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A. A. GOBEILLE

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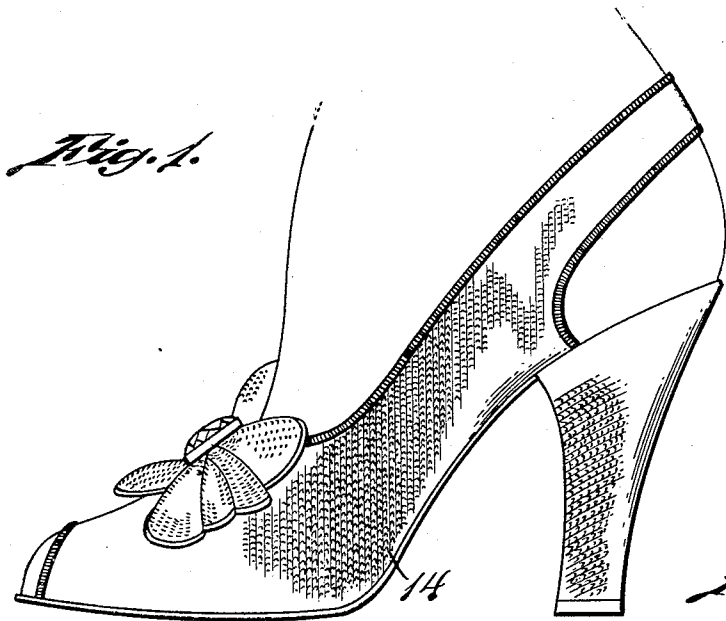


Fig. 2.

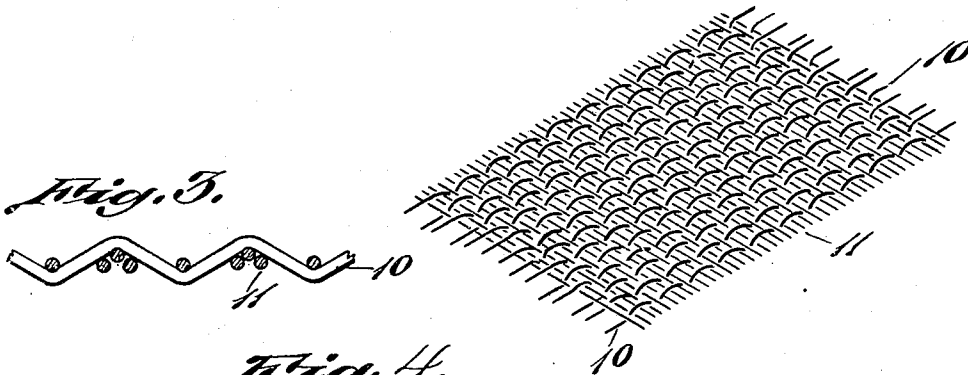
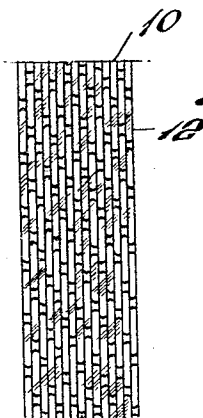


Fig. 4.



INVENTOR
Alfred A. Gobeille
BY *Barlow & Barlow*
ATTORNEYS

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Alfred A. Gobeille, Stonington, Conn.

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4 Claims. (Cl. 139—420)

This invention relates to a fabric of a type which may be used in a woman's shoe or in a handbag or for trimming purposes and the like. Because of the light-reflecting properties of the fabric it is of the type frequently referred to as having a beaded effect.

Heretofore in the formation of so-called beaded fabrics beads formed of glass or a similar shiny material have been sewed upon the fabric, or small particles of glass have been sprayed upon the fabric with a suitable adhesive so as to give a lustrous appearance at intervals to the fabric by reason of the reflection of light in a myriad of different directions causing the fabric to sparkle. Fabrics with glass beads secured thereto, or with particles of glass sprayed thereon will not withstand abrasion to any extent, and the fabrics are rather fragile and frail, besides being exceedingly expensive to produce.

An object of this invention is to produce a more durable beaded effect in a fabric than by the use of beads sewed on, or shiny particles sprayed on, to a formed fabric.

Another object of this invention is to provide a fabric which will have a strong, durable, hard finish which will resist many abuses to which it may be put, and which may be readily cleaned.

