

May 11, 1926.

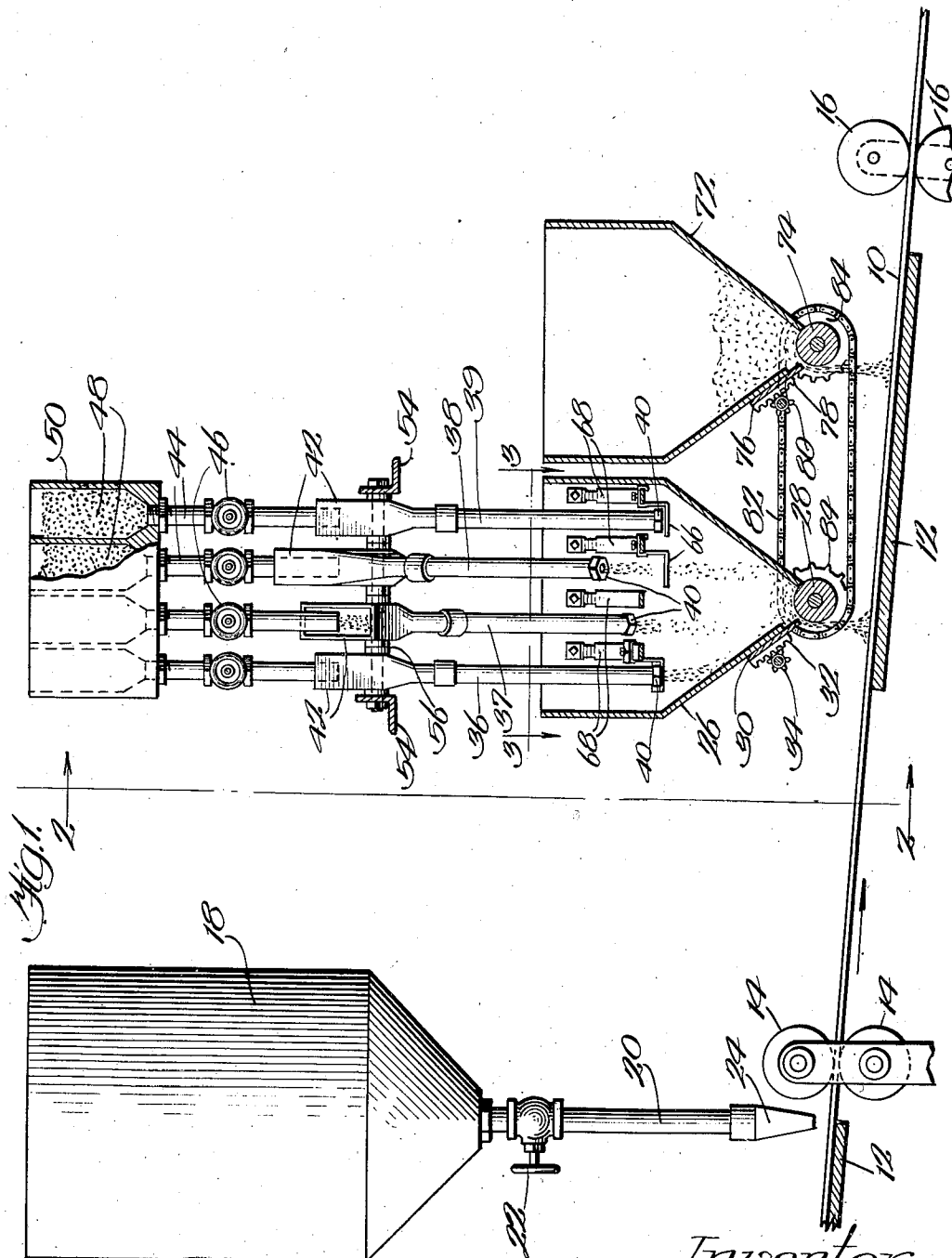
H. C. KOCH

1,584,557

METHOD AND MACHINE FOR COATING ROOFING AND THE LIKE

Filed August 5, 1925

3 Sheets-Sheet 1



Inventor:
Henry C. Koch
by Cheever & Cox Attys

