of Fig. 2 of one of the cams of the timing mechanism.

Fig. 4 is a vertical longitudinal section through the feed boxes.

Fig. 5 is a diagram of one system of supply.

Fig. 6 is a plan view of part of a strip of roofing.

In the embodiment of apparatus according to the invention, selected for illustration, a strip of felt 11 is drawn over a roller 12 and through a bath 14 of hot liquid coating material; after which it passes through rolls 16 which perform a squeezing and gauging function, and through a smoothing and scraping means 18. After leaving these devices, the strip of material has a soft, sticky tar surface to which the grits used for surfacing will adhere in considerable quantity especially when they are pressed into the strip by a suitable roller shortly after being deposited thereon.

The strip now passes through a surfacing zone comprising the space below the feed boxes 20. In this zone the entire area of the strip receives a uniform coating of surfacing material. Different predetermined areas of the strip receive different predetermined kinds of material, but the small areas receiving the various kinds of material are neatly and effectively juxtaposed without any apparent discontinuity in the amount or effectiveness of the surfacing.

I have illustrated three individual troughs 22, each trough extending transversely throughout the transverse extent of the area to be surfaced. Each trough is subdivided by partitions 24 into a plurality of compartments. Each trough terminates in a bottom discharge slot 26 closed by a feed roller 28 so that material will be fed out only when the roller 28 rotates. The rate of feeding of the material may be controlled partly by the speed of the roller, but chiefly by forming one side wall of the slot in the form of a gate 30 adjustable by a suitable mechanical transmission 32 to vary the clearance between the edge of the gate and the roller. The partitions 24 have their lower edges at 34 spaced from the rollers 28

far enough so that the stream passing through the feed opening is continuous and uniform throughout the length of the roller.

I have indicated a system of chutes 37 for delivering material separately to each compartment, and a set of supply bins 39 for keeping the chutes filled.

In the embodiment illustrated the longitudinal spacing of the rollers 28 is equal to the transverse dimension of a compartment, and the small areas defined on the strip are, therefore, square.

All the rollers 28 are provided with transmission means indicated as a whole by the reference character 36 and illustrated in detail in Figs. 2 and 3. The shaft 38 is geared to the strip moving mechanism so as to have a definite speed ratio with respect thereto. The cross shaft 40 is driven from shaft 38 by bevel gears 42. Splined on the shaft 40 are three clutches 44 and adjacent each clutch is a drive sprocket 46 connected by a sprocket chain 48 to one of the rollers 28. Each clutch is braced by a spring 49 and controlled by a rocking lever 50 pivoted on a vertical pintle 52 beside the clutch. The end of the rock shaft carries a roller 54 riding on a compound cam 56 on a cam shaft 58. All three cam shafts are connected together to rotate at the same speed by sprocket chains 60 and they are all driven at a predetermined speed ratio by a sprocket chain 62 connecting one of the cam shafts to the shaft 38.

To produce a uniform coating over the entire area of the strip, it is necessary to rotate the rollers 28 while the strip 10 moves longitudinally through a distance equal to the longitudinal distance between adjacent rollers. The feed must then be interrupted to permit the areas already surfaced by the middle and foremost rollers to pass through under the rearmost roller. The rollers must be started again in time for the rearmost roller to coat an area that will lie next to the area last coated by the foremost roller without any discontinuity. Because the grits are poured on to the strip from an appreciable height there is an appreciable spreading at the edges of the deposit made by a given roller during one active period. By correct timing, the tapered edges of the different deposits may be overlapped just enough to secure uniformity in the total deposit of material, and a slight blending of the different materials at the lines between adjacent areas covered by different individual deposits.

Where only three rollers are employed, this means a cessation of movement for an interval twice as long as the movement interval. Referring to Fig. 3 each cam is built up out of two

plates 64 and 66, one keyed to the cam shaft 58 and the other one adjustably connected to the keyed plate as by a clamping bolt 68 extending through a slot 70. In the embodiment illustrated, each plate has a raised portion 72 of constant radius and a lower portion 74 of smaller radius, and the low portion 74 comprises slightly more than one-third of the periphery of the plate. Thus, by mismatching the plates, as clearly indicated in Fig. 3, the ratio between the active and inactive periods for the rollers 28 may be adjusted with precision.

In the embodiment of the product according to the invention, selected for illustration in Fig. 6, I have indicated the effectiveness of the variation obtainable by the invention. Fig. 5 is a plan diagram of a set of six feed boxes. The numbers inscribed in the compartments correspond to ten different varieties of surfacing material arbitrarily indicated on Fig. 6 by the ten different varieties of shading and stippling employed on the corresponding areas. The arrangement of the numbers in Fig. 5 was determined by shuffling together fifty cards made up of five sets numbered from one to ten inclusive, and then drawing the first thirty-six cards at random. When employing six boxes, the inactive period will obviously need to be five times the active period.

Upon reference to Fig. 6, which indicates a strip carrying the surfacing deposited during three successive active periods, it will be noted that while the so-called pattern is repeated three times and the areas 76, 78 and 80 are identical in appearance, the strip as a whole does not impress the eye as having any regularity of pattern. This is all the more noteworthy, because it happens that in the arrangement of Fig. 5 there are three different places where two adjacent areas carry the same surfacing material.

When the strip of Fig. 6 is to be cut up into individual shingles or shingle strips and the shingles or strips laid on a roof at random, it will be obvious that materially less variety than that indicated in Fig. 6 will be sufficient to produce a roof in which the colored areas concur without any suggestion of a regular pattern. At the same time, where a pattern is desired, it will

be obvious that two or three different varieties of surfacing may readily be distributed among the compartments of Fig. 5 so as to produce a large number of very attractive patterns.

Without further elaboration, the foregoing will so fully explain the gist of my invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. In a machine of the class described, a plurality of receptacles for surfacing material, means associated with each receptacle actuatable to feed material therefrom, a power-driven shaft, clutch operated means individually connecting said power-driven shaft with said means for actuating the same, and cam means for individually and periodically actuating said clutch means substantially in unison, said cam means being individually adjustable for varying the timing of the active and inactive periods for said means.

2. The combination with a saturating device, and a conveyor for moving a strip of material through said device, of a plurality of feed boxes, means for feeding predetermined selected material into said boxes, a feed roller associated with each box, a power-driven member, a clutch for each of said rollers and associated with said power-driven member, means for individually connecting the rollers with their respective clutches, and adjustable cam means for actuating said clutches substantially in unison, said cam means being individually adjustable for varying the timing of the active and inactive periods for the rollers.

3. In a machine of the class described means for moving a strip of sheet material in a generally horizontal path, a plurality of receptacles for surfacing material positioned above the path of said strip of material, means associated with each receptacle to feed material therefrom, a power actuated transmission for operating all said feeding means, said transmission including separate individual rotary cam means for operating each feeding means intermittently independent of the operation of any other feeding means.

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