Oct. 24, 1933. R. M. FREYDBERG 1,932,361

BACKING MATERIAL

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Fig. 1.

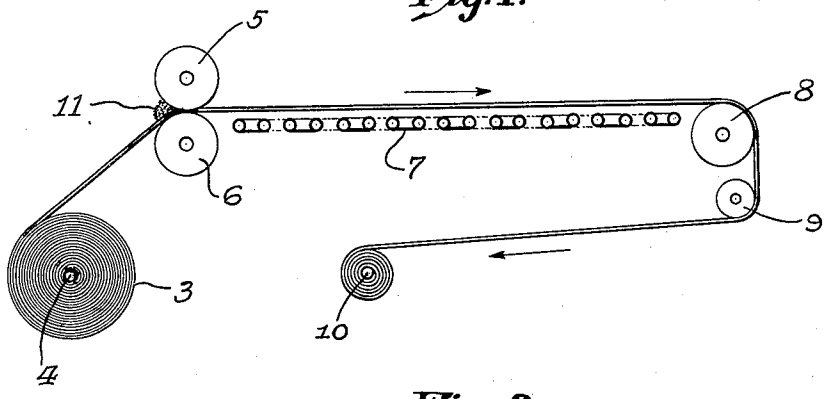
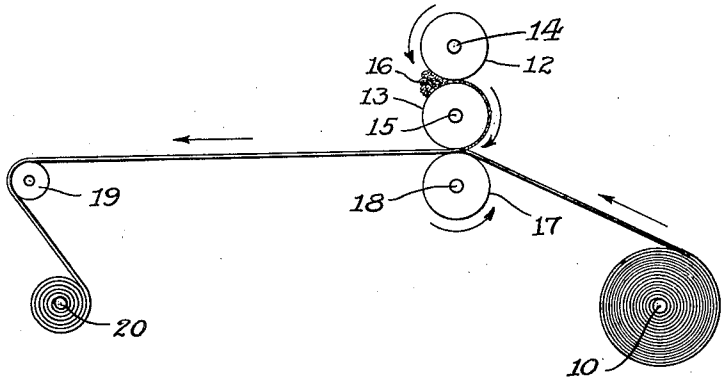


Fig. 2.



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BACKING MATERIAL

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6 Claims. (Cl. 91—68)

My invention relates to fabrics especially designed for use as backings on leather, fabrics and the like, and method of producing the same.

The general purpose of the invention is to provide fabric backings for the above use prepared and treated to impart to them a smooth finish on one face and a substantially tacky coating on the other face, the latter being adapted to be secured to another fabric or leather without employing any adhesive agent other than that provided on the finished backing. As will be hereinafter pointed out in detail, the fabric from which the backing is made is impregnated with a compound imparting to it additional body and strength without noticeably detracting from its flexibility, and further enabling cutting of the fabric without ravelling at the edges either before or after it is united with the leather or other fabric.

More specifically stated as to method, the invention resides in impregnating a fabric, such as single or double nap cotton, that is, a cotton fabric having nap on one or both faces and a substantially open mesh, with a plastic composition including rubber, mineral filler, factis, or the like, of a consistency capable of filling the openings in the mesh and the nap on the surface or surfaces. The fabric thus impregnated and coated is then dried by subjecting to heat, after which a composition including gutta percha, wax, and mineral fillers is applied while hot to one face or surface of the fabric, which in the case of single nap fabric is the plain or unnapped surface, and allowed to cool. The latter composition provides the surface slightly tacky at normal temperature.

The resulting material or backing possesses all of the qualities and characteristics mentioned above in connection with the general purpose of the invention and is readily united to leather or other fabric by placing the tacky surface against the leather or fabric and hot-ironing them together. The heat makes the gutta percha compound quite soft, and the pressure of the ironing implement or apparatus forces the backing and other fabric or leather together so that when the gutta percha compound is cooled it sets and the backing and leather or fabric are firmly united thereby. The normally tacky surface facilitates relative positioning of the backing and material to be backed prior to and during the hot-ironing.

The backing is generally used on relatively thin leather or other sheet materials, for instance, as used in certain parts of articles of footwear, and a backing made in accordance with my invention may be united to the leather or other fabric before or after it is cut to shape as the backing will cut as smoothly as the other fabric or leather since the edges of the backing do not unravel.

