May 13, 1952 H. DERMAN 2,596,377

SURFACE COVERING MATERIALS

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Fig. 1.

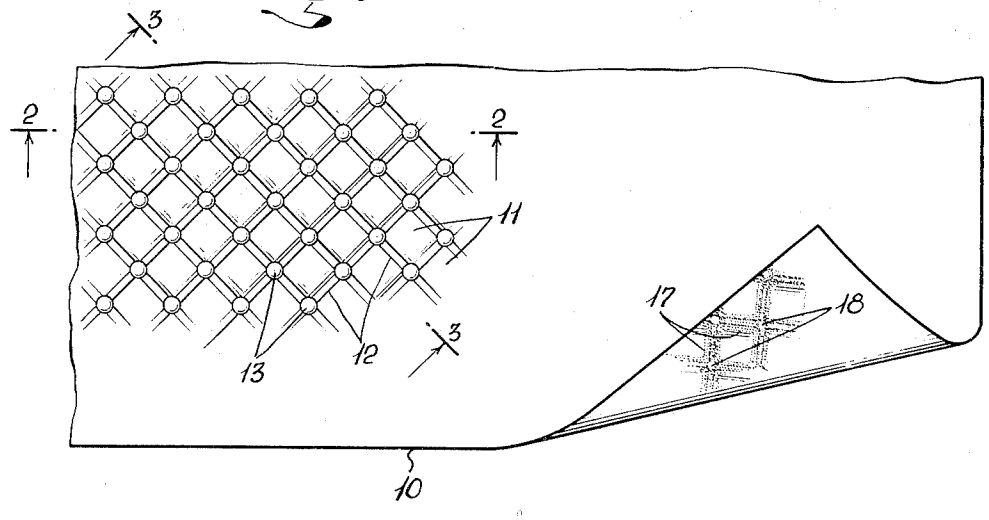


Fig. 2.

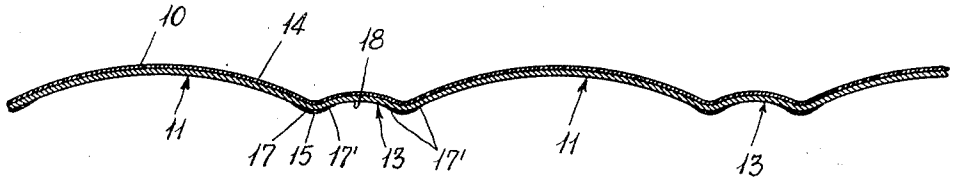
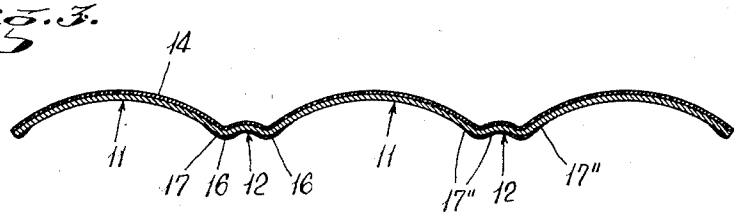


Fig. 3.



INVENTOR
HARRY DERMAN
BY
Howard C. Thompson
ATTORNEY

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SURFACE COVERING MATERIALS

Harry Derman, Great Neck, N. Y.

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7 Claims. (Cl. 117—11)

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This invention relates to surface covering materials used in covering walls, ceilings and other surfaces. More particularly, the invention deals with materials of this type and kind which are embossed so as to present, on the rear surface of the sheet material, high-spots characterized by the border of the embossing. Still more particularly, the invention deals with sheet material of the character described employing a suitable adhesive or other sizing on the high-spots only of the lower or back surface of the sheet and, wherein, the upper or front surface of the sheet is coated with a plastic protective film to render the same water repellent.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

Fig. 1 is a diagrammatic view of the upper or front surface of the sheet indicating part of the embossing thereon and showing one corner of the sheet turned to render part of the back surface visible.