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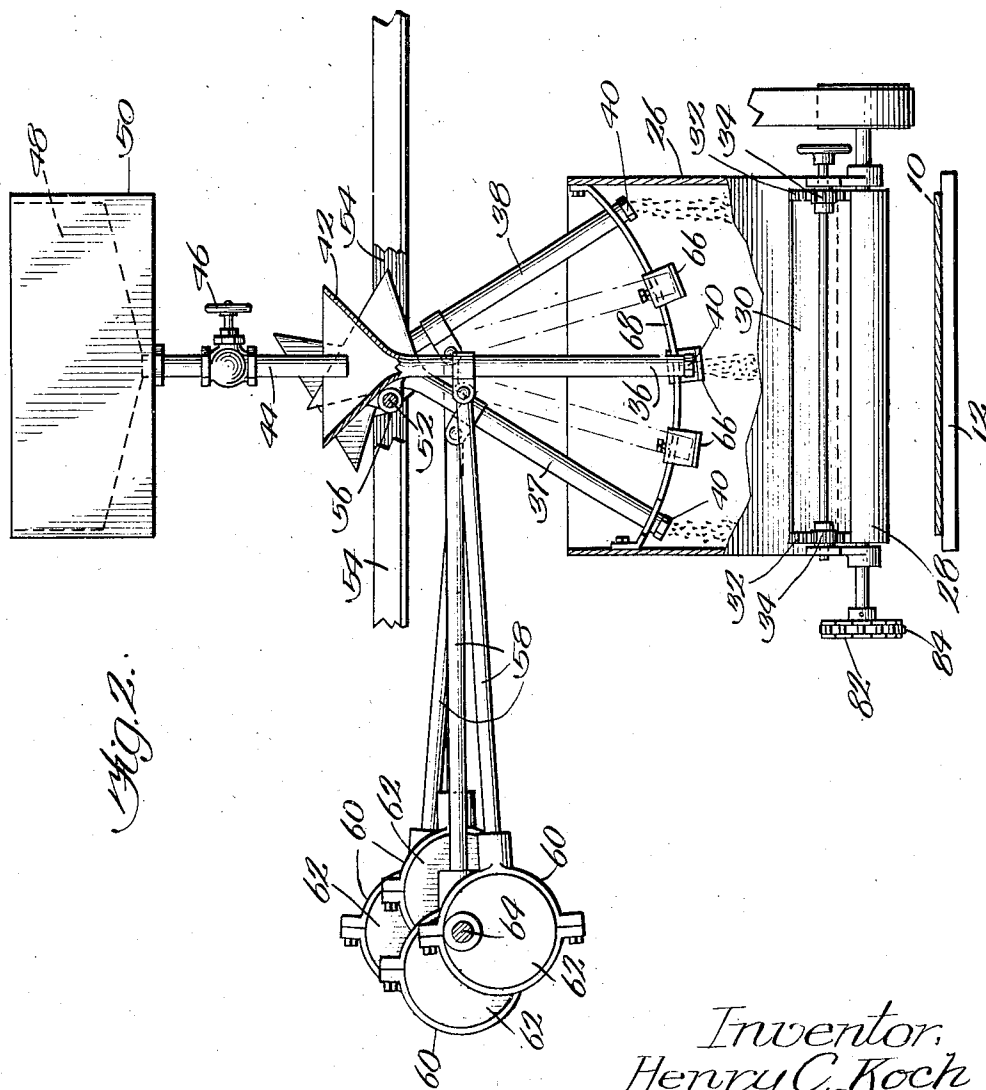
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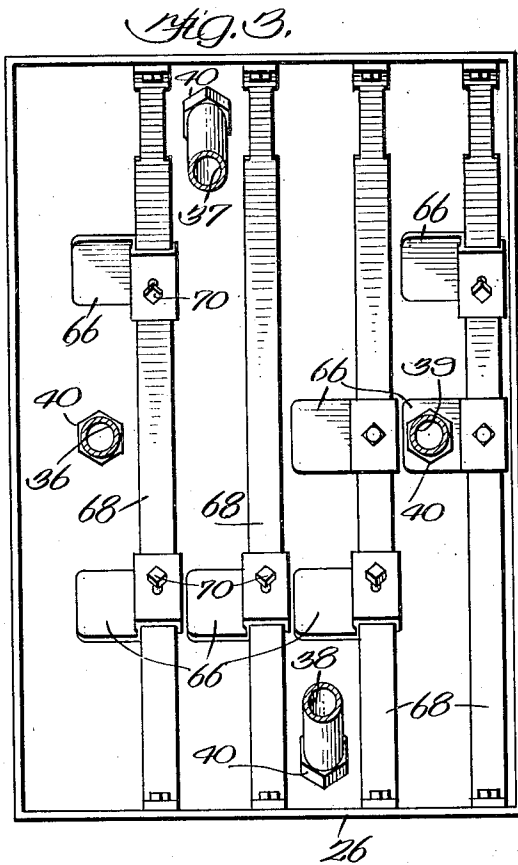