I have found that I may produce a brilliant sparkling beaded effect upon a fabric without attaching shiny beads or small particles of glass or similar material by spraying, by the use of strands of a plastic material which will have a high, light-reflecting surface and which will have other qualities which will enable these strands to be bent into a set undulating form, that the strands may protrude beyond other strands with which they are interlaced which will be so drawn in as to recede from the outwardly protruding undulated formation of the set plastic strand, and thus leave a series of spaced high points in the fabric which will reflect light at a large number of points.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawing:

Fig. 1 is a side elevation of a shoe formed from my fabric;

Fig. 2 is a diagrammatic view illustrating a woven fabric constructed in accordance with this invention;

Fig. 3 is an enlarged diagrammatic view illustrating a warp strand of my fabric with filling strands associated therewith;

Fig. 4 is a side elevation of a warp strand alone;

Fig. 5 is a top plan view of the fabric, illustrating the raised or extending protruding portions of the strand such as shown in Figs. 3 and 4 as extending above the surface of the fabric.

In proceeding with this invention I utilize a plastic strand which will have high light-reflecting properties, and of certain desired characteristics as will be hereinafter more fully explained, and I weave this strand with other strands having non-light-reflecting properties, and which will be of less stiff characteristics than the plastic strand with which I weave it. The selection of the plastic strand is such that it will receive a permanent set so that portions of this strand will protrude beyond the fabric to provide light-reflecting points which by reason of the high light-reflecting properties of the plastic strands give to the fabric a beaded effect, or the provision of a myriad of light-reflecting areas when the fabric is placed in strong light and viewed by the observer. Many different weave structures may be utilized to produce the effect desired, I having shown but one of such weave structures as an illustration of one embodiment of this invention.

With reference to the drawing, the weave structure which I have illustrated for the fabric here involved, shows a plurality of warp strands 10 of a plastic material which are woven with a plurality of filling strands 11 of the usual textile type of material such as cotton, woolen, or fibers of this nature. The weave structure is such that three fillings pass beneath and the next filling passes over each warp strand in a series of four successive picks. The filling has a different relation to the next successive warp strand in that one of the fillings which extend beneath the previous warp strand will extend over the next adjacent warp strand that a locking relation may occur, in a known weave structure as indicated in Fig. 2, the weave here shown giving somewhat of a gabardine effect. It will be understood, however, that many weave structures may be utilized.

The plastic strand 10 which I utilize, shown as a warp in the above illustration, must have certain requisite properties in order to provide the desired characteristics. The strand must be similar to some of the qualities possessed by a soft wire. It must be flexible to a certain degree and sufficiently elastic so that after bending a certain amount it will spring back to its original formation. The strand when bent beyond its

elastic limit, which is a bending such as occurs in weaving in the beating up operation of the filling, will take a set and remain in a permanent crimped form which the plastic strand will assume in such interlacing operation. The strand must be such that these properties will exist at the ordinary room temperature at which fabrics are ordinarily woven. Further the strand must have a high light-reflecting surface. A plastic which has all these qualities is placed on the market by the Dow Chemical Company under the name "Saran," and this is one of the forms of plastic which may be found suitable for this invention. This material becomes soft at 110 degrees centigrade and liquid at 150 degrees centigrade,—thus the range of 110 degrees centigrade to 150 degrees centigrade (230 degrees Fahrenheit to 302 degrees Fahrenheit) is a range at which the material is sufficiently soft to mold or shape.

The filling 11 with which the plastic strands 10 are woven I have illustrated as formed of a cotton fiber although it will be understood that other commonplace textile yarns or strands such as woolen and the like, may be utilized. It must be softer and more flexible than the plastic strand with which it is woven. I have shown the plastic strand 10 as constituting the warp although it will be perfectly apparent that these strands may constitute the filling, and the cotton strand may be utilized for a warp.

In the utilization of the plastic strands for a warp, each time that the filling strands are beaten up the warp strand is bent beyond the elastic limit of the strand, and thus there is provided a permanent set of an undulating wavy form in the plastic strand such as shown in Fig. 4 while filling strands may be related to this form as shown in Fig. 3. By this relationship the crimped or outwardly extending undulation 12 of each of the warp strands 10 will protrude beyond the softer cotton filling thread 11 so as to leave these points 12 extending beyond and outwardly from the main surface area of the fabric, and these points being formed of the plastic material will give to the fabric certain qualities of the plastic material such as being tough, rugged, easily washed, and also being resistant to acids and the like, will provide a surface which is highly desirable in a fabric for such uses as shoes, handbags and the like.