Fig. 2 is an enlarged section taken through the sheet on the line 2—2 of Fig. 1 and omitting all background illustrations; and

Fig. 3 is a view similar to Fig. 2 with the section taken on the line 3—3 of Fig. 1.

In surface covering materials of the type and kind under consideration, it is known to provide, on the rear or back surface of the sheet, a coating covering the entire surface to form an adhesive or sizing for adhering the sheet to a support. Further, it has been known to provide, on the front or printed surface of the sheet, a protective coating such, for example, as varnish.

The distinctive feature of my invention resides in applying to the back surface of the sheet an adhesive or sizing covering only part of the area of the sheet, so as to minimize contact engagement of the sheet with the supporting surface and, particularly, in attaching what is known as embossed sheets to a surface, in which event, the adhesive or sizing is applied to the raised areas which are disposed on the rear or back surface of the sheet.

In illustrating one adaptation and use of my invention, I have shown, in the accompanying drawing, a sheet 10 of paper or other suitable material embossed to form a series of square raised or embossed portions 11, bordered by slightly raised bar portions 12, which intersect

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in raised, rounded or knob-like members 13 disposed at corner portions of the squares 11. The squares 11 have a greater embossing depth than the rounded members or knobs 13, as will clearly appear from a consideration of Fig. 2 of the drawing; whereas, the ribs or bars 12 have a still lesser degree of embossing than the members 13, as will appear from a consideration of Fig. 3 of the drawing. As clearly seen in Figs. 2 and 3 of the drawing, a thin film-like coating 14 is deposited on the upper or front surface of the sheet 10, in other words, the surface to which the decorative printing or coating is applied. This film-like deposit is sprayed upon the surface of the sheet by any number of spraying operations, depending upon the degree of deposit to be formed and the protective film 14 is preferably of a plastic-type including, for example, ethyl cellulose; toluol; aryle sulfonamide formaldehyde; nomil-amine resin; dibutyl phathalate; and ethyl alcohol in suitable proportions to provide a spraying solution. In usual practice, I find that one or two spraying applications is ample for average surface covering materials but, in other instances, additional coatings can be provided. These coating materials maintain the soft and pliable characteristics to the material while, at the same time, render the surface water repellent; thus, the front surface of the paper can be washed for cleaning purposes.

Considering Fig. 2 of the drawing, it will appear that the embossed square sections 11 form, where they join the rounded knob members 13, raised portions 15 on the back surface of the sheet 10 and, in like manner, where the embossed portions 11 join the bars or ribs 12, similar raised portions 16 are formed. These raised portions 15 and 16 are coated with a suitable adhesive or sizing, as seen at 17. The sizing is applied to the raised portions by passing the sheet over an applicator cylinder, or the like, so as to be assured that substantially the high-spots only of the sheet are coated. However, in the process of drying, a slight amount of the adhesive or sizing will extend onto parts of the raised or embossed portions, as is indicated, for example, at 17' in Fig. 2 and at 17'' in Fig. 3. The spreading of the adhesive or sizing 17 will be sufficient to cover the surface of the shallow embossings 12, but not sufficient to cover the raised members 13, thus leaving the center portion of the members 13 uncovered, as is seen at 18 in Fig. 2 of the drawing and also noted on the upturned corner of the sheet, as seen in Fig. 1.

From the foregoing, it will be apparent that a

surface covering sheet of the pre-glued or pre-sized type is employed and the same will be distributed and sold on this basis, so that the consumer or ultimate user of the sheet will only have to apply moisture to the high-spots or areas 15, 16 coated with the glue or sizing 17. This may be done by a moist brush, cloth, sponge or the like. If, in this operation, some of the glue spreads to the other areas of the sheet, this is not objectionable as adhesion to the surface would be primarily established at the high points or sections of the embossed sheet. It will thus be apparent that, after the sheet has been secured to the wall and the adhesive or sizing dryed, the embossed portions will stand out from the surface producing a very attractive appearance and, at the same time, a more or less cushioned wall covering material will be provided, in that air will be pocketed or housed within the embossed sections or areas of the sheet, particularly the sections or areas 11 and 13.

