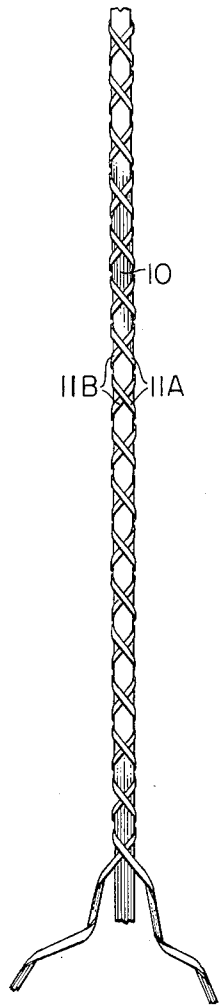
Feb. 6, 1962 A. S. GOULD ET AL 3,019,592

SUPPORTED METALLIC YARN

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SUPPORTED METALLIC YARN

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This invention relates to metallic yarns or threads.

An object of the invention is to depart from the smooth metallic gleam typical of metallic yarns of the prior art and create a metallic yarn that will contain facets, as in a jewel, resulting in a shimmer and glitter as light is reflected from these facets.

Another object of the invention is to provide a supported yarn or thread which may be employed in the simplest type of conventional weaving operation to provide finish effects which have heretofore been relatively costly and difficult to produce or which have not been heretofore produced.

The above and other objects and advantages of the invention become more clear from the following specification of certain embodiments of the invention together with the accompanying drawing which shows, on an enlarged scale, a yarn embodying the present invention.

Thread contemplated by the invention may comprise laminations of strips of transparent or semi-transparent material with metal foil or metallic deposits included therein. One material which may be employed is cellulose acetate butyrate, although strips of other cellulosic materials, preferably containing suitable plasticizers, may be used (e.g., cellulose acetate, cellulose acetate propionate). Other non cellulosic material may also be employed, as for example, longitudinally and transversely oriented films of polyethylene terephthalate.

In accordance with the present invention, thread is preferably formed by providing sheets of the material from which the thread is to be made and slitting the sheet lengthwise to provide a number of individual threads. Several sheets may be combined or laminated together prior to slitting in order to provide threads having several thicknesses, and color or pattern applied to one or all of such sheets is preferably included within such lamination rather than being exposed on one or both of the other surfaces of the lamination. Sheeted material may be combined with metal foil, such as aluminum foil, or may reecive a metal vapor deposit (as disclosed in U.S. Patent 2,714,569) in order to provide threads having a metallic appearance, printing occurring either before or after or both before and after they fall combining or metal depositing operation. The metal foil or deposited metal film may itself be printed if desired. Numerous transparent adhesives which are for the lamination of widths of the various materials from which the thread contemplated by the invention will be apparent to those skilled in the art. Such adhesives may be adapted to pigmentation so that the adhesives themselves may exhibit a color, if desired. Thus, the pigmented adhesives specified in the above mentioned Patent No. 2,714,569 may be employed if desired. Obviously, the same adhesive formulations as set forth in such application, minus the pigment set forth therein, may be employed if a colorless adhesive is desired by way of example, the formulations for suitable transparent adhesives which are given in the aforesaid Patent No. 2,714,569 may be employed or the formulations which are given in copending application of George H. Lacy, Serial No. 462,753 filed October 18, 1954 now U.S. Patent No. 2,772,994 may be employed.

The laminated metallic yarn contemplated by the invention comprises a base yarn **10** and a supported yarn **11** which preferably comprises two yarns of opposite hand, **11A** and **11B**, although it will be understood that in certain application one of the yarns **11A** or **11B** may be eliminated leaving merely a single supported yarn of one given hand. Alternatively, supported yarns may be supplied in such a way that there are several supported yarns of each hand or there may be two or more yarns of one hand and only one yarn of the opposite hand. Numerous permutations and combinations will be self-evident.

The base yarn **10** and the supported yarn **11** (or **11A** and **11B** or other combinations of supported yarn) are produced by slitting the laminated webs referred to above by procedures which will be familiar to those skilled in the art, such as web slitting procedures. As is known, yarns can be slit to various widths, typical widths being $\frac{1}{64}$ inch or $\frac{1}{100}$ inch or $\frac{1}{32}$ or $\frac{1}{80}$ inch, etc. In the illustrated example the base yarn **10** comprises a yarn which is slit to a width of $\frac{1}{64}$ of an inch and the supported yarn **11A** and **11B** comprises two separate yarns each of a width of $\frac{1}{100}$ inch which are turned at 6 turns per inch to opposite hands in twisted relationship around the central core or base yarn **10**. This results in a $\frac{1}{64}$ inch base yarn with a crisscross of two ends of $\frac{1}{100}$ inch yarn. The supported yarn or crisscross yarn or seconds form the facets on the core or base and reflect the light to give the jewel like sparkle.