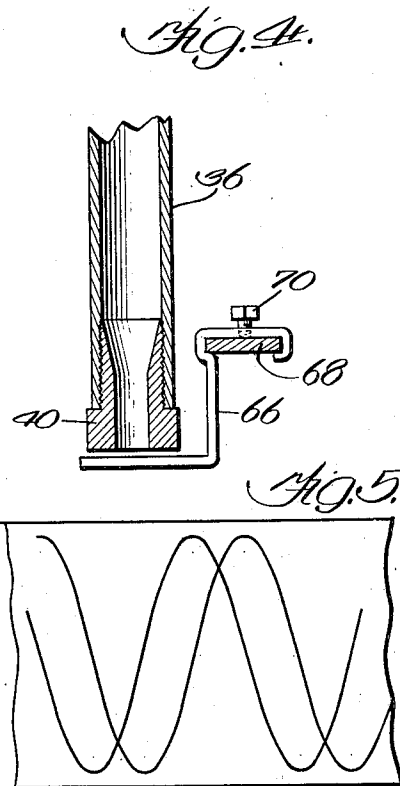
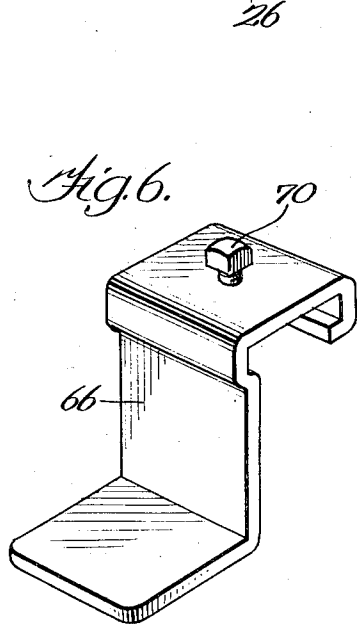
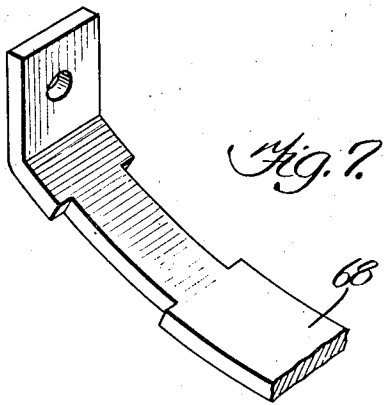
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METHOD AND MACHINE FOR COATING ROOFING AND THE LIKE