This type of covering will produce on walls or ceilings an insulation as against transmission of sound or sound vibrations, in other words, it will be suitable in control and regulation of acoustics.

In other uses of my invention and where the question of pre-embossing of the sheet is not desirable, the spasmodic or wide spreading deposit of the adhesive on the back of the sheet is employed by passing the sheet over a drum or the like having a pattern surface characterizing the deposit of the adhesive or sizing on the sheet; in other words, somewhat in the form of a printing cylinder. In such instances, the adhesion of the sheet to the surface will be localized thus leaving unadhered areas on the sheet, which, in drying, will produce slightly extended sections or areas which would be somewhat equivalent to the embossing heretofore referred to. However, in the flat surface sheet, there will be some degree of spreading of the adhesive in application of moisture to the back surface of the sheet. However, in all instances, the greater amount of adhesive or sizing will be localized on the sheet to establish greater adhesions of these particular areas or sections of the sheet.

Aside from uses of the sheet material as hereinbefore mentioned, the sheet may be used as a wall, ceiling or other surface covering and, in some of such instances, the application of the waterproof film coating need not always be employed. However, it is desirable to use this coating, particularly where washing and the cleaning of the walls is desirable. I have always found my improved sheet material practical for use in lining closets, particularly closets used for the storage of clothing. In such instances, I combined with the plastic spray used on the front or printed surface of the sheet suitable proportions of dichlor diphenyl trichlorethane, commonly referred to as "D. D. T.," which are placed in the spraying solution and sprayed in the application of the waterproof coating. This will afford added utility to the sheet material, particularly in rendering the walls of a closet protective against moths and other insects, thereby adding protection to the garments arranged in the closet. With the plastic ingredient, heretofore mentioned, in the following proportions; i. e., ethyl cellulose 58 lbs.; toluol 18 gallons; aryle sulfonamide formaldehylde 7 lbs.; nomilamine resin 9 lbs.; dibutyl phthalate 19 lbs.; ethyl alcohol 72 gallons, I add substantially 26 lbs. of dichlor diphenyl trichlorethane.

For the adhesive or sizing, I have found that a preparation comprising three parts of tapioca dextrin, one part natural gum and one part of water produces very desirable results. However, the type and kind of adhesive sizing may be varied to suit different conditions or uses.

As indicated above, it will be understood that the entire inner or back surface of the sheet 10 may be covered with water in the preparation of the sheet for attachment to a wall. This would eliminate the care of applying moisture only to the adhered or sized areas and any spreading of the adhesive or sizing on an embossed paper would not be detrimental to maintaining the otherwise effective embossed characteristics thereof. I have found, in practice, that pressure can be applied to the surface of the paper to insure complete contact of all of the sized or gummed areas with the supporting surface and without injury to or destruction to the embossed characteristics of the sheet.

The front or characterized surface of the sheet may be of a plain color throughout the entire area thereof or the colored sheet may also include patterns or designs of any type or kind. However, in the accompanying drawing, a plain sheet is shown and no attempt is made to illustrate in Figs. 2 and 3 the print or coloring of the surface. After the sheet has been prepared, the same is embossed and, after embossing the sheet, it is then sprayed for the protective coating on the front, printed or characterized surface thereof, after which the adhesive or sizing is applied to sectional areas of the back of the sheet in the manner stated above. After this, the sheet may be rolled up and packaged in suitable lengths for shipment and sale.

In the present construction, it is preferred that the square embossings be arranged diagonally on the sheet; that is to say, in diamond formation with the embossed bars or ribs extending at 90° to each other and 45° to the edges of the sheet. However, any type or kind of embossings can be employed.

