Nov. 26, 1935. S. S. GUTLON 2,021,993

WOVEN FABRIC

Filed July 8, 1935

Fig. 1.

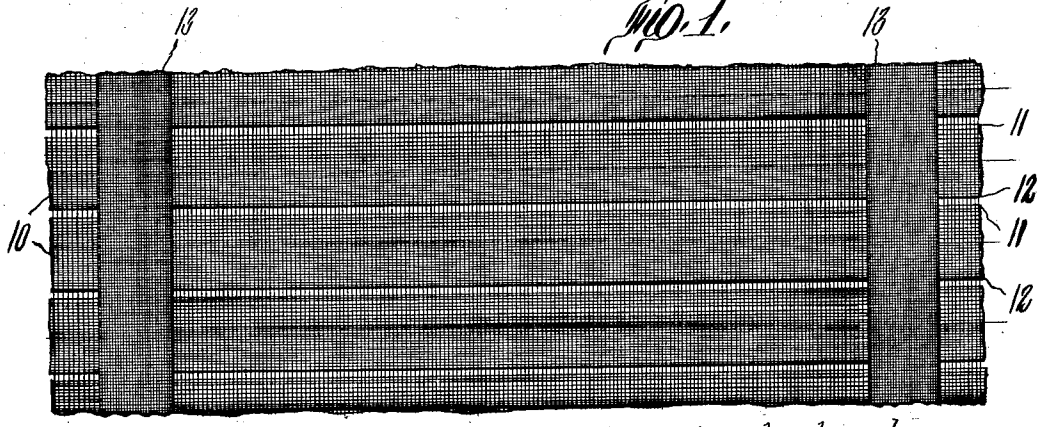


Fig. 2.

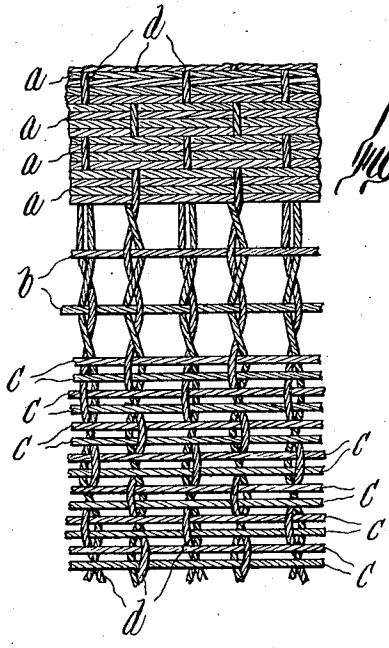
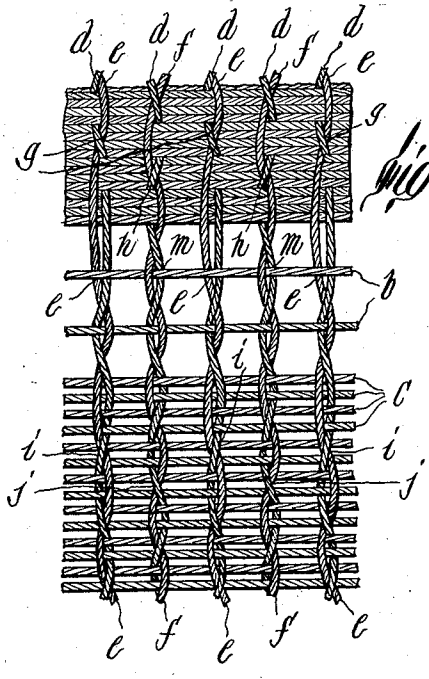


Fig. 3.



Inventor
Sidney S. Gutlon
by Wright, Brown, Quinby & May
Attys

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2,021,993

WOVEN FABRIC

Sidney S. Gutlon, Newton, Mass., assignor to Modern Curtain Co., Inc., Boston, Mass., a corporation of Massachusetts

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5 Claims. (Cl. 139—419)

The subject of this invention is a woven fabric wherein there are regularly recurring transverse zones or stripes of progressively varying opacity or shadow effect created by varying the coverage or closeness of packing of the weft in each such zone. More particularly, the fabric of the present invention is made up of regularly recurring transverse stripes in each of which there is a succession of groups or sheds of weft threads of progressively varying number and density through the succession, wherefore such fabric presents a progressively diminishing opacity or shadow effect with maximum opacity or shadow at the group or groups of weft threads of maximum number and maximum density.

Although not limited thereto, the fabric of the present invention is particularly adapted for use as curtains and window shades, since it simulates well Venetian blinds, so-called, especially when shaded longitudinal stripes of suitable weave are introduced into the fabric pattern to give the effect of the vertical bars serving to interconnect the slats of Venetian blinds. In its preferred and most practical embodiment, the fabric of the present invention is of a leno or cross-woven variety whose crossing or leno threads are preferably practically invisible on one face (i. e., the front face) thereof and cross under the standard warp threads on the other or back face so as to prevent substantial displacement or slippage of the latter with consequent impairment or loss of the desired graduated shadow effect, as would otherwise tend to take place during handling, finishing, and laundering of the fabric. Intersection or crossing of the successive leno threads and the standard warp threads preferably occurs at alternating groups or sheds of the weft threads, as this ensures the desired permanency of the original weave during the life of the fabric.

With the foregoing and other features and objects in view, the present invention will now be described in further detail with particular reference to the accompanying drawing, wherein,

Figure 1 is a front face view of a piece of fabric embodying the weave of the present invention.