All of the objects and advantages of the invention will become more apparent and will be pointed out during the course of the following detailed description of the preferred method of practicing the invention and the resulting article.

In the accompanying drawing, Fig. 1 is a diagrammatic view of apparatus for performing the first step of the process and illustrating the fabric being treated in accordance with the first step of the process; and

Fig. 2 is a diagrammatic view of other apparatus illustrating the fabric being treated thereon in accordance with the second step of the process.

As previously stated, I preferably use a cotton fabric having either one or both faces napped, and woven with the warp and filler threads spaced to afford an open mesh. Such material is not only light in weight and cheap in price, but is also well adapted to the practice of the invention for reasons hereinafter pointed out. It being more economical to treat a long length of the fabric instead of individual sheets, I shall accordingly describe the invention.

A composition with which I impregnate the fabric to fill the openings in the mesh as well as the nap and form a smooth surface or surfaces on the fabric is preferably compounded of 30% rubber, 15% rubber substitute, i. e. factis, and 55% mineral fillers, such as whiting, lithopone, zinc oxide, with stearic acid as a softener. These ingredients are mixed or milled into a mass in any suitable standard mixer, such as a Bambury mixer, from which the mass is conveyed and divided into portions which are dropped into naphtha and agitated. The resulting product is a plastic composition of a paste like consistency and is preferably applied to the fabric by running the fabric between rollers. A quantity of the composition is maintained against one of the rollers in contact with the fabric, so that as the fabric passes between the rollers the composition is pressed into the fabric and into the nap, it being understood that in the case of a single nap fabric the composition is maintained preferably against the napped face, and in the case of a double napped fabric the composition may be maintained on both sides of the fabric and against

or on each of the rollers. The result is that the open mesh of the fabric is filled with the composition and a layer of the composition is pressed into the nap to provide a smooth surface. The fabric in this condition is then dried by subjecting it to the action of heat.

When the fabric has been impregnated with the above composition and dried, it is then coated on one side with another composition consisting preferably of substantially 45% gutta percha gums, 7% wax and 48% mineral filler, such as whiting, lithopone or zinc oxide applied hot. The side or surface of the fabric having the second composition applied thereto may be called the gutta percha side, and after the gutta percha composition has been applied hot to this side of the fabric it is allowed to cool. When the fabric and gutta percha composition are cooled, the gutta percha side of the fabric is slightly tacky at ordinary or normal temperatures, and it is this side which is secured to the material to be backed by hot-ironing. In other words, the tacky surface of the fabric is pressed against a face of the other material, while at the same time applying heat, whereby the gutta percha softens. As the backing cools, the gutta percha sets and the backing and other material are firmly united.

The fabric treated in accordance with the above disclosure, that is, impregnated with the first composition and having one surface coated with the second composition, is soft and flexible and the coatings will not crack when the fabric is flexed. The backing may be easily shaped by cutting or punching either before it is united with the other material or afterwards, and the edges will not fray or ravel when the backing is cut. Inasmuch as the gutta percha side is normally only slightly tacky at ordinary temperatures the backing may be rolled, packaged and handled with facility. I would again state that the backing or fabric is especially useful in connection with relatively thin materials, and when united to the materials in the manner specified, that is, by hot-ironing, firmly adheres to the materials, provides resulting sheets of greater tensile strength and more body than the unbacked material without detracting noticeably from the flexibility of the material and further provides a smooth dry exposed surface or face. This latter surface or face is the napped surface impregnated with the first composition. In the case of a single napped fabric, the gutta percha composition is applied to the unnapped surface. In the case of double napped fabrics, the gutta percha composition is applied to either one of the napped and impregnated surfaces.

While I believe that the foregoing description should be sufficient to instruct those skilled in the art how to practice the invention and form the fabric in accordance therewith, I have illustrated diagrammatically in the accompanying drawing just how the fabric is treated.

Referring to Fig. 1, the numeral 3 designates a roll of fabric rotatably supported on a shaft or roller 4. The fabric is passed between the rollers 5 and 6 which may be rotated by any mechanism (not shown). After passing between the rollers 5 and 6, the fabric is moved across heater coils 7 preferably in close proximity thereto and then around another driven roller 8, idler roller 9 and on to the shaft or roller 10, on which it is again wound into a roll. The rollers 5, 6 and 10 are preferably driven in synchronism by any suitable mechanical means, such as gears or sprockets, not shown.