It will be apparent that the use of my improved surface covering material comprises a new method which consists in adhering the back surface of the material to the supporting surface at pre-controlled sections or areas which are materially less than the total area of the sheet and, more particularly, in arranging the adhesion areas to form a multiplicity of completely surrounded unadhered sections, thus forming, on the resulting surface, a multiplicity of air pockets. This may be further described, particularly with respect to flat, unembossed sheet as areas or sections capable of free expansion and contraction.

Still further, my improved method comprises the use of a plastic film coating on the front surface of the sheet rendering the same moisture-proof and, further, insulating the surface from a standpoint of exposure to damp atmospheric conditions. It will be understood that, by applying the sizing to limited areas only of the back surface of the sheet, a material saving is effected in the production of pre-sized sheets of the kind under consideration.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In surface covering paper materials having pre-sized back surfaces for attachment to a supporting surface, the sizing being deposited on the back surface of the sheet in intersecting sections, said sections intermediate pairs of aligned intersections being widely spaced one with respect to

the other to form on the back of the sheet relatively large unsized areas throughout the width and length of the sheet, the deposit of the sizing on said sheet being such as to completely envelope substantially all of the unsized areas of the sheet, and the unsized areas of the sheet being embossed.

2. In surface covering paper materials having pre-sized back surfaces for attachment to a supporting surface, the sizing being deposited on the back surface of the sheet in intersecting sections, said sections intermediate pairs of aligned intersections being widely spaced one with respect to the other to form on the back of the sheet relatively large unsized areas throughout the width and length of the sheet, the deposit of the sizing on said sheet being such as to completely envelope substantially all of the unsized areas of the sheet, the unsized areas of the sheet being embossed, and other smaller areas of the sheet, between portions of said first named areas, being embossed and unsized.

3. In surface covering paper materials having pre-sized back surfaces for attachment to a supporting surface, the sizing being deposited on the back surface of the sheet in intersecting sections, said sections intermediate pairs of aligned intersections being widely spaced one with respect to the other to form on the back of the sheet relatively large unsized areas throughout the width and length of the sheet, the deposit of the sizing on said sheet being such as to completely envelope substantially all of the unsized areas of the sheet, the unsized areas of the sheet being embossed, other smaller areas of the sheet, between portions of said first named areas, being embossed and unsized, and other areas of the sheet having, in alinement with the sizing thereon, other embossed and sized areas.

4. A surface covering paper sheet of the class described comprising embossings extending over the entire areas of the sheet and forming, on the back surface of the sheet, raised intersecting surfaces intermediate embossings on the sheet, an adhesive coating applied and secured to all of the raised areas on the back of the sheet, leaving the major portion of the embossed areas free of said adhesive coating.

5. A surface covering paper sheet of the class described comprising embossings extending over the entire areas of the sheet and forming, on the back surface of the sheet, raised intersecting surfaces intermediate embossings on the sheet, an adhesive coating applied and secured to all of the raised areas on the back of the sheet, leaving the major portion of the embossed areas free of said adhesive coating, and the front and characterized surface of the sheet having a plastic film coating thereon.

6. A surface covering paper sheet of the class described comprising embossings extending over the entire areas of the sheet and forming, on the back surface of the sheet, raised intersecting surfaces intermediate embossings on the sheet, an adhesive coating applied and secured to all of the raised areas on the back of the sheet, leaving the major portion of the embossed areas free of said adhesive coating, the front and characterized surface of the sheet having a plastic film coating thereon, said coating including an insecticide.

7. A surface covering paper sheet of the class described comprising embossings extending over the entire areas of the sheet and forming, on the back surface of the sheet, raised intersecting surfaces intermediate embossings on the sheet, an adhesive coating applied and secured to all of the raised areas on the back of the sheet, leaving the major portion of the embossed areas free of said adhesive coating, the front and characterized surface of the sheet having a plastic film coating thereon, said coating including an insecticide, such for example as dichlor diphenyl trichlorethane.

HARRY DERMAN.

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