Aug. 15, 1944. G. J. ALLES 2,356,023

ARTICLE AND PROCESS OF MAKING THE SAME

Filed Aug. 16, 1941

FIG. 1.

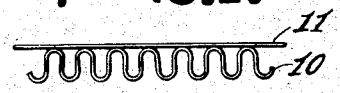



FIG. 2.




FIG. 3.

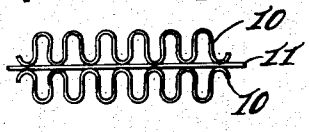



FIG. 4.

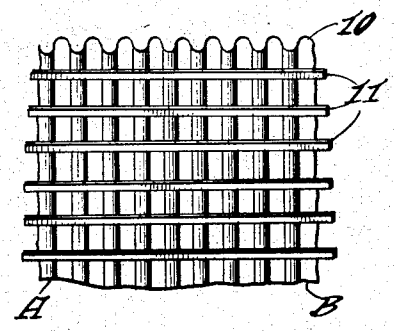



FIG. 5.

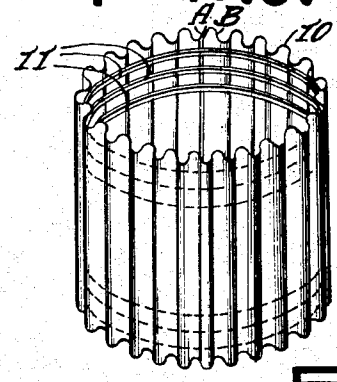



FIG. 6.

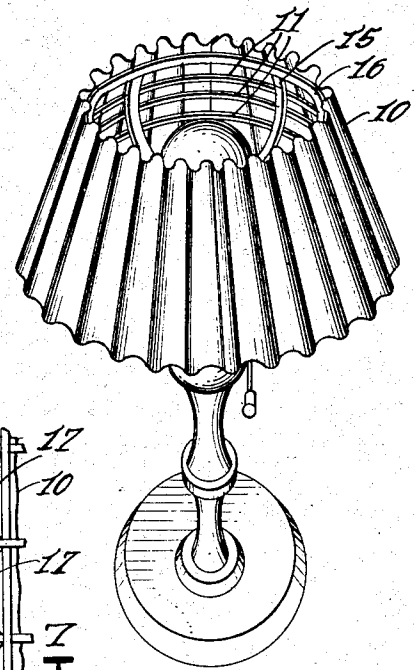



FIG. 8.

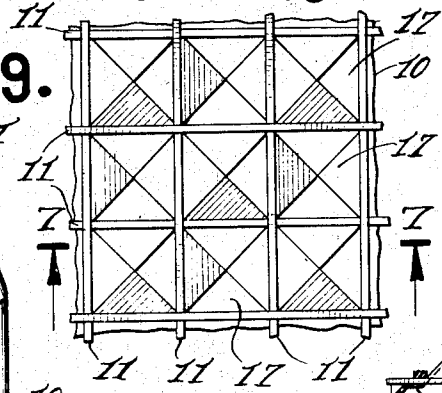



FIG. 9.

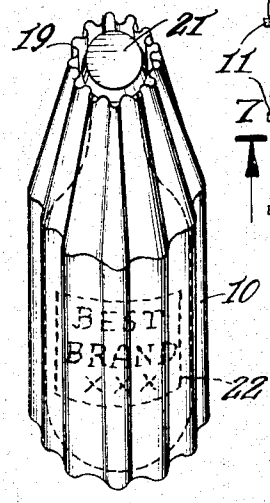
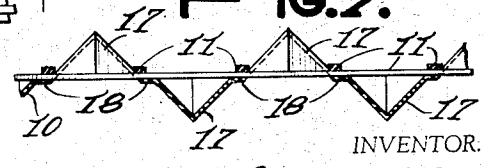



FIG. 7.