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UNITED STATES PATENT OFFICE.

HENRY C. KOCH, OF CHICAGO, ILLINOIS.

METHOD AND MACHINE FOR COATING ROOFING AND THE LIKE.

Application filed August 5, 1925. Serial No. 48,238.

My invention relates to coating machines for producing roofing and the like, and in order to explain the principle of the invention I shall describe it in connection with the production of roofing of the type in which the body of the roofing is coated with granulated material such as small stones of different colors to protect the surface and at the same time add to the attractiveness of appearance.

According to the present vogue it is desirable to produce roofing which is variegated as to color. With this in view striped roofing has been made, but this is apt to produce a monotonous appearance which is not entirely pleasing. According to another known method, small rectangles or shingles of different colors are produced. In laying these different colored shingles the workmen must see to it that the arrangement is diversified so that the ensemble will present a pleasing appearance, and there will not be splotches of one color appearing here and there on the roof. In order to assist the workmen in obtaining such diversification it has been the practice to make up bundles of shingles at the factory, these bundles containing divers colors so that if the roofing is laid by using up one bundle after another the proper diversification will probably result without calling upon the workmen for too much discretion or taste in selection. This selecting of different colors at the factory and bundling of the shingles together in an assortment of colors entails considerable labor, and hence expense, and one of the objects of my invention is to provide a roofing which will present a diversified color scheme obtainable automatically at the factory during manufacture. This method also has the disadvantage that shingles of different color must be kept on hand, which is also expensive and apt to reduce efficiency of manufacture. It is one of my objects to avoid this.

Another object of the invention is to provide roofing which may be produced in strips representing a row of shingles which when laid in the roof will present different colors which are distinguishable in themselves, but when viewed as a whole in the roof will give a uniform appearance in the sense that no definite patterns will be presented and no large splotches of a single color. In other words, my purpose is to provide a colored

roof which may be laid either in strips or single shingles and will produce a roof which when completed will avoid the appearance of stripes or other definite patterns and will also avoid the grouping together of comparatively large areas of a single shade or color.

Contributory objects concerned more particularly with the mechanical devices and arrangement of the devices will appear as the description proceeds.

I obtain my objects by the mechanism illustrated in the accompanying drawings in which—

Figure 1 is an assembly view in side elevation partly in section.

Figure 2 is a sectional elevation on the line 2—2 Figure 1.

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

Figure 4 is a vertical section of the mouth of one of the delivery spouts, together with the valve which temporarily stops delivery of granulated material therefrom.

Figure 5 is a diagrammatic view illustrating one form and arrangement of sinuous curves, such as the apparatus is capable of applying to the work strip.

Figure 6 is a perspective view of one of the valves or shut-offs for temporarily stopping the flow of granulated material from a spout to prevent two different colors from being superposed where the curves cross.

Figure 7 is a fragmentary perspective view showing a portion of one of the supports for the shut-off valves shown in Figure 6.

Like numerals denote like parts throughout the several views.

In the form selected to illustrate the invention, the work strip 10 travels over suitable supports 12 which may be in the form of tables or other supporting structures. Any suitable means may be provided for advancing the strip; for example, the distributing rollers 14 and pulling rollers 16. Means for advancing the work strip through a coating machine are well known and may assume various forms and hence need not be described in any further detail for the present purpose.

A tank 18 is provided near the head of the apparatus for applying an adhesive to the weather surface of the strip. I prefer to employ asphaltum of low melting point, al-

though the particular type of adhesive is not an essential feature of the invention. At the bottom of the tank is a down spout 20 controlled by a valve 22, and at the lower end of the spout is a distributing head 24 which extends almost entirely across the strip and is for supplying the adhesive in the quantities desired. The distributing rollers 14 previously mentioned are located just beyond the delivery head 24 and their function is partly to advance the strip and partly to press the adhesive into the strip and to distribute it uniformly across the entire width thereof.

Beyond the distributing rollers is a hopper 26 which receives the crushed stone or other granulated material of different colors to be applied to the strip. This hopper is open at the bottom and just beneath the opening is located a distributing roller 28. Its function will presently be described in more detail. The amount of opening between the hopper and the roller is regulated by a slide valve 30 controlled by racks 32 and cooperating pinions 34.

The granulated material is supplied to the hopper by spouts 36, 37, 38, 39, which, according to the illustrated design, are four in number, although the number may be varied. These spouts are in the form of pipes, which, if desired, may have reducing bushings 40 screwed into their lower end as illustrated in Figure 4. At the upper end each spout has its own individual hopper 42 shown in side section in Figure 2. Each of these hoppers receives its granulated material from one of a number of pipes 44, each of which has a controlling valve 46 and is connected at the top to its own individual compartment 48 in an overhead supply bin 50.