The plastic material which I have mentioned above, namely "Saran," also must have for the desired purposes of this fabric a high light-reflecting quality, and thus the high points 12 of the warps which protrude beyond the interwoven portion of the fabric will provide a myriad of light-reflecting points which give to the fabric a beaded effect and reflect light as would a beaded fabric, while providing a fabric which is much stronger and permanent against abrasion than the usual beaded fabrics formed by sewing on beads or spraying on glass or a like element, as has heretofore been the practice.

The plastic strand may exist in transparent, translucent or opaque condition by reason of the character of the dye which may be used to color the same. The plastic may be extruded as a single, solid strand having a lustrous surface which will be highly reflective of light which may fall upon the same or as a multiple of finer strands grouped together. A fabric so formed will stand much more abrasion and wear than is customary for fabrics to stand, and will also be resistant to weather, acid and other chemi-

cals which ordinarily serve to deteriorate, rot or destroy the usual textile fibers. The plastic material is also such that it may be easily washed and thus may be cleansed readily from such dirt as may come in contact with the same.

As was seen in the weaving, certain sharp deflections of the strands will cause them to stay in a permanent position. It is also found that "Saran" is capable of being molded after the fabric has been woven. Where molding to fit a certain form where sharp curvatures are not required, the material may be heated to a degree to soften the plastic within the softening range above mentioned, the degree of plasticity being dependent upon the temperature or which end of the softening range is approached; thus the fabric may be molded to fit a form something after the form of shoe 14, or a person's foot, and then when cooled again will retain its shape in this form.

The filling is a soft fibrous strand of one or more plies of thread and is relatively non-light reflective.

I claim:

1. A tightly woven fabric having a lustrous beaded surface effect consisting essentially of closely spaced interlaced strands of different materials, the strands of one material being formed of a plastic substantially curved in cross section and having a highly light reflective surface and of such quality as to be set in an undulating formation upon fabrication, the strand of the other material being comparatively non-light reflective and soft, said plastic strands being floated over a greater number of the other strands on one side of said fabric than on the other side between the interlockings of said strands, said plastic strands being relatively stiff thereby providing undulations extending in curved formation between adjacent interlockings of said strands, said other strands being sufficiently pliable to be positioned below the crest of each undulation of said plastic strands on one side of the fabric, providing a surface on said fabric composed predominantly of said plastic strands having a multiplicity of closely spaced highly light reflective points.

2. A tightly woven fabric having a lustrous beaded surface effect consisting essentially of closely spaced interlaced strands of different materials, the strands of one material being substantially round in cross section and formed of a plastic and having a highly light reflective surface and of such quality as to be set in an undulating formation upon fabrication, the strand of the other material being comparatively non-light reflective and soft, said plastic strands being floated over a greater number of the other strands on one side of said fabric than on the other side, between the interlocking of said strands, said plastic strands being relatively stiff thereby providing undulations extending in curved formation between adjacent interlockings of said strands, the strands of the other material being relatively dull and sufficiently pliable to be positioned below the crest of the undulations of said plastic strands on one side of the fabric providing a surface on said fabric composed predominantly of said plastic strands having a multiplicity of closely spaced highly light reflective points.

3. A tightly woven fabric having a lustrous beaded surface effect consisting essentially of closely spaced interlaced strands of curved cross section strands of "Saran" and strands of non-

synthetic material and relatively non-light reflective, with the "Saran" strands floated over a greater number of the non-synthetic strands on one side of the fabric than on the other side between the interlockings of said strands, said floated portions of the "Saran" strands extending in upwardly curved formation between adjacent interlockings of said strands, with the crest of each undulation protruding beyond the strands of non-synthetic material providing a surface on said fabric composed predominantly of "Saran" strands having a multiplicity of closely spaced highly light reflective points.

4. A tightly woven fabric having a lustrous beaded surface effect consisting essentially of an

all "Saran" strand warp and an all fibrous filling having relatively non-light reflective properties with each strand of the warp floated over a plurality of filling strands between each interlocking of said warps and fillings, said "Saran" strands being substantially curved in cross-section and relatively stiff and extending on a curvature between adjacent interlockings of said warps and fillings and with the crest of each of the said curved portions of the "Saran" strand protruding beyond the filling strand providing a surface on said fabric composed predominantly of "Saran" strands having a multiplicity of closely spaced highly light reflective points.

ALFRED A. GOBEILLE.