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# UNITED STATES PATENT OFFICE

2,356,023

## ARTICLE AND PROCESS OF MAKING THE SAME

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Application August 16, 1941, Serial No. 407,244

2 Claims. (Cl. 240—108)

This invention relates to a decorative sheet material and in particular a decorative article comprising such sheet material which is elastic or stretchable in at least one dimension and to a process for making the same. The invention also includes correlated improvement designed to enhance the structure, utility and appearance of such articles.

It has been found desirable to provide a decorative elastic sheet material to protect lamp shades and other odd-shaped articles. In order to protect such odd-shaped articles with a transparent covering it has been found desirable to employ a covering sheet which is elastic and/or extensible in order that said covering device may conform to the irregularities in shape of such articles. It is desirable that such covering sheet be of a transparent nature in order that printing, designs and labels borne by the article can be seen through the covering sheet. Such covering sheets are also desirable to enhance the appearance of the article thus covered.

It is therefore a general object of the invention to provide a sheet material which is elastic in at least one dimension.

It is a further object of the invention to provide an elastic sheet material adapted to cover, protect and enhance the appearance of articles, especially of irregularly shaped articles.

It is another object of the invention to provide a decorative sheet material having a limited degree of extensibility in two dimensions.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

According to the present invention there is provided an elastic sheet material comprising a flexible sheet of non-fibrous organic plastic material combined with a plurality of elastic bands attached to said sheet of non-fibrous organic material at spaced intervals along the lengths of the bands, the sheet material having a greater length than the elastic bands when the bands are in a relaxed condition, whereby the article has a substantial amount of elasticity and is capable of use in covering, protecting and decorating various articles.

According to the preferred process of the invention, a flexible sheet of non-fibrous organic plastic material is convoluted in one or two dimensions by forming more or less parallel crimps, folds, pleats or corrugations therein to which convolutions an elastic band of natural or synthetic rubber is then adhered in an unstretched condition transverse of the convolutions so that the sheet has a greater length than the bands when the latter are in a relaxed unstretched state. In an alternative process, the stretched elastic bands are adhered at spaced intervals to the sheet material while it is flat. When the tension on the bands is removed the contraction of the bands will convolute the sheet material.

In the specification and claims the term "convolutions" is intended to include folds, corrugations, pleats or crimps formed in the non-fibrous organic material. The expression "transversely" with respect to the position of the elastic band is intended to mean the band as being applied to the sheet of convoluted non-fibrous organic material of the invention at an angle to the longitudinal axis of the convolution. The expression "band" used with reference to the elastic member is intended to include any strip ribbon, filament or thread of elastic material stretched in a direction corresponding with the direction of stretch applied if it were intended to remove the corrugations or pleats thus formed.

The invention accordingly comprises the several steps and relation of one or more of such steps with respect to each of the others, and the article possessing the features, properties, and the relation of elements, which are exemplified in the following detailed disclosure, and the scope of the invention will be indicated in the claims.

Referring to the drawing which is illustrative of the invention but which is not intended to be by way of limitation thereof, there are shown a few embodiments of the invention, in which:

Figs. 1, 2 and 3 are enlarged cross-sectional views of as many embodiments of the article of the invention;

Fig. 4 is a bottom plan view of the article shown in Fig. 1;

Fig. 5 is a view in perspective of one embodiment of the article of the invention in the form of a sleeve.

Fig. 6 is a view in perspective of the article of the invention in the form of a lamp shade;

Fig. 7 is a top plan view of a fourth embodiment of the sheet material of the invention;

Fig. 8 is a cross-sectional view of the sheet shown in Fig. 7; and

Fig. 9 is a perspective view of the sheet of the invention as a covering for an irregularly-shaped object.

The sheet material may be colorless or colored, transparent, translucent or opaque. The sheet material may be further treated to render it iridescent and/or luminescent, fireproof and/or

moistureproof in a manner known to the art. Effect materials may be disposed over the sheet material to produce designs or other desired effects, such as by printing, spraying, painting, sprinkling or otherwise treating with a lacquer, pigment, paint or metallic powder.

