

Feb 14, 1933.

H. HEMMERICH

1,897,051

YARN AND KNITTED WEARING APPAREL PRODUCED THEREFROM

Filed Nov. 20, 1931

FIG. 2.

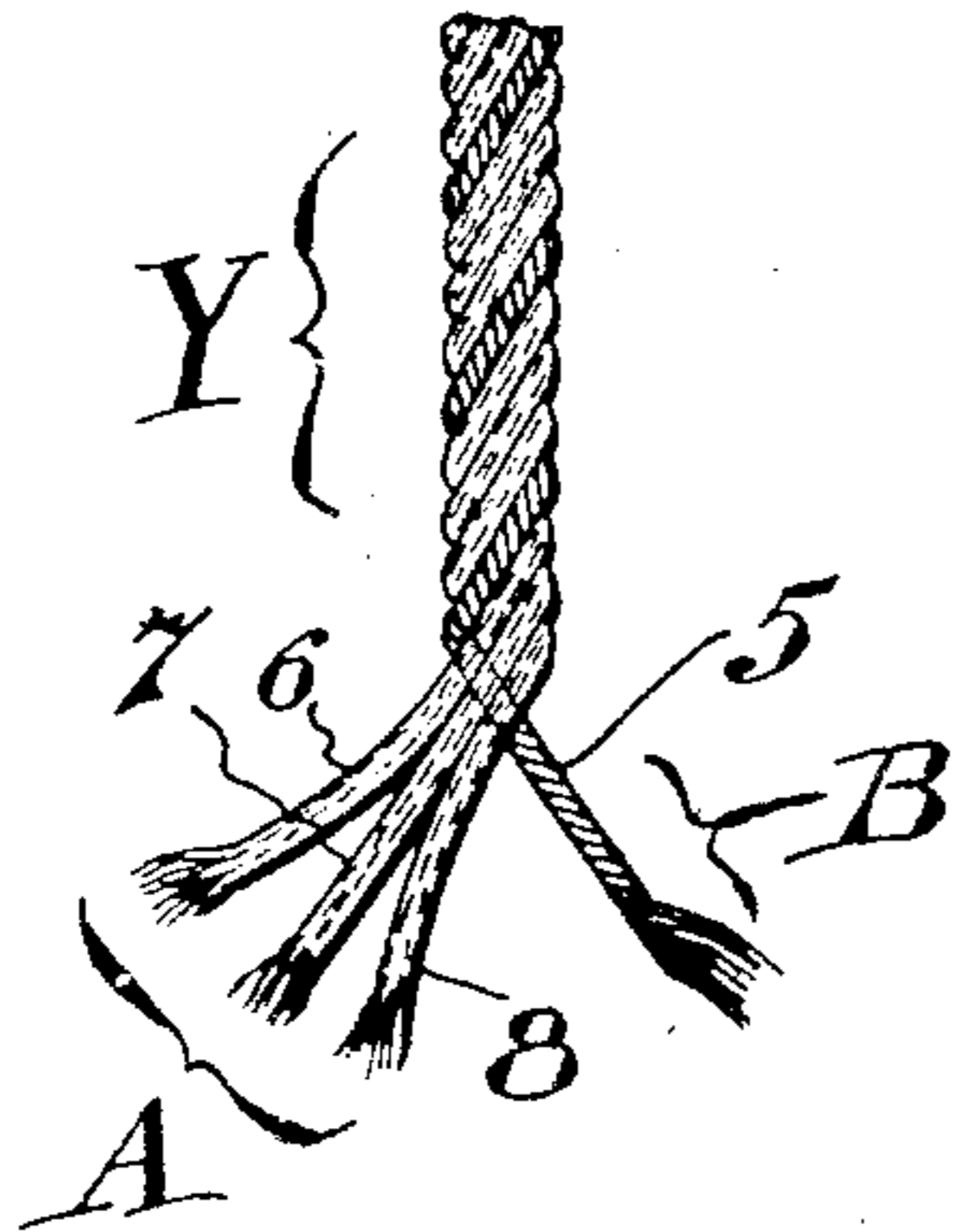


FIG. 3.

