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S. R. HICKOK

2,290,685

FLOCKED MATERIAL AND METHOD OF PRODUCING THE SAME

Filed July 3, 1940

FIG. 1.

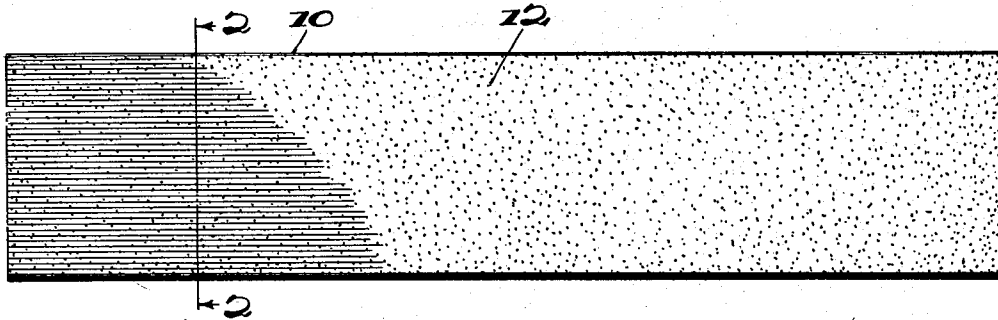


FIG. 2.

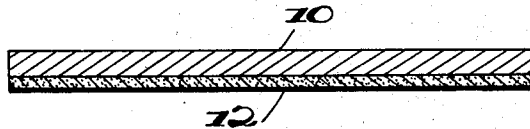


FIG. 3.

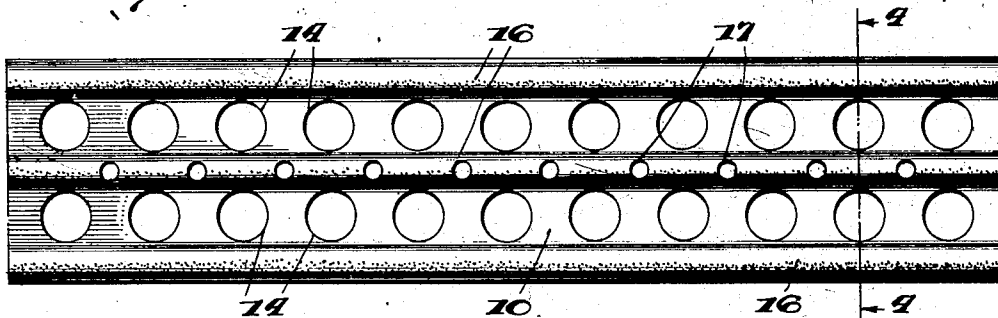


FIG. 4.

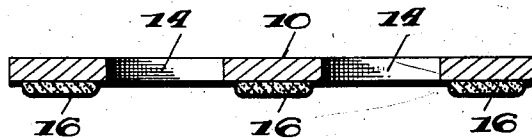
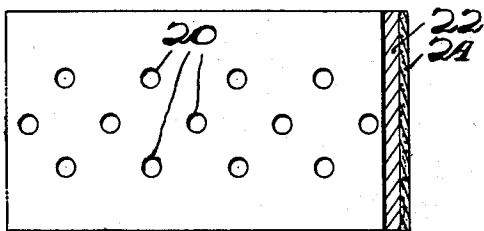


FIG. 5.



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UNITED STATES PATENT OFFICE

2,290,685

FLOCKED MATERIAL AND METHOD OF
PRODUCING THE SAME

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1 Claim. (Cl. 2—338)

The present invention relates to protective sheet materials and to a method of producing the same. More specifically, the invention relates to flexible, resilient, transparent or translucent sheet material formed by the polymerization of vinyl compounds, as for example vinyl acetate and vinyl chloride in mutual contact and which has been treated in a novel manner to render the sheet non-injurious to the human skin.

Vinyl compounds such as vinyl acetate, which form polymers of a soft and adhesive type, and vinyl compounds such as vinyl chloride, which form polymers of a hard and high melting type, when polymerized in mutual contact produce polymerization products, commonly referred to as "Vinylite", a trade-mark name, which are elastic yet tough and extremely strong, as well as being transparent or substantially so. When formed in sheets, such products are admirably adapted for use in forming various articles, such as belts, garters, wrist watch bands, arm bands and the like, on account of the elasticity, flexibility, toughness and durability of the product as well as its attractive appearance. However, products of this character, when exposed to the action of moderate heat, light, particularly ultraviolet radiation or the actinic rays of the sun, or to certain catalysts, emit injurious elements, compounds or solvents which affect the human skin when brought into contact therewith for a prolonged time although the nature of the injury is not altogether serious but rather is uncomfortable. The emission of such undesirable substances is continuous throughout the life of the product. For this reason, manufacturers have been reluctant to place on the market articles formed from co-polymers of vinyl compounds which are intended for personal wear next to the skin of the user.

The present invention is designed to overcome the above-noted limitation that is attendant upon the use of polymerized vinyl compounds of this character and toward this end contemplates a method of treating the sheet material by a coating process wherein flocking material is applied thereto which may be carried out either co-extensively on the sheet material or which may be a partial process. This being the principal object of the invention, it is another object to provide sheet material which has been thus treated and which may be formed into strips or lengths suitable for forming articles of personal adornment such as belts, garters, wrist watch bands and the like.

Another object thereof is to provide strip sheet

material of this character which is ornamental and attractive by virtue of the coating material and which is thus further enhanced for the uses enumerated above.