As a class, the flexible non-fibrous organic material which may be used to form the sheet material of the invention may comprise webs, films, sheets and pellicles formed of cellulose ethers, cellulose esters, cellulose ether-esters, synthetic resins, halogenated rubber, for example "Pliofilm," gelatin, casein, regenerated cellulose and the like, all of which materials are characterized by being non-fibrous and film-forming.

The elastic bands may be in the form of strips, ribbons, filaments and threads, and may comprise rubber, rubber substitutes, synthetic rubber and the like. Such bands may be uncovered, or covered as with fibrous material such as textile yarn or roving. The elastic band may be of a natural color to more effectively blend with the color of the sheet material, as for example when transparent sheet material is employed; or, the rubber may be colored to contrast with the sheet material when the sheet material is colored or uncolored.

The adhesive substances which may be employed to adhere the elastic band material to the non-fibrous organic plastic sheet material may comprise such adhesives as are inherently pressure-sensitive and tacky as well as those adhesives which dry to a non-tacky condition.

The adhesive is selected with regard to the nature of the elastic material and the non-fibrous organic sheet material employed. The adhesive may be applied to the flexible sheet material and/or the elastic bands at spaced intervals, the adhesive then permitted to set or dry, thus uniting the elastic material with the sheet material of the invention. Alternatively, there may be employed an adhesive tape applied over the elastic band and the non-fibrous sheet material to adhere these materials to each other at spaced intervals. The adhesive may be transparent, translucent, colored or opaque.

The article of the invention may be constructed from a single sheet or from a plurality of sheets of non-fibrous organic plastic material, which is capable of being formed into thin flexible and transparent sheets. A plurality of pleats, crimps, folds or corrugations may be preformed in the sheet. After the material has been convoluted, a plurality of elastic bands may be adhered to the flexible sheet material at spaced intervals and over predetermined areas of the said sheet material. The elastic bands are preferably applied to a convoluted sheet material while the bands are in an unstretched condition, but it is also to be understood that the elastic bands may be attached in a stretched condition to an uncrimped or uncorrugated sheet material at spaced intervals, whereupon by allowing the elastic members or bands to contract there is formed in the sheet material a plurality of crimps or corrugations in those portions not attached to the elastic band.

In the preferred embodiment, a sheet of flexible non-fibrous organic material is corrugated in a wet or dry state in manner known to the art as by passing such material through a crimping device or corrugating machine, and while the sheet material is thus maintained in a corrugated condition, a plurality of elastic bands are adhered transversely to the corrugations at spaced intervals while the elastic members are maintained. The article thus formed may be stretched within the elastic limits of the elastic bands and/or the sheet material, whereby the corrugations disappear, but upon release of the stretch the elasticity of the bands causes the sheet material to again assume the original corrugated condition.

Referring to Figs. 1 and 4 of the drawing, there is shown one embodiment of the article in which a flexible sheet of non-fibrous organic plastic material 10 is pre-corrugated by suitable means and elastic bands 11 are adhered to the sheet 10 transverse of the corrugations. In this embodiment, the elastic member 11 is adhesively secured while relaxed to the ridges of the corrugations. In a similar manner elastic bands may be adhered to the other side.

In Fig. 2 there is illustrated a second embodiment of the invention in which a flexible sheet 10' of non-fibrous organic material is pleated to form spaced parallel pleats 13. Elastic bands 11 are adhered transverse of the pleats to the sections of the sheet which lie between the pleats. The elastic bands 11 are secured to the sheet 10' while the bands are in a relaxed or unstretched condition.