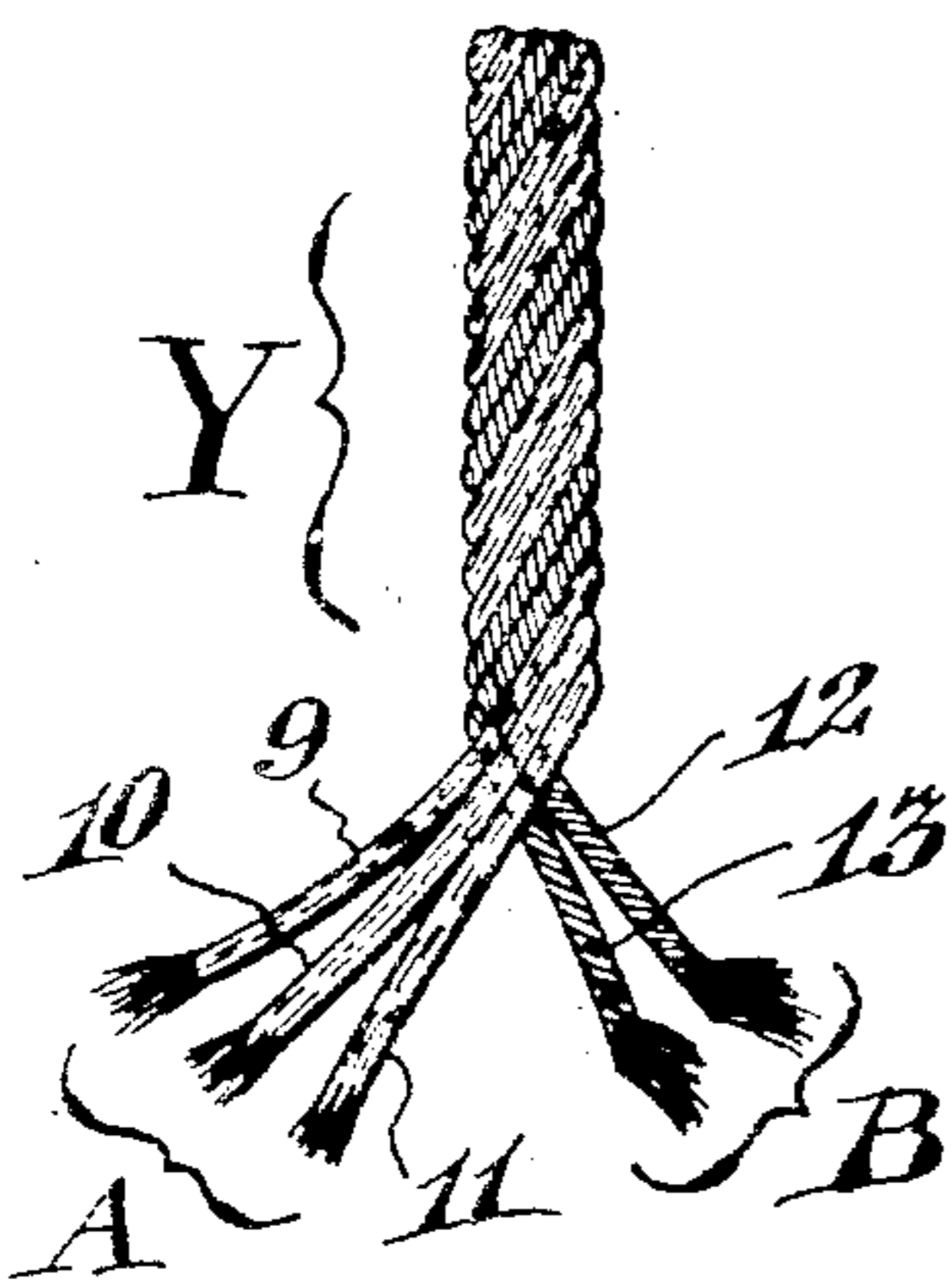


FIG. 4.

