May 10, 1932. R. MACLEAN 1,857,463

ROOFING

Filed Oct. 24, 1929 2 Sheets-Sheet 1

Fig. 1

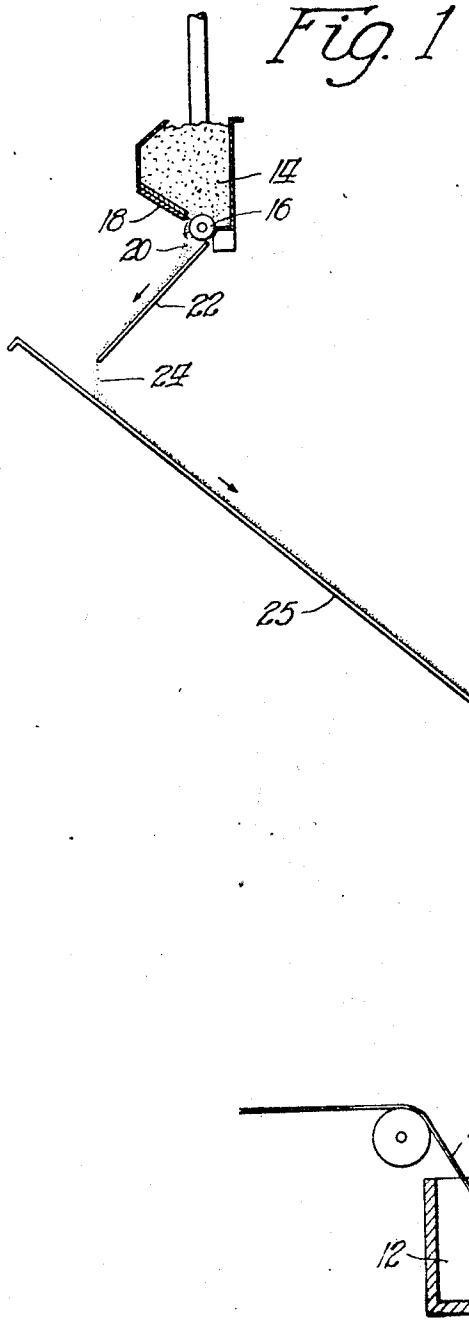
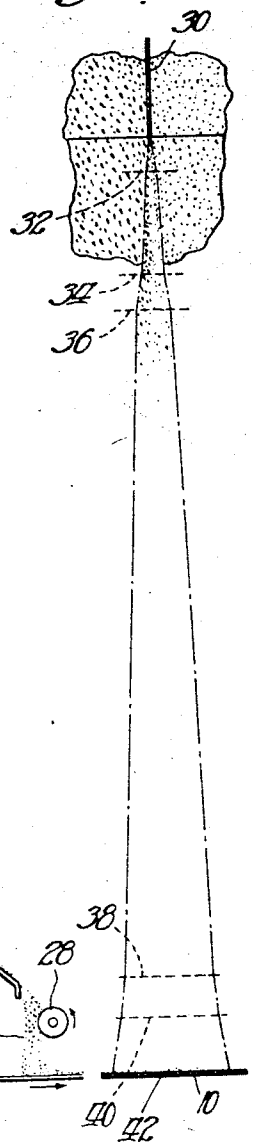


Fig. 2



Inventor
Robert Maclean
By Freeman and Sweet Attys.

