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PROCESS FOR COATING FABRICS

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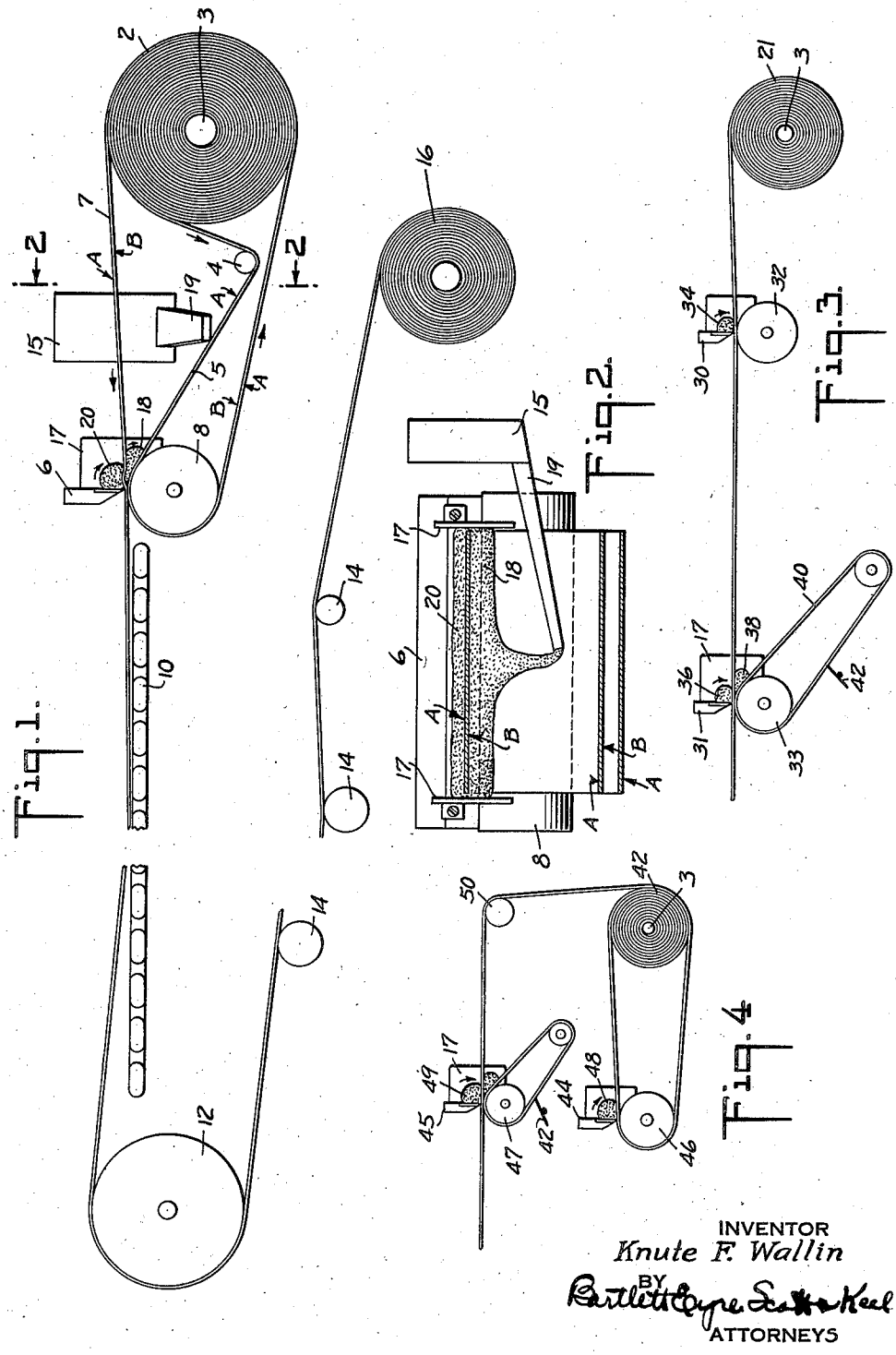


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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PROCESS FOR COATING FABRICS

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6 Claims. (Cl. 91—68)

The present invention relates to the treating of textile fabrics with a suitable compound to produce what is commonly known as artificial leather.

One object of the present invention is the application of multiple coats of compound to a fabric prior to any drying of same.