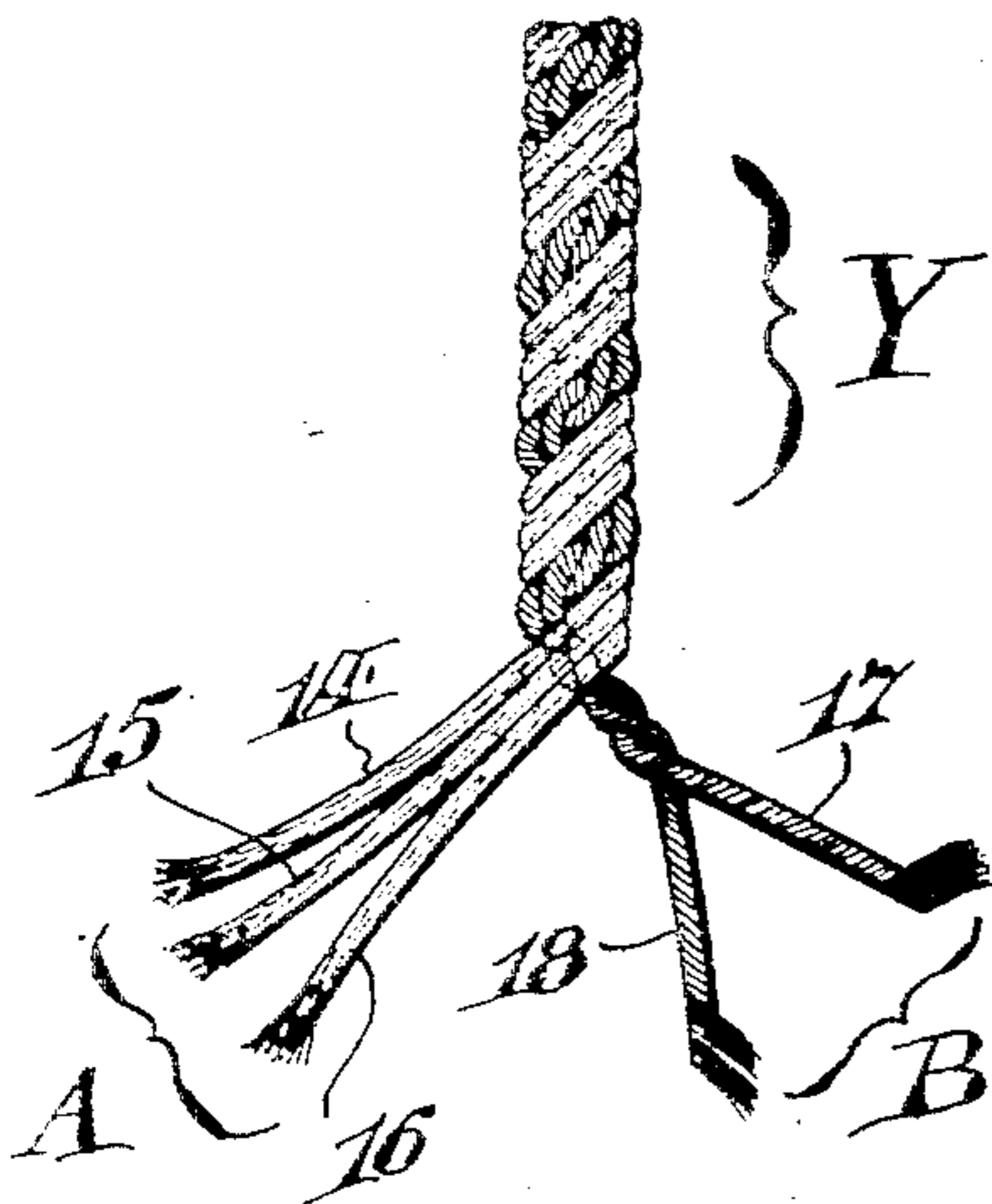