May 10, 1932. R. MACLEAN 1,857,463

ROOFING

Filed Oct. 24, 1929 2 Sheets-Sheet 2

Fig. 3

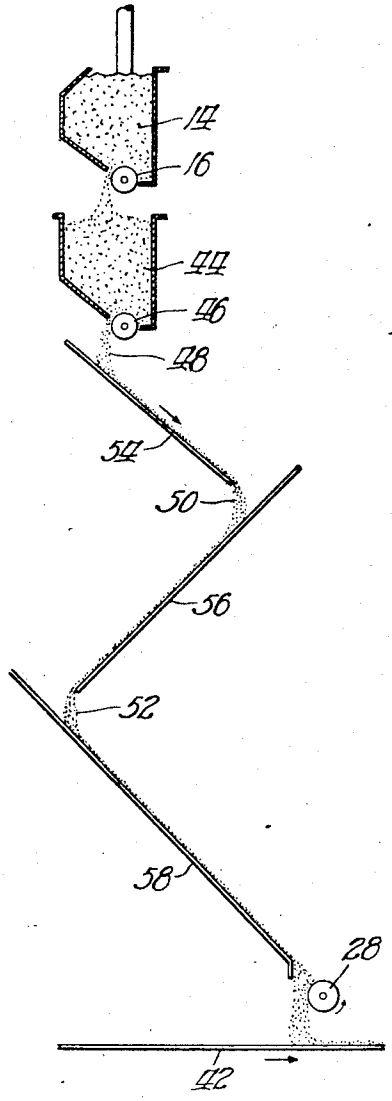
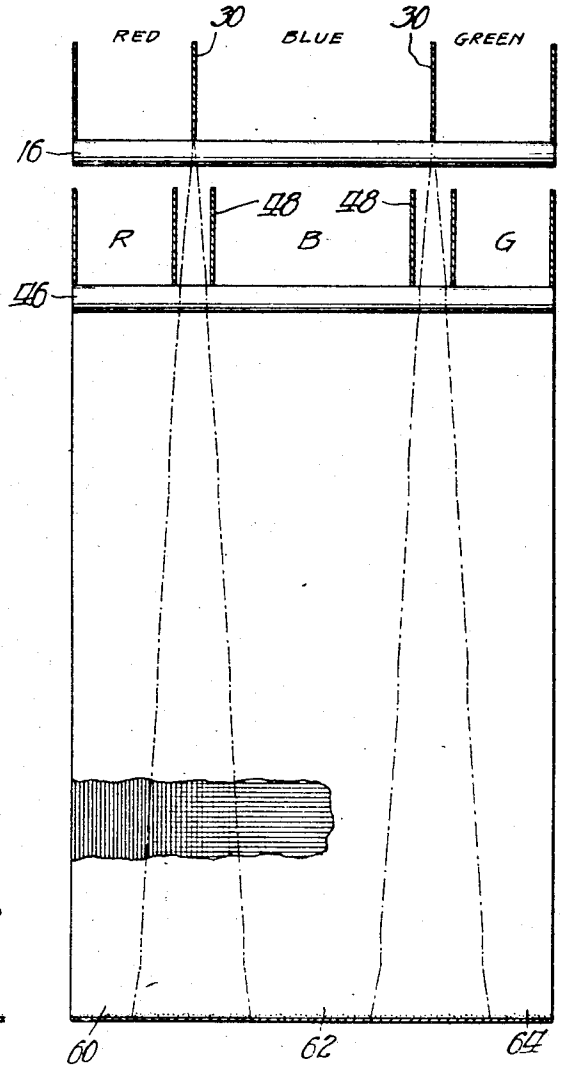


Fig. 4



Inventor
Robert Maclean
By Freeman and Sweet Attys.

Patented May 10, 1932 1,857,463

UNITED STATES PATENT OFFICE

ROBERT MACLEAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO AMALGAMATED ROOFING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

ROOFING

Application filed October 24, 1929. Serial No. 402,144.

My invention relates to coating, and includes among its objects and advantages certain features which I have found particularly advantageous in the preparation of flexible roofing material.

In the accompanying drawings:

Figure 1 is a partial diagrammatic longitudinal section through those parts of a complete machine for the preparation of flexible roofing material involved in the practice of the invention;

Figure 2 is a view taken at right angles of Figure 1;

Figures 3 and 4 are views taken similarly to Figures 1 and 2, respectively, of a modified device indicating a more extensive application of some of the principles involved.

In the embodiment of the invention selected for illustration, the strip of felt 10 which forms the base upon which the flexible roofing material is built up, passes through one or more coating and saturating tanks 12, in which it is saturated and coated with hot liquid hydrocarbons of the nature of tar or asphalt. The surface of the sheet is then covered with a protecting layer of grits which adhere to the hot asphalt.

I have illustrated a bin, or container 14, from which grits are discharged in a thin uniform sheet by the feed roller 16, the thickness of the stream being controlled by the gate 18. From the roller 16 the grits fall a short distance vertically as at 20, and then slide or cascade over the surface of an inclined plane 22.

From the lower edge of the plane 22 the grits again fall vertically as at 24 on to the surface of a much longer plane 25 down which they slide or cascade. Upon reaching the lower end of the plane 25, part of the grits will fall directly to the strip 10 as indicated at 26, and part of them will happen to have enough velocity to strike the check roller 28, which roller rotates in the direction of the arrow and operates to arrest the movement of such particles and cause them to fall back at 26 within substantially the same path as that of the grits having insufficient velocity to reach the roller.

The bin 14 is divided into a plurality of compartments by transverse partitions 30, and the different compartments may be filled with grits having different optical characteristics, such as differences in color.

If these grits were dropped directly on the sheet 10 by the roller 16, the line of demarkation between grits of different characteristics would be relatively distinct and sharp. Seen from a distance, as the material must be when placed on a roof, such a line would appear as sharp as a knife edge.

By the successive droppings and cascadings at 20, 22, 24, and 25, I cause a slight transverse migration that will intermingle or blend the different grits over a fairly wide region extending transversely in both directions from the plane of the partition 30. Furthermore, in the blended area, there will be a constant graduation or shading from one side to the other.

Referring to Figure 2, I have indicated such a shading having a transverse extent indicated at 32 after the drop at 20, at 34 after the cascading at 22, at 36 after the drop at 24, at 38 after the cascading at 25, at 40 where partial impact with the roller 28 occurs, and at 42 on the strip of material 10.

Th inclination of the planes 22 and 25 should be greater than the critical angle for the material being handled, so that the material will not pile up anywhere in its downward course. However, the excess over the critical angle should be as small as possible so that the velocity of the material will not increase appreciably as it descends over the planes. Unless the plane is set at such an angle as to prevent large increases in velocity, the particles will be traveling so fast that they will not only all hit the roller 28, but that they will bounce violently off the roller in all directions, and practically destroy the effect desired.

Referring now to Figures 3 and 4, I have indicated one other way in which blending may be made to occur automatically, and to a predetermined extent. The bin 14 and roller 16 have been arranged to deliver into a second bin 44 provided with a second roller 46. The second bin may or may not be provided with transverse partitions 48 to control lateral

shifting of the material in the bin or reduce the extent to which blending occurs therein. In the embodiment illustrated, I have placed a pair of such partitions on either side of the plane of each partition 30 to provide a positive limit to the blending that may occur.

After blending by dropping and remixing in the bin 44, I have indicated further blending by dropping at 48, 50, and 52, each drop being followed by cascading on planes 54, 56 and 58. The final plane 58 discharges adjacent the check roller 28, which operates precisely as in Figure 1. The use of a plurality of dropping and cascading actions makes it easier to adjust the mechanism to take care of slight variations in the material, and the repeated checking of the velocity of the particles by the use of a larger number of relatively short cascade planes makes it possible to set the planes at a slightly steeper angle without developing excessive velocities.

Many beautiful color effects may be produced by blending different grits as above outlined. In many cases it is desirable to make the blend substantially as wide as the exposure of a shingle cut from the material. The design indicated in Figure 4 with a narrow band of red at 60 merging gradually to a wide band of green at 62 which green band merges gradually into a narrow band of blue at 64, is an arbitrarily selected indication of the range of combinations that may readily be developed.

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

I claim:

1. In a roofing machine, means for dropping a sheet-like stream of granular matter transversely subdivided into bands of different optical characteristics, inclined means for receiving the granular matter and delivering the same to a moving strip of material, said inclined means being of sufficient length to permit the particles of granular matter to mix along the adjoining edges of the said bands.

2. In a roofing machine, means for dropping a sheet-like stream of granular matter transversely subdivided into bands of different optical characteristics, means for moving a strip of material to be coated, and a plurality of surfaces positioned between the first named means and said moving strip of material for delivering said sheet-like stream of granular matter to said strip of material, the particles of granular matter along the adjoining edges of said bands being caused to mix during their passage from the first named means to said moving strip.

3. The method of producing shaded effects upon a strip of coated roofing which comprises dropping a sheet-like stream of granular matter subdivided into bands of different optical characteristics upon an inclined surface, blending the areas defined by the adjoining edges of said bands during the passage of the granular matter down said surface, and moving the strip of roofing underneath the delivery end of said inclined surface.

4. The method of producing shaded effects upon a strip of coated roofing which comprises passing a sheet-like stream of granular matter transversely subdivided into bands of different optical characteristics over a plurality of surfaces positioned in different planes, mixing portions of said bands along their adjoining edges, and passing the strip of roofing underneath said inclined surfaces for receiving said sheet-like stream of granular matter.

In testimony whereof I hereunto affix my signature.

ROBERT MACLEAN.