Another object of the invention is to provide protective sheet material of the type set forth above in which the protective coating material or flock is intimately and permanently united to the material against dislodgment.

Other objects of the invention, not at this time enumerated, will become apparent as the nature of the invention is better understood.

In the accompanying drawing:

Figure 1 is a fragmentary bottom plan view of a narrow strip of sheet material manufactured in accordance with the principles of the present invention.

Figure 2 is a sectional view taken transversely through the strip of Figure 1.

Figure 3 is a fragmentary top plan view of a modified form of strip or sheet material manufactured in accordance with the principles of the invention, and

Figure 4 is a sectional view taken transversely through the strip of Figure 3.

Figure 5 is a bottom plan view similar to Figure 1 showing another form of strip material.

In all of the above described views, like characters of reference are employed to designate like parts.

According to this invention, in the preferred embodiment thereof, raw wool or woollen material is disintegrated and/or comminuted until the particles or fibers thereof are of a high degree of fineness. The particles, which constitute the flocking material, are subsequently used as will be more clearly explained hereinafter in the production of the ornamental sheet material. While wool is the preferred material employed herein, cotton or other effective flocking material may also be employed. Sheets or films of regenerated cellulose, which may or may not be transparent, may be disintegrated and/or comminuted to produce the flocking material.

According to one mode of manufacture of the protective sheet material, the untreated sheets or strips of co-polymerized vinyl compounds which serve as the base for the final product are coated with an adhesive material, softening agent or both, either co-extensively on one side thereof or in part by a painting, stenciling, printing or dipping operation. Before the adhesive material has set or before the softened portions of the base material have hardened, i. e. while the surface of the material is still wet or soft,

the particles of flocking material are applied to the base in any suitable manner, as for example, by spraying or dusting. In practice it has been found that the best results are obtained when the material is applied in excess over the entire surface of the base material. The particles adhere to those portions of the base which have been coated or softened and upon drying or hardening are securely affixed thereto. The excess material is then removed in any well known manner as by a blast of air or by shaking or otherwise agitating the material, or operating upon the material.

As the securing and anchoring medium, any suitable adhesive and/or softening agent may be employed. Satisfactory results have been attained by utilizing methyl iso butyl ketone solely as a softening agent to soften a surface area of the polymerized sheet material, or by dissolving a suitable quantity of the base material in the softening agent to produce an adhesive which, when applied to the base material, will ultimately harden, leaving the resinous residue integrally united thereto. Various other ketones such as di-methyl ketone (acetone) and the like are capable of use as solvents. Similarly, solvents other than ketones, for example, certain esters and hydrocarbon solvents, may be used.

In Figure 1 the narrow strip of base material is designated at 10 and the flocking material which has been applied co-extensively to the underneath surface thereof is shown at 12. Obviously, multi-color or single color flocking material may be employed in which case the transparent base material will permit visualization of the flocking from above the upper surface thereof.

In Figure 2, a series of perforations or holes 14, arranged to form a continuous pattern, are shown in spaced rows on each side of which narrow areas of bands 16 of flocking extend. The strips may be manufactured from narrow strips of the base material or large sheets of the latter may be formed by a continuous operation utilizing rollers, absorbent pads or the like, for applying the adhesive, and utilizing dusting or spraying apparatus for applying the flocking and the sheet subsequently cut into narrow strips.

The bands 16 of flocking material, when arranged on opposite sides of the perforations 14, serve to maintain the base product slightly spaced from the skin while the holes or perforations provide ventilation for the skin through the strips when the latter are used in the manufacture of garters, belts, wrist watch bands or the like. A certain amount of protection is afforded the skin when the flocking is omitted and the perforations alone relied upon to provide

adequate ventilation through and around the band. Likewise perforations may be formed through the flocked portions of the strip as shown at 17, for both functional and mechanical purposes. Functionally the holes 17 further the ventilating features of the strip while mechanically they afford engagement apertures for a buckle tongue when the strip is used as a wrist watch strap or the like.

As in the form of the invention shown in Figures 1 and 2, the bands 16 may be formed by using colored flocking material, the colors of which are preferably permanent.

In Figure 5, a strip of co-extensively flocked material is formed with apertures 20 extending through both the base material 22 and the flocking 24 for ventilation purposes.

Various changes in the details of construction of the strips may be resorted to and the particular arrangement or patterning of the flocking material thereonto may be varied as desired as well as may the arrangement of the perforations be altered to accommodate varying conditions of use or design.

What is claimed is:

As an article of manufacture, a strip of material designed for use as an article of personal wear and suitable for use as a strap in connection with a pronged buckle, said strip including an elongated relatively narrow transparent base sheet of a copolymer of vinyl chloride and vinyl acetate, an adherent hardened coating on one side of said sheet extending longitudinally of the sheet coextensively therewith and confined to spaced band-like regions adjacent the side edges of the strip and to a central longitudinal band-like region disposed medially between said spaced band-like regions, said coating being formed in part of the material of the base sheet, said coating carrying thereon coextensively therewith a covering of finely comminuted substantially opaque flocking material of a definite thickness whereby raised marginal and central supporting portions are provided on the sheet and the sheet will be maintained spaced from the skin of the user when the material is used as a strap, there being a series of ventilating apertures extending through the medial regions of the sheet and confined between the raised marginal supporting portions, there also being a series of prong-receiving apertures extending through the base sheet and central band-like portion for reception of a buckle prong when the material is used as a strap in conjunction with a buckle, the flocking material surrounding said latter apertures serving as reinforcements for the same.

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