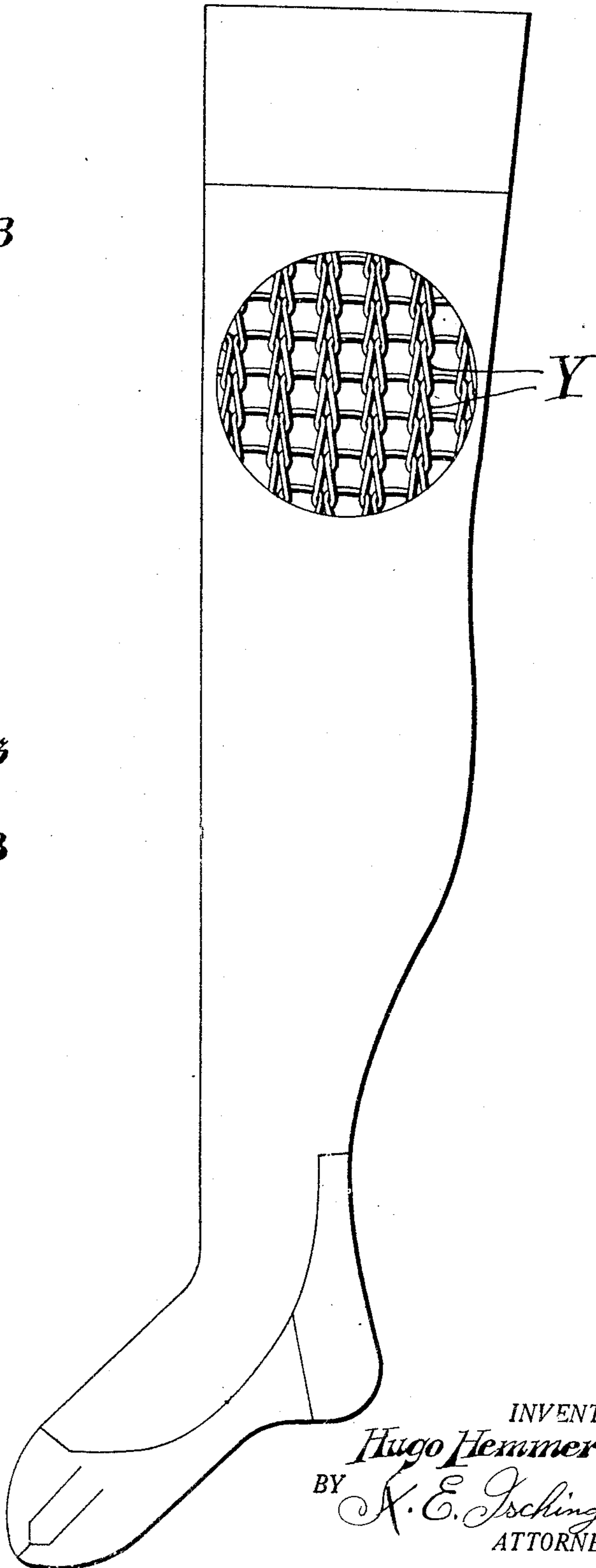


FIG. 1.



INVENTOR:
Hugo Hemmerich,
BY *A. E. Ischinger,*
ATTORNEY.

UNITED STATES PATENT OFFICE

HUGO HEMMERICH, OF WYOMISSING, PENNSYLVANIA, ASSIGNOR TO BERKSHIRE KNITTING MILLS, OF WYOMISSING, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

YARN AND KNITTED WEARING APPAREL PRODUCED THEREFROM

Application filed November 20, 1931. Serial No. 576,315.

This invention relates to finely knitted wearing apparel, particularly to hosiery, and to the silk or synthetic yarns used in its production.

5 The prime requisites of fabric quality and appearance in finely knitted apparel such as ladies' hosiery, are elasticity, sheerness, firmness and strength, combined with a rich dull-luster finish. High-twist yarns, such as
10 grenadine, crepe, compensene, etc., have heretofore been utilized in this branch of the knitting art because each, in a limited way, imparts one or more of these desirable characteristics to finely knitted fabrics. In general,
15 however, these yarns are not satisfactorily suited to this purpose for several reasons. Chief among these may be mentioned their limited contribution to the essential requisites of the finished fabric, and their
20 unavoidable high production cost due to involved and extensive twisting.

One object of my invention is to provide a novel yarn more ideally adapted for this purpose in that it not only imparts to knitted
25 wearing apparel all of the mentioned essential requisites, but enhances or intensifies the latter, and which, due to its construction, can be more quickly and easily produced at a fraction of the cost of the heretofore used
30 high-twist yarns.

I attain these results in the manner disclosed by the following detailed description and accompanying drawing of several illustrative embodiments of the invention, reference to which will make the above and other objects, as well as attendant advantages, more readily apparent.

In the drawing:—

40 Fig. 1 is a side elevational view of a stocking, and illustrates one knitted article embodying my invention; the usual loop formation of the improved knitted fabric being indicated on a greatly enlarged scale.

45 Figs. 2, 3 and 4 illustrate various forms of my novel yarn.

In accordance with my invention, the intensification of the desirable characteristics above pointed out, is attained in a knitted fabric by the use of a yarn in which twisted
50 and untwisted filaments or strands are com-

bined in such manner and proportions that the twisted strand or strands impart some of the desired firmness, strength and dull-luster characteristics, while the untwisted strands mainly effect increased softness, depth and
55 richness of appearance; the final twisting-together of all the strands adding the last degree of sheerness, quality and fine appearance.

Considering the yarn in its broader aspects,
60 the twisted and untwisted strands are united as follows: One or more of the constituent strands are first given a comparatively high twist in one direction, these are then combined with one or more untwisted strands,
65 and this combination is united by a final twisting-together in the direction opposite to that of the twist of the first mentioned strands. Preferably, although not necessarily,
70 the proportion of twisted strands to untwisted strands is such that the latter are in the majority.

In comparison with the construction of the above mentioned high-twist yarns the amount of twisting involved in my novel
75 yarn is, therefore, considerably less. Furthermore, the hardness and harshness of such yarns is overcome by the presence of the softer untwisted strands. The latter also impart a desirable amount of "glow" to the
80 stockings which has the well known slenderizing effect on the leg of the wearer; and finally make the yarn knit better.

The degree of intensity, particularly as to the depth and richness of the dull-luster
85 effect of the knitted fabric, can, of course, be varied within wide limits by varying the twists and proportion of twisted to untwisted strands.

In the following description of several
90 practical forms of my novel yarn, I shall, for convenience, refer to the untwisted strands as comprising group A, and the twisted strands as group B throughout the several
95 figures. It is to be understood that each group may consist of one or more individual strands.

Referring now to Figs. 2, 3 and 4, it will be noted that the three practical forms of my improved yarn shown, mainly illustrate pos-
100

sible variations in the number and twisting of the strands in group B, and the final twist imparted when uniting groups A and B to form the yarn Y.

5 Specifically considering the yarn Y of Fig. 2, the single strand 5, comprising group B, is twisted approximately thirty-six turns per inch to the right and combined with three
10 untwisted strands 6, 7 and 8 comprising group A; both groups A and B being unit- edly-twisted to the left about thirty-two turns per inch.

The yarn Y of Fig. 3, is composed of three untwisted strands 9, 10 and 11 in group A,
15 two strands 12 and 13 in group B twisted approximately thirty turns per inch to the right, and both groups A and B unit- edly-twisted to the left at the rate of about twenty- seven turns per inch.

20 In Fig. 4, group A consists of three un- twisted strands 14, 15 and 16; group B of two strands 17 and 18 first individually twisted approximately sixty turns per inch to the right and then combined by united-twisting
25 to the right; groups A and B being finally twisted together at the rate of about twenty- seven turns per inch to the left to form the yarn Y.

It is to be understood that the limits of
30 twist specifically given in these three in- stances for the individual strands forming group B, and also for the uniting twist given all the strands comprising the yarn, is some- what elastic and depends on the intensity of
35 the characteristics of quality and appearance desired.

The yarn Y is knitted into a fabric in the usual and well known manner, one desirable loop formation being illustrated in Fig. 1;
40 such knitted fabric incorporating the inten- sified characteristics of quality and appear- ance above pointed out. Obviously, knitted lace fabrics are similarly enhanced if pro- duced with this yarn.

45 Of course, the improvements specifically shown and described can be changed and modified in various ways without departing from the invention herein disclosed and here- inafter claimed.

50 I claim:

1. A knitting yarn composed of two groups of strands combined by united-twisting in one direction, one of said groups including one or more untwisted strands, and the other
55 group including one or more strands indi- vidualy twisted in the direction opposite to said united-twisting.

2. A knitting yarn composed of two groups of strands combined by a comparatively high
60 united-twisting in one direction, one of said groups including one or more untwisted strands, and the other group including one or more strands individually given a compara- tively high twist in the direction opposite to
65 said united-twisting.

3. A knitting yarn composed of two groups of strands combined by united-twisting in one direction, one of said groups comprising three untwisted strands, and the other group comprising one strand twisted in the direc-
70 tion opposite to said united-twisting.

4. A knitting yarn composed of two groups of strands combined by united-twisting in one direction, one of said groups comprising three untwisted strands, and the other group
75 comprising two strands individually twisted in the direction opposite to said united-twist- ing.

5. A knitting yarn composed of two groups of strands combined by united-twist-
80 ing in one direction, one of said groups com- prising three untwisted strands, and the oth- er group comprising two strands first indi- vidualy twisted in the direction opposite to
85 said united-twisting and then united by a further combined-twisting in the same direc- tion of twist as that imparted to the individ- ually twisted strands.

6. A knitting yarn composed of two groups of strands combined by united-twisting in
90 one direction at the rate of approximately thirty-two turns per inch, one of said groups comprising three untwisted strands, and the other group comprising one strand twisted in the direction opposite to said united-twist-
95 ing at the rate of approximately thirty-six turns per inch.

7. A knitting yarn composed of two groups of strands combined by united-twist-
100 ing in one direction at the rate of approxi- mately twenty-seven turns per inch, one of said groups comprising three untwisted strands, and the other group comprising two strands individually twisted in the direction opposite to said united-twisting at the rate
105 of approximately sixty turns per inch and then united by combined-twisting in the same direction as said individual strands.

8. A knitting yarn composed of two groups of strands combined by united-twisting in
110 one direction at the rate of more than twenty-five turns per inch, one of said groups comprising three untwisted strands, and the other group comprising two strands first in- dividualy twisted in the direction opposite
115 to said combined twisting at the rate of ap- proximately sixty turns per inch and then united by combined-twisting in the same di- rection as said individual strands.

9. A knitted fabric embodying a yarn com-
120 posed of two groups of strands combined by a comparatively high united-twisting in one direction, one of said groups including one or more untwisted strands, and the other group including one or more strands indi-
125 vidualy given a comparatively high twist in the direction opposite to said united- twisting.

10. As a new article of manufacture, a stocking embodying a yarn composed of two
130

groups of strands combined by united-twisting in one direction, one of said groups including one or more untwisted strands, and the other group including one or more strands individually twisted in the direction opposite to said united-twisting.

In testimony whereof I affix my signature.

HUGO HEMMERICH.

10

15

20

25

30

35

40

45

50

55

60

65