Figure 2 is a greatly magnified front face view of a fragment of adjoining transverse stripes.

Figure 3 is a greatly magnified back face view of the same fragment.

As appears in Figure 1, fabric embodying the present invention gives the appearance of a Venetian blind in that it comprises regularly recurring transverse zones or stripes 10 each of progressively deepening shadow effect from its upper edge 11 toward its lower edge 12. When the fabric is to be used as curtains or window shades, for which purpose it is especially adapted, it may advantageously include in its woven pattern two or more longitudinal stripes 13 whose warp threads may be of a light or gray color, as are the weft threads, or may be dyed to some such dark shade as brown, blue, gold, etc., and which thus create the impression of the vertical bars of a Venetian blind. The present invention is not, however, concerned with such additive effects as the stripes 13 whose weave may be none other than that of plain cloth. It is directed to the structure of the transverse stripes 10 whose weave is such as to present the desired progressively varying opacity and the concomitant progressively varying shadow effect.

For the sake of clarity and simplicity, Figures 2 and 3 have been drawn on a greatly magnified scale to show only those portions of the weave of adjoining stripes to illustrate the principles of the present invention. Each stripe is made up of a succession of groups or sheds of weft threads of progressively varying number and density through the succession, comprising, say, a plurality of groups *a* of four densely packed threads affording maximum opacity, spaced individual threads or singles *b* affording minimum opacity, a plurality of groups *c* of two threads spaced apart less but affording greater opacity than the threads *b*, and a plurality of groups (not shown) of three threads packed together more densely and affording greater opacity than the threads *c*. It will, of course, be understood that the succeeding groups or sheds of weft threads entering into a transverse stripe might be made up of any other progressively varying number and density of threads. Indeed, it is possible to get the desired progressively varying opacity in each stripe by using in the successive groups or sheds the same yarns but of progressively varying coverage or yarn count or by adopting both the expedient of progressively varying the number of yarns and that of progressively varying the yarn count through the succession of groups, but, as shown, it is preferable to work with weft thread of the same count and to vary progressively the number and density of weft threads through the succession of groups, as this does away with the need of multiple shuttle-box looms and other complications in weaving.

The standard warp threads *d* are shown in Figure 2 as defining the various groups of weft threads to produce a semi-sateen face or finish such as is desired for such purpose as curtains. On the back face of the fabric, as best illustrated in Figure 3,

are two sets of crossing or leno yarns, namely, *e* and *f*, respectively. The successive leno yarns *e* and *f* cross sinusoidally under the standard warps *d* at alternating groups of weft threads, as at the alternating groups *g* and *h* of the four-weft groups and as at the alternating groups *i* and *j* of the two-weft groups. A departure from this regular practice of cross-weaving is, however, desirable when, as is shown, there are two individual weft threads or singles *b* in each stripe to afford a region of minimum opacity. In such case, as illustrated, each leno thread *e* does not cross under the corresponding warp at the last two four-weft groups adjoining the singles *b* but passes together with the standard warp in front of the first single at *l* and then crosses sinusoidally under the standard warp as the latter passes in back of the second single. Each leno thread *f*, on the other hand, pursues, as depicted, a regular sinusoidal path and crosses sinusoidally under the corresponding standard warp as the latter passes in front of the first single at *m* and also in back of the second single. It is thus seen that, excepting for the irregularity just described as being desirable when individual weft threads or singles occur in each stripe, the successive leno threads cross sinusoidally under the corresponding standard warps at alternating groups of the weft threads. Since the leno threads cross the standard warp only on one face of the weft, it is preferable that all of the groups of weft threads, excepting the singles, be packed together sufficiently to render the leno threads invisible on the other face to the naked eye, thereby rendering the other face the front or finished face of the fabric, as already described.

In weaving the fabric of the present invention, various types of looms may be employed. However, such fabric presents the important advantage that it can be woven on a standard dobby loom equipped with two sets of leno motions to provide for the desired cross-weaving of the double set of leno yarns with the standard warp and equipped with the appropriate pattern chain and accessory mechanism to regulate the speed of take-up or pick as required by the weave hereinbefore described.

I claim:—

1. A woven fabric presenting regularly recurring transverse stripes of progressively varying opacity, each of said stripes comprising a succession of sheds of weft threads of progressively varying number and density through the succession of sheds.

2. A leno fabric presenting regularly recurring transverse stripes of progressively varying opacity, each of said stripes comprising a succession of groups or sheds of weft threads of progressively varying coverage through the succession, the leno warps in said fabric serving to prevent substantial displacement of said groups of weft threads.

3. A leno fabric presenting regularly recurring transverse stripes of progressively varying opacity, each of said stripes comprising a succession of groups or sheds of weft threads of progressively varying number and density through the succession, the leno warps in said fabric serving to prevent substantial displacement of said groups of weft threads.

4. A leno fabric presenting regularly recurring transverse stripes of progressively varying opacity, each of said stripes comprising a succession of groups or sheds of weft threads of progressively varying number and density through the succession, the leno warps in said fabric crossing under the standard warps essentially only on one face of the fabric and serving to prevent substantial displacement of said groups of weft threads.

5. A leno fabric presenting regularly recurring transverse stripes of progressively varying opacity, each of said stripes comprising a succession of groups or sheds of weft threads of progressively varying number and density through the succession, the successive leno warps in said fabric crossing sinusoidally under the corresponding standard warps at alternating groups of said weft threads and being practically invisible on one face of the fabric.

SIDNEY S. GUTLON.