In Fig. 3 there is illustrated a third embodiment of the article of the invention wherein elastic bands 11 are secured in relaxed condition between two corrugated flexible sheets 10 of non-fibrous organic material. Alternative, the elastic bands 11, while in a stretched condition, may be adhesively secured at spaced intervals to the sheet or sheets 10 while the sheets are flat, or, if previously corrugated, when the sheets are pressed to a flat condition. Upon releasing the tension on the elastic bands, the bands cause the sheet or sheets to become corrugated as shown in Fig. 3.

In Fig. 5, there is illustrated the sheet in the form of a sleeve made by joining the edges A and B of the sheet shown in Fig. 4. Parallel elastic threads 11 are shown as applied to the corrugated sheet material 10 near one edge thereof and spaced from the top and bottom edges. The sleeve thus formed will readily expand and contract within the limit imposed by the length of the sheet material.

The article shown in Fig. 5 is adapted for a wide variety of uses among which may be mentioned protective covering for fragile objects, insulating materials for pipes, decorative covering for containers of all kinds, a wrapping sleeve particularly for irregularly shaped articles and more specifically as a lamp shade or bottle cover.

In Fig. 6 there is illustrated a lamp having a shade comprising the sleeve shown in Fig. 5 placed over a supporting wire frame 15 comprising an upper ring 16 and a lower ring of larger diameter (not shown) so as to stretch the sleeve to a greater extent at the bottom than the top. Elastic bands 11 are shown disposed about the inside of the top and also the bottom of said sleeve as shown in Fig. 5, providing for elasticity in said sleeve to cause it to tightly conform to the frame 15. It will be noted that the elastic bands 11 when disposed as shown form an attractive design simulating stripes about the top and bottom of the shade, said stripes appearing to be painted on the inside of said shade, especially when the sheet material 10 is of a transparent or translucent nature.

In Figs. 7 and 8 there is illustrated a fourth embodiment of the sheet material of the inven-

tion wherein a flexible sheet 10 of non-fibrous organic material is die-pressed to form alternate depressions and elevations in the shape of pyramids 17. Such depressions and elevations may be conveniently formed in the flexible sheet of non-fibrous organic material 10 by first wetting the sheet material causing it to become soft, placing the sheet material in such condition in a mold or press resembling a waffle iron, applying heat and pressure thereto until the sheet is substantially dry. After the sheet material has become thoroughly dried, elastic bands 11 are adhesively secured to said treated sheet material in criss-cross fashion on the flat areas 18 between the depressions and elevations, as shown, so that upon applying a stretch in two directions the sheet material may be stretched transversely as well as longitudinally. In this manner there is provided an article which may be stretched substantially in more than one direction, and upon release of said stretch will again regain its original configuration.

In Fig. 9 there is illustrated in perspective a further use for the article formed according to the invention, comprising a sleeve-like member 19 disposed over an irregularly shaped object such as bottle 21. Due to the elasticity of the sheet material, the sleeve 19 will substantially conform to the irregularities of said bottle. When the sheet material 10 is of a translucent or transparent nature, the contents of the bottle may be observed and the label or labels thereon such as label 22 may be read through the sheet.

Various designs may be imprinted upon the sheet material, and where it is desired to form the article of two sheets of corrugated materials having elastic members disposed therebetween, a sheet of printed paper or transparent material may be disposed between said sheet carrying printed matter thereon.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

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

1. An an article of manufacture, an elastic sheet material comprising a flexible sheet of non-fibrous organic plastic material having convolutions therein comprising depressions and elevations in the shape of pyramids combined with a plurality of elastic bands attached to said sheet material between said pyramids at spaced intervals along the lengths of the bands, whereby said article may be stretched transversely as well as longitudinally.

2. As an article of manufacture, an elastic lamp shade comprising a flexible sheet of non-fibrous organic plastic material having convolutions therein comprising depressions and elevations in the shape of pyramids combined with a plurality of elastic bands attached to said sheet material between said pyramids at spaced intervals along the lengths of the bands, whereby said article may be stretched transversely as well as longitudinally.

GEORGE J. ALLES.