The spouts 36, 37, 38, 39 are pivotally supported upon a stationary shaft 52 supported in a frame work, which may consist of angle bars 54 as shown in Figures 1 and 2. The spouts have sleeves 56 which rock upon said shaft and also form spacers to keep the distributing spouts in proper position side-wise.

The distributing spouts are caused to swing or oscillate about the pivot shaft by means of eccentric mechanism consisting, according to the present design shown in Figure 2, of connecting rods 58 which are pivotally connected at one end to the spouts individually. At the other end they have straps 60 encircling the eccentric 62 fastened to the drive shaft 64. In the illustrated case these eccentrics are set 90 degrees apart so that the spouts will not swing in unison although they will swing in timed relation and preferably through arcs of the same amplitude. The arrangement is such that as the shaft 64 rotates the spouts will swing back and forth in the hopper 26 with

their lower end passing approximately from one edge to the other of the work strip 10 as it travels.

I have provided means for temporarily shutting off the flow of granulated material from the respective spouts 36, 37, 38, 39. In the illustrated design these consist of brackets 66 shown in perspective in Figure 6 and in side elevation in Figure 4. The foot of the bracket extends horizontally so that it may project under the spout and prevent discharge of the granulated material while the spout is passing it.

Each of these valves or brackets is mounted upon a supporting bar 68. They are slidable upon them and are held in any position to which they may be adjusted by means of a set screw 70 or otherwise. The supporting bars are preferably arcuate to conform to the path of the delivery mouth of the spouts, and they are bolted or otherwise secured at their ends to the sides of hopper 26, as shown in Figures 2 and 3.

Located beyond the hopper 26 is a supplemental hopper 72 for containing granulated material of neutral tone. This hopper is similar in construction to the hopper 26, being open at the bottom and there provided with a distributing roller 74. The amount of opening between the hopper and the roller is controlled by a gate 76 having racks 78 cooperating with pinions 80. The two rollers are caused to rotate in unison by means of a sprocket chain 82 which passes over a sprocket wheel 84 secured to the rollers 28 and 74.

In operation the compartments 48 in the hopper 50 are filled with crushed stone of various colors. I employ the term "crushed stone" generically to include stone of various kinds, slate etc., reduced to granular form, as will be readily understood by those familiar with the roofing industry. The tank 18 is supplied with asphaltum or other appropriate adhesive. When the machine is thus charged the advancing mechanism for the work strip 10 is started, and the valve 22 opened to permit the flow of adhesive. As the adhesive descends onto the strip it soon passes between the rollers 14 and is spread by them entirely across the strip in a substantially uniform layer and is pressed into close contact with it. As the strip advances the valves 46 are open and the granulated stone passes down through the spouts 36, 37, 38, 39. The shaft 64 is started and causes the spout to swing back and forth in the hopper 26. The granulated stone falling into the hopper descends onto the roller 28, which rotates in such direction as to cause the stone to issue from the hopper past the gate 30, and drop onto the strip passing beneath. If desired the hopper 26 and roller 28 may be dispensed with, but I have found that they cause the material to be distributed in a somewhat more uniform manner, but with-

out mixing up the colors coming from the different spouts. The colors are blended at their margin, thus preventing sharp outlines of contrast which would be detrimental to the artistic effect. It will be understood that according to ordinary practice the granulated stone will not be permitted to pile up in the hopper but will issue from it almost immediately, thus preventing anything more than a blending of the different colors at the margins of the curves which they delineate. As the work strip 10 has a continuous travel and the spouts swing back and forth in planes transverse to the direction of movement of the strip each color is supplied to the strip in a band following approximately a sine curve. The exact form of the curve, however, is not essential and may be varied. On account of the presence of the shut-off valve 66, the granulated stone from one spout is shut off when it is in juxtaposition to the adjacent spout, thus preventing two colors from being laid one above the other or being mixed at the point where their respective curves intersect. This gives the product a brighter coloring for there is no neutralizing of the tones at the points of crossing of the curves. If neutral tones are desired, however, at the points of crossing, the shutoff valves or brackets 66 may be dispensed with.