The type of metallic thread disclosed lends itself to unlimited color combinations by combining one color of base yarn with one or two colors or more colors of the crisscross or supported yarns or threads. Unusual effects are obtained by providing supported yarn **11** (or **11A** and **11B** or other combinations) which is multicolored, the base yarn being gold or silver or other color or being multicolored.

As previously stated, various film materials may be used and various metals may be used including aluminum foil and also including vapor deposited aluminum or other aluminum thin films or vapor deposited zinc or the like.

The invention obviously is not limited to the specific sizes or widths of yarn given in the examples nor is it limited to yarn having laminations of two films as opposed to yarn having three or four thicknesses or more. In fact, among others, the possibilities are presented that any base yarns may be combined with any supported yarns. The base yarn and each of the one or more supported yarns may comprise any of the following possibilities:

(1) Yarn slit from an imprinted single film with no metal thereon.

(2) Yarn slit from an imprinted single film with metal thereon.

(3) Yarn slit from a printed single film with metal thereon.

(4) Yarn slit from an imprinted multiple lamination of two or more films with a clear adhesive therebetween and with no metal present.

(5) Yarn slit from a multiple lamination of two or more films with a colored adhesive between at least two of the films and with no metal present.

(6) Yarn slit from a multiple lamination of two or more films with a colored adhesive between at least two of the films and with other printed color thereon and with no metal present.

(7) Yarn slit from a multiple lamination of two or more films with printed color on at least one of them and with clear adhesive therebetween, and with no metal present.

(8) Yarn slit from an unprinted multiple lamination of two or more films with a clear adhesive therebetween and a metal deposit such as aluminum or zinc on one or more of the films.

(9) Yarn slit from a multiple lamination of two or more films with a colored adhesive between at least two of the films and a metal deposit such as aluminum or zinc on one or more of the films.

(10) Yarn slit from a multiple lamination of two or more films with a colored adhesive between at least two of the films and with other printed color thereon and a metal deposit such as aluminum or zinc on one or more of the films.

(11) Yarn slit from a multiple lamination of two or more films with printed color on at least one of them and with clear adhesive therebetween, and a metal deposit such as aluminum or zinc on one or more of the films.

The above possiblities may be further varied by providing at any given lamina, print layer or adhesive multicolor effects according to the disclosure of aforesaid application Serial No. 462,753. The base yarn and each one of the one or more supported yarns may comprise any of the yarns disclosed in either said Serial No. 462,753 or U.S. Patent 2,714,569 and insofar as they may not have already been set forth herein, the disclosures of such references are specifically adapted herein as if they were repetitively recited herein and set forth in the drawings.

All combinations of such possible variations of base yarns and supported yarns are contemplated by the invention. For example, the base yarn may be the first of the enumerated possiblities specifically numbered above, a first supported yarn may be the sixth possibility, a second supported yarn if there is one may also be the sixth possibility or it may be the seventh or eighth or other possibility, and if a third supported yarn is employed it may be the eighth or ninth or other possibility. All other permutations or combinations may be employed.

The invention generally contemplates the provision of a base yarn which is of greater width than the supported yarns and this is a preferred form of the invention although not necessarily provided in the practice of the invention in all cases.

What is claimed is:

1. A yarn comprising a continuous-filament base thread and at least one continuous-filament supported thread twisted around said base thread in supported relation therewith, said continuous-filament base thread comprising a first metal film interposed between long narrow strips of transparent film material, said continuous-filament supported thread comprising a second metal film interposed between other long narrow strips of transparent film material and a color deposit overlying at least one of said first and second films along the length thereof.

2. A yarn comprising a continuous-filament base thread and at least one continuous-filament supported thread twisted around said base thread in supported relation therewith, each of said continuous-filament threads comprising long narrow strips of transparent film material, at least one of said continuous-filament threads comprising a metallic film layer.

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UNITED STATES PATENT OFFICE

CERTIFICATION OF CORRECTION

Patent No. 3,019,592 February 6, 1962

Arthur S. Gould et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

In the grant, lines 2 and 3, for "assignors to The Dobeckmun Company, of Cleveland, Ohio, a corporation of Ohio, read -- assignors, by mesne assignments, to The Dow Chemical Company, of Midland, Michigan, a corporation of Delaware, --; line 12, for "The Dobeckmun Company, its successors" read -- The Dow Chemical Company, its successors --; in the heading to the printed specification, lines 4 and 5, for "assignors to The Dobeckmun Company, Cleveland, Ohio, a corporation of Ohio" read -- assignors, by mesne assignments, to The Dow Chemical Company, Midland, Mich., a corporation of Delaware --.

Signed and sealed this 12th day of June 1962.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents