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FLOCKING MACHINE

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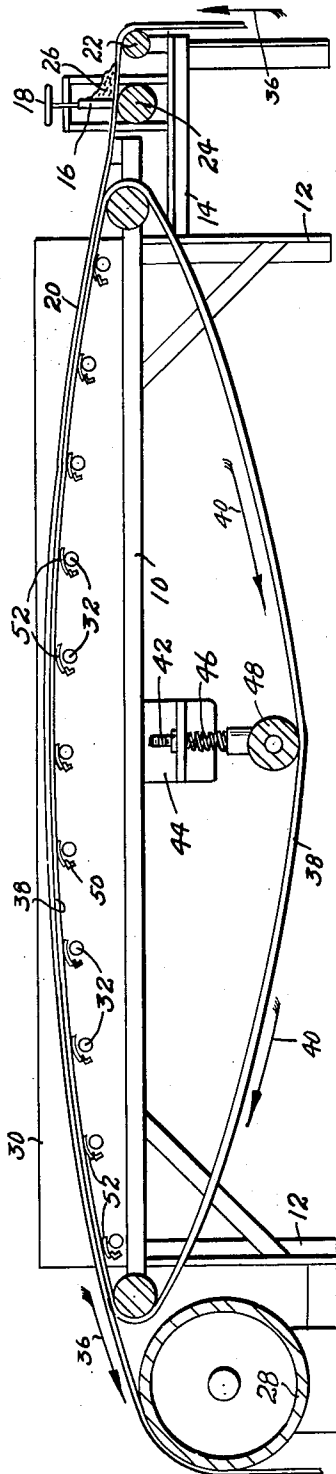


FIG. 1

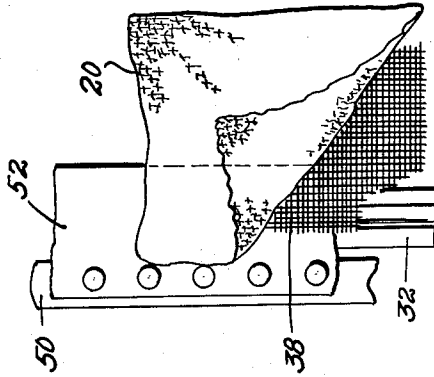


FIG. 3

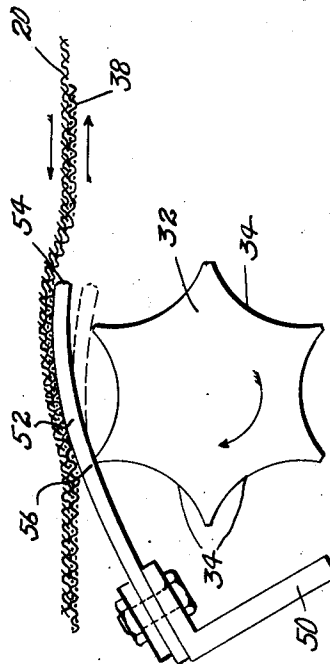


FIG. 2

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FLOCKING MACHINE

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4 Claims. (Cl. 118—57)

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This invention relates to a method and apparatus for flocking, which refers to the application of flock to a backing material previously coated with adhesive.

In the prior art flock has been applied to the backing material for a great many years by passing the backing material over and in contact with a series of beaters which rapidly rotate and agitate the backing material, the flock simultaneously being deposited on the material in any way desired, but particularly by blowing from above so that it settles down upon the adhesive coating on the backing material; and the action of the beater bars causes the backing material to vibrate, or to be agitated so that the flock gradually becomes fairly evenly cemented thereto.

The principal object of the present invention is to increase the quality of the flocking by making the flocking adhesion greater per unit of area; or, in other words, the flocking according to the present novel method and apparatus becomes denser and it is cemented better and more effectively to the backing material, making a thicker, higher quality, and better wearing and feeling material.

Another object of the invention resides in the provision of a new and improved processing machine for producing higher quality flocked fabrics and other materials having a better density and consistency than those of the prior art.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which—

Fig. 1 is a view in side elevation of a machine according to the present invention;

Fig. 2 is a greatly enlarged end view of one of the rotating cams, and showing the relation thereof to the backing material; and

Fig. 3 is a top plan view showing a detail of a cam, screen and material to be flocked.

In Fig. 1, the reference numeral 10 indicates a bed or support having legs 12 and provided with a cement or adhesive applying bench 14 at one end, the latter comprising in general a horizontal knife 16 which is adjustable vertically by means of a wheel 18. The backing material referred to above is shown at 20 and it passes over a front roll 22, and a roll 24 under the knife 16 meters or gauges the adhesive 26 which is therefore applied to the top surface of the backing material 20 in a thin even layer.