After the strip leaves the first hopper 26 it passes beneath the second hopper 72, which is supplied with similar granulated material, but of a neutral tone. This neutral tone material falls onto the strip, but will adhere only to the portion not covered by the material issuing from the first hopper. The result is that bare spaces are covered. The neutral colored stone dropping onto portions of the strip which have already been coated with stone from the hopper 26 will not be able to adhere to the strip and will subsequently fall off.

After the strip has been thus coated it may be used in the form of a strip of shingles. It does not need to be cut up into individual shingles, and for this reason no assorting of shingles is required. Nor is any skill or artistic taste required on the part of the person laying the roof, for the colors are harmoniously arranged and blended as the strip leaves the machine. Thus a uniform appearance in the roof is secured and much labor is avoided. Furthermore the roof as a whole is not subject to the carelessness or lack of skill of the roof layer. Of course different colors may be supplied to the machine and the number of colors may be increased or decreased as desired, but as the result of using my machine it becomes unnecessary to make a run first of one color and then of a different color and then cut the strips into shingles and keep these shingles in stock to be later assembled in the roof. For a given type of variegated

roofing only one kind of product need be kept on hand, thus reducing labor cost and carrying charges.

Under certain conditions it is preferable to cut the finished coated strip into shingles. In such event it is not necessary to sort the shingles. They may be used promiscuously and when laid in the roof will present on the whole very much the same appearance as if laid in strips. In both cases my invention dispenses with the need of sorting at the factory or sorting at the roof.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a coating machine for roofing and the like, means for supporting the strip to be coated, a plurality of spouts for delivering the coating material onto it, and means for causing a compound relative movement between the strip and the spouts, and a relative movement between the spouts to apply the coating material in sinuous, non-coincident curves.

2. In a coating machine for roofing and the like, a plurality of spouts for delivering the coating material onto the strip, means for moving said spouts in parallel planes non-coincidentally, and means for producing relative movement between the strip to be coated and the spout in a direction transverse to the planes of movement of the spouts to thereby lay the coating material on the strip in non-coincident sinuous curves.

3. In a coating machine for roofing and the like, a plurality of spouts for delivering the coating material onto the strip, means for moving said spouts in parallel planes non-coincidentally, means for producing relative movement between the strip to be coated and the spout in a direction transverse to the planes of movement of the spouts to thereby lay the coating material on the strip in non-coincident sinuous curves, and means for temporarily arresting the delivery from one of the spouts when in juxtaposition with the adjacent spout to thereby prevent the delivery of material from both spouts at the points where the curves cross.

4. In a machine for coating roofing and the like, a support for the strip to be coated, a hopper located above it and having a discharge opening at the bottom, a distributing roller at the bottom of the hopper, a plurality of spouts for delivering coating material into the hopper, means for producing relative movement between the strip and the hopper lengthwise of the strip, and means for producing relative movement of the spouts transversely to the length of the strip.

5. In a machine for coating roofing and the like, means for supporting a work strip

to which an adhesive has been applied, a plurality of spouts movable relatively to each other for applying granulated material to the adhesive coated strip, means for causing relative movement between the strip and the spouts lengthwise of the strip to thereby produce non-coincident sinuous curves which if completed would cross each other, and means for temporarily stopping delivery from one of said spouts when two of them are in juxtaposition to thereby prevent superposing material from two spouts where the curves cross.

6. In a machine for coating roofing and the like, means for supporting a work strip to which an adhesive has been applied, a plurality of spouts movable relatively to

each other for applying granulated material to the adhesive, coated strip, means for causing relative movement between the strip and the spouts lengthwise of the strip to thereby produce non-coincident sinuous curves which if completed would cross each other, means for temporarily stopping delivery from one of said spouts when two of them are in juxtaposition to thereby prevent superposing material from two spouts where the curves cross, and means for applying additional granulated material to the strip for filling in spaces left vacant by the curves.

In witness whereof, I have hereunto subscribed my name.

HENRY C. KOCH.