A further object is a method of treating textile fabrics whereby the compound when spread on the fabric becomes deeply anchored within the interstices of the fabric without utilizing any positive pressure.

Another object is to simultaneously apply the compound at different points of travel.

A further object is to coat one lead of a fabric on one side while simultaneously coating another lead on both sides.

A still further object is to double coat one surface of the fabric and single coat the other in a single operation prior to the drying thereof.

These and other objects will be readily understood with reference to the following description and the accompanying drawing, in which—

Fig. 1 is a diagrammatic view of an apparatus for practicing the invention;

Fig. 2 is a view on 2—2 of Fig. 1;

Figs. 3 and 4 are diagrammatic views showing alternative arrangements.

Referring to Fig. 1, a fabric 2, such as three-yard cotton flannel having napped surfaces, is first drawn downwardly from supply roll 3 under idler 4, then upward to form a lower lead 5 which passes between a conventional knife spreader 6 and rubber coated roll 8 the opening therebetween being restricted as necessary to obtain the proper clearance for the fabric. It is then reversed in its direction, passing rearwardly around roll 8, back to supply roll 3 where it is again reversed to form an upper lead 7 which passes between the knife 6 and lead 5, the idler spacing the two leads in a manner to cause them to converge toward each other and meet under knife 6. After lead 7 passes under the spreader the fabric passes over steam coil driers 10, around drum 12, which is driven by any suitable driving mechanism at the same speed as roll 8, where its travel is again reversed passing it beneath drier 10 and over supporting idlers 14 to be rewound at 16. Suitable batches of coating compound 18 and 20 are carried on the top surface A of both leads of the fabric as it enters the restricted opening of the compound applying device. The lower batch of compound 18 deposits a coating on the upper surface A of lower lead 5 and after receiving this initial coating the fabric is advanced in its travel around roll 8 and supply roll 3 with the coated side outermost. The surface A of lower lead 5 while still in wet condition becomes upper lead 7 and then receives a second coating which is deposited thereon from the compound 20, and simultaneously the under surface B of lead 7 is coated from the batch of compound 18.

The fabric upon leaving knife 6 after the second passage has a double coating on surface A and a single coating on surface B, both surfaces being smooth and the fabric requiring no pressing step either to smooth the surfaces or to press the compound into the interstices. The fabric now passes over the steam coil drier 10 which evaporates the solvent, then around the drum 12 which is arranged to prevent the sag in the fabric from contacting with the drier, and being reversed in its travel it now passes under the driers, and is rewound at 16. The fabric may then be subsequently coated for building up or finishing, as desired. The lower lead 5 of fabric 2 also serves as a supply belt supporting the compound whereby the upper lead 7 is simultaneously coated on both sides as it passes through same. As lead 5 constantly advances the belt renews itself and there is no necessity of providing cleaning means to prevent an accumulation of compound from getting on to the belt, as would otherwise be necessary.

The compound is initially placed on the upper surfaces of leads 5 and 7, but after the machine is running it is fed onto the lower layer from a container 15 through spout 19 as the batch 18 accumulates at the point of convergence between lead 5 and lead 7 the compound flows or travels outwardly on roller 8 beyond the edges of the fabric coming in contact with shields 17, placed at either side thereof, which redirect the compound upwardly and inwardly across the top lead 7 forming batch 20, the flow to the lower lead then being regulated to maintain the correct amount of compound on the fabric. As indicated, the surfaces of the compound seem to rotate or circulate in the direction of the arrows as the fabric passes between the spreader knife and the roll 8, the compound contacting with the material for several inches in front of the spreader. The compound used may consist of rubber, whiting and lithophone, to which is added bluing or coloring as required. The foregoing is mixed with a solvent such as naphtha to form a semi-plastic viscous compound, the amount of solvent being varied to vary the consistency of the compound to increase or decrease

its viscosity, depending on the type and weight of fabric being treated. The compound will be varied depending on the type of fabric used or the resultant product desired, and compounds other than for rubberizing may be employed.