At the other end of the machine there is a roll 28 which is here shown as guiding the flocked material which may be passed into a

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drier, vulcanizer, or other machine as desired or necessary, such other machines forming no part of the present invention.

The bed 10 supports an upright frame 30 on which are rotatably mounted a series of elongated cams 32 which cams are arranged for rapid rotation in a clockwise direction as seen in the drawing. Appropriate driving means is provided for the purpose. These rotary cams are fluted as shown at 34, Fig. 2, and are elongated so as to underlie the entire width of the backing material transversely thereof.

The cams 32 are arranged on an arc as clearly shown in Fig. 1 for a purpose to be described, and, therefore, the backing material which passes thereover in the direction of the arrows 36 is forced to travel on the arc shown.

A screen 38 travels oppositely to the direction of travel of the backing material, see arrows 40, this screen preferably being of a well known plastic, but the invention is not limited to this particular material. The screen 38 also assumes the form of the arc described above and tension may be applied thereto by means of a screw 42 on a support 44 to adjust the tension of a spring 46 pressing a roller 48 in a downward direction so as to increase or decrease the tension of the traveling screen.

Each rotary cam 32 is provided with a longitudinal spaced parallel supporting bar 50 also mounted in the frame 30. Each supporting bar is just behind the respective cam in the direction of travel of the backing material but just ahead of its cam in the direction of travel of the screen.

Each support 50 is used to detachably mount and support an elongated relatively narrow strip or flap 52. Each strip 52 overlies a rotary cam as clearly shown in Figs. 2 and 3 and terminates at 54 at a point only a little beyond a vertical plane passing through the cam axis. The strips 52 may be of any suitable material and the essential characteristics of these strips are that they are durable and flexible to such an extent that although they rest on the points of the flutes 34, the end edges thereof as at 54 are extremely rapidly agitated under rapid rotation of the cams. Under this condition the flaps or strips flutter, particularly at the edges.

This fluttering effect reacts against the screen 38 and, therefore, against the backing material and agitates and flutters the same. It will be seen that the agitation or vibration is uniform from cam to cam but, of course, irregular at any one point along the length of any cam since, of course, the points of the cams will tend to knock

the strips 52 upwardly at about point 56, see Fig. 2, but this upward motion is limited by the presence of the screen and the backing material, and, therefore, when the next successive point on the rotary cam contacts strip 52 the exact degree of force with which it strikes it is indeterminate because in fluttering, the strip 52 may be descending before the successive point strikes it, or it may even be ascending.

The actual agitation and fluttering has a very small amplitude and is extremely rapid as the cams 32 are rotated.

If a denser flocking is desired, the tension on the screen is increased as described above and this action creates a greater tension downwardly against strips 52 and varies the "bounce" of the strips 52 against the cams.

Furthermore, the oscillation of fluttering of the backing material is increased by the presence of the screen and the fact that it runs oppositely to the travel of the backing material.

The more rapid the oscillation or fluttering of the backing material, the denser and higher grade the flocking is, and it is believed that the combination of the fluted cams, the flaps or strips 52 acting as vibrators, and the screen 38 is such as to make for the fastest oscillation or most rapid fluttering action in the fabric that would be possible in a machine of the character described.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed otherwise than as set forth in the claims, but what I claim is:

1. In a flocking machine having a frame, means to travel backing material unidirectionally on the frame under means to apply flocking thereto, and means to apply adhesive to the backing material preparatory to application of the flocking, that improvement comprising a traveling screen on which the backing material rests, means to travel the screen oppositely to the direction of travel of the backing material in contact therewith, a rotary cam under the screen and located on an axis transverse thereto, means to rotate the cam, a free-ended flexible vibrator between the cam and the screen, the cam striking and fluttering the vibrator against the screen, said flexible vibrator being held at one end thereof trans-

versely of the screen, the free, fluttering end of the vibrator extending from the end thereof that is held in the direction of travel of the screen.

2. In a flocking machine having a frame, means to travel backing material uni-directionally on the frame under means to apply flocking thereto, and means to apply adhesive to the backing material preparatory to application of the flocking, that improvement comprising a traveling screen on which the backing material rests, means to travel the screen, a rotary cam under the screen and located on an axis transverse thereto, means to rotate the cam, a free-ended flexible vibrator between the cam and the screen, the cam striking and fluttering the vibrator against the screen, said flexible vibrator being held at one end thereof transversely of the screen, the free, fluttering end of the vibrator extending from the end thereof that is held in the direction of travel of the screen.

3. The flocking machine of claim 2 including means to adjust the tension of the screen down upon the flexible vibrator.

4. The flocking machine of claim 2 including a plurality of cams and vibrators arranged on an arc and holding the screen and backing material on said arc.

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