It will be noted that where the fabric passes between the rollers 5 and 6, that a mass 11 of the impregnating and coating composition used in the first step and hereinbefore described in detail, is applied against one of the rollers and one of the faces of the fabric. In the illustration now being referred to, the mass of the composition may be thrown against the roller and fabric by hand or suitable implements by an attendant, so that there is always a supply of the composition at the place shown as the fabric passes between the rollers, it being understood that in this instance the upper surface of the fabric against which the mass is thrown would be the napped surface when a single nap fabric is used. The composition is forced into the fabric by the rollers and is also spread on the upper face. As the impregnated and coated fabric passes over the heater coils 7 it is dried, and then as it is wound on the roller 10 the coated face is wound against the uncoated face of the fabric, that is, the fabric is wound on the roller 10 reversely to the manner in which it was wound on the roller 4.

The roller 10 impregnated with coated fabric wound thereon is then conveyed to the apparatus shown diagrammatically in Fig. 2 for applying the tacky composition to the uncoated surface. In Fig. 2, the numerals 12 and 13 designate driven heated rollers which are supported on shafts 14 and 15 adjustable with respect to each other to space the rollers apart at desired distances. The means for effecting this adjustment is not shown but is well known in the machinery art and may be in the form of movable journal blocks. The distance between the rollers 12 and 13 determines the thickness of the coating of the tacky composition applied in accordance with the second step of the process. This is due to the fact that a mass 16 of the composition previously described to form the tacky coating is applied between the rollers 12 and 13 and is spread on the roller 13 during rotation of the rollers. Beneath the roller 13 is a roller 17 rotatably supported on a shaft 18 and the fabric passes from the roller 10 between the rollers 13 and 17, so that the layer or coating of the tacky composition on the roller 13 is brought into contact with the surface of the fabric reverse of the surface to which the composition 11 was applied, due to the reverse winding of the fabric as previously described. The coated fabric passes over the idler 19 and is wound on to a roller 20 similar to the roller 10 with the tacky surface next to the coated surface and the coated surface outermost on the completed roll.

I claim:

1. A backing material of the character described comprising an open meshed fabric napped on one surface and impregnated with a composition including rubber and mineral fillers filling the openings in the mesh and covering said napped surface, and having its other surface coated with a compound slightly tacky at normal temperatures and including gutta percha, and capable of uniting said backing to a sheet of leather or fabric when heated and pressed against such sheet.

2. The method of producing a backing material of the character described which comprises impregnating a fabric and coating at least one surface with a plastic composition comprising substantially 30% rubber, 15% factis, 55% mineral filler compounded with stearic acid and

naphtha, drying the impregnated fabric by subjecting it to heat and then coating a face of the fabric with a composition composed of substantially 45% gutta percha, 7% wax and 48% mineral fillers applied hot, and then allowing the coated fabric to cool.

3. The method of producing a backing of the character described which comprises impregnating an open mesh fabric napped on one face with a plastic composition composed of substantially 30% rubber, 15% factis, 55% mineral filler compounded with stearic acid and naphtha to fill the openings in the mesh and to coat the napped face with said composition, causing the impregnated fabric to dry and then coating the unnapped face of the fabric with a composition consisting of substantially 45% gutta percha, 7% wax and 48% mineral fillers applied hot, and then allowing the coated fabric to cool.

4. A backing material of the character described comprising a textile fabric having a fibrous surface and coated on said surface with a composition including rubber and mineral fillers which when dry present a smooth coating on said fibrous surface with the composition closing the mesh of the fabric, said coating when dry being capable of flexing with the fabric without cracking, and the other surface of the fabric being coated with a gutta percha compound slightly tacky at ordinary temperatures and capable of being softened by heat for firm adhesion when cooled to another material such as leather or fabric after being pressed against said other material while the gutta percha compound is soft.

5. A backing material of the character described comprising a napped textile fabric impregnated with a plastic composition including rubber and mineral fillers which when dry adhere to and fill the nap and close the mesh of the fabric, said composition when dry being capable of flexing with the fabric without cracking, said fabric also having one of its surfaces coated with a gutta percha compound slightly tacky at ordinary temperatures and capable of uniting said backing material to a sheet of leather or fabric when heated and pressed against such sheet.

6. The structure of claim 5 wherein both faces of the fabric are napped and are coated with the plastic composition and the gutta percha compound is applied on one of said coated faces.

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