Referring to Fig. 3, the fabric 21 is drawn between a conventional spreader knife 30 and rubber coated roll 32, supporting a batch of compound 34 on its upper surface and then, when still wet, drawn between a second conventional knife 31 and rubber coated roll 33 with batches of compound 36 and 38 to simultaneously coat both sides of the fabric. The compound 38 is supported on an impervious apron 40, such an apron being used as repeated applications of coatings to a pervious apron would eventually result in saturating same, causing roll 33 to become coated with the compound, a suitable blade 42 being provided to keep the apron clean and prevent an accumulation of compound thereon. After leaving the second knife the fabric receives the same treatment as above explained.

In Fig. 4 the operation and steps are substantially the same as in Fig. 1, but it is possible to use compounds of different natures. For example, in making a colored fabric, the material is drawn from roll 42 between knife spreader 44 and roll 46, any type filling compound 48 being supported on the top surface thereof. The fabric is drawn back around roll 42 and over idler 50 with the coated side outermost and then between knife 45 and roll 47, where the colored compound 49 is simultaneously applied to both surfaces.

As in Fig. 3, the material is not dried until leaving the second spreader, and, after being dried, the fabric is treated by further coatings or given such subsequent treatment as may be required, such as curing, embossing or surfacing.

The fabrics made in accordance with the foregoing process have the compound anchored deeply therein without saturating the fabric, the resultant product being porous, pliable and soft, and no positive pressure is utilized, the threads are not crushed or broken but retain their original plumpness, and the material is substantially lighter in weight for a given length than when the compound is driven through the fabric.

Although three modifications of the method of manufacturing have been shown, Fig. 1 shows the preferred form, as only one spreader is required and the supply of compound is more readily controlled. As clearly shown, the material being coated is flexed as it passes around roll 8 and the fabric roll prior to receiving its second coating, this flexing apparently opening the pores resulting in deep penetration of the compound. The second coating being superimposed while the first is moist apparently causes the two to intermingle resulting in close adherence and further penetration. Although the reverse side receives but one coating, the compound likewise penetrates deeply into the fabric, possibly due to the capillary attraction following the simultaneous application of compound to both sides of the fabric. The depth of penetration will also be varied by the speed of the machine as well as by varying the consistency of the compound, as explained above. If a heavy closely woven fabric is being run, the speed of operation will be reduced, keeping the compound in contact with the fabric for a greater length of time, and allows the first coating more time in which to penetrate the interstices of the fabric before the application of the second coat. If a loosely woven light fabric is being run, the speed may be materially increased.

The spacing of the knife from the roller will also depend on the weight of the fabric, a proper spacing being such that no substantial tension is required to pass the fabric therebetween.

I claim:

1. The method of producing an artificial leather which comprises supporting a batch of compound on a fabric to coat said supporting surface, then advancing the fabric in its travel to cause it to pass over said supporting surface and through said batch of compound and coat both surfaces.

2. The method of producing artificial leather which comprises converging two leads of fabric at a common point, applying a suitable compound between the leads near the point of convergence, whereby the lower surface of the upper lead and the upper surface of the lower lead are coated, and simultaneously applying a coating of compound to the upper surface of the upper lead and separating said leads after passing said point.

3. The process of coating a fabric with rubberizing material which comprises spacing apart at least two layers of the same continuous strip of fabric then converging said layers at a common point while maintaining batches of rubberizing material on the upper layer of fabric and between the layers of fabric at the point of convergence.

4. The process of coating a fabric which comprises drawing a continuous strip of the fabric in upper and lower layers past a common point, maintaining a batch of coating material between the two layers of fabric for simultaneously coating the upper side of the lower layer of the fabric and the underside of the upper layer as the two layers are drawn past the point, carrying the lower layer of the fabric around and passing it as the upper layer, then again coating the upper layer from a batch of material maintained thereon at the point where the underside of the upper layer is being coated by said batch between the layer, then drying the upper layer of coated fabric.

5. The process of coating a fabric which comprises contacting two layers of a continuous strip of the fabric at a common point, supplying coating material in advance of said point between the two layers and on the upper layer to thereby apply a preliminary coat on the upper side of the lower layer, bringing the lower layer into position as the upper layer, then drawing this layer past the point as the upper layer and coating its under side from said material between the two layers while again coating the upper side from said batch on the upper layer and thereafter drying the upper layer.

6. The process of coating a fabric which comprises drawing the fabric under tension past a common point in two contiguous layers and simultaneously applying to both sides of one layer of the fabric and one side of the other layer in advance of said point coating material and thereafter drying the coated and impregnated fabric.

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