

May 23, 1933.

J. MILLEN

1,910,850

ULTRA-VIOLET RAY TRANSMITTING FABRIC

Filed Jan. 20, 1931

Fig. 1.

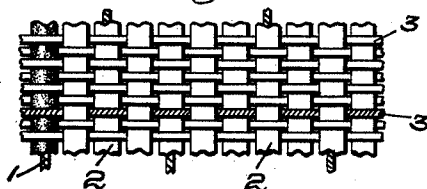


Fig. 2.

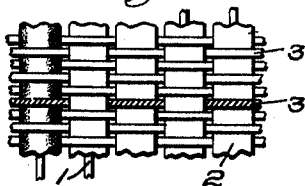
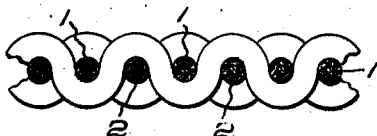
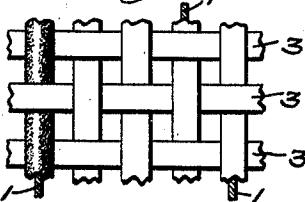


Fig. 3.



Inventor:
James Millen,
by Emory R. H. Torrey & Townsend
Attys

UNITED STATES PATENT OFFICE

JAMES MILLEN, OF MALDEN, MASSACHUSETTS

ULTRA-VIOLET RAY TRANSMITTING FABRIC

Application filed January 20, 1931. Serial No. 509,940.

My invention aims to provide improvements in fabric particularly adapted to permit passage of ultra-violet rays.

In the drawing which illustrates preferred embodiments of my invention:—

Figure 1 includes an enlarged plan and a cross-section through a piece of cloth showing weft threads treated with ultra-violet ray transmitting material and warp threads untreated;

Fig. 2 includes an enlarged plan and a section similar to Figure 1, except that the weft threads have been flattened to increase the ultra-violet ray transmitting area; and

Fig. 3 includes an enlarged plan and a section similar to that shown in Figure 1, but showing both the warp and weft threads as being treated.

My invention as illustrated by the accompanying drawing is primarily directed to a fabric suitable for manufacture into garments and which will permit the passage of the health giving violet rays such, for instance, as are given off by the ultra-violet section of the sun's spectrum. It is, of course, desirable to have a cloth which is attractive, durable and comfortable so that a person wearing garments made from such a cloth will be clothed and yet receive the benefits of the ultra-violet rays which pass through. Furthermore, a person wearing garments made from my improved cloth will be much less apt to receive ill effects from long exposure to the sun's rays than if the naked body is exposed for the purpose of receiving the health giving ultra-violet rays.

My improved cloth may be manufactured in many different ways and several different substances are available to provide for the passage of the ultra-violet rays. In the ordinary cloth the threads used for the warp and weft threads will not permit the passage of any appreciable amount of ultra-violet rays and, therefore, garments made from closely woven fabrics do not permit passage of sufficient ultra-violet rays to benefit the wearer.

As illustrated by the drawing and with particular reference to Figure 1, I have shown a cloth which is made from cotton or

like thread. All of the weft threads have been treated before the cloth is woven by coating the thread with an elastic ultra-violet ray transmitting material such as fiber silk cellophane and other like substances. In this manner, the complete thread has a core 1 of cotton fiber surrounded by a coating 2 of violet ray transmitting material which may be as thick as desirable. The coating 2 acts as spacing means whereby the coated threads 1 are spaced sufficient distances apart, in the completed fabric, to permit passage of substantial amounts of ultra-violet rays when the cloth is exposed to such rays.

In the fabric shown in Figure 1, the warp threads 3 are uncoated. Therefore, when the fabric is completely woven a cloth is provided which appears substantially as the ordinary cloth since it is preferable to have the coating 2 translucent rather than transparent to rays of visible light. At the same time the cloth permits passage of certain amounts of ultra-violet rays.

It should be understood that I do not wish to be limited to any particular arrangement of the threads of the cloth or to the particular ultra-violet ray transmitting material or to the thickness of the coating. The coated threads may be either the warp or weft threads or both and the ultimate shape of the coated thread may vary.

In Fig. 2 I have illustrated an example of the variation of the shape of the coated thread. In this particular case, I have shown the coated weft threads as being somewhat flattened, thereby to increase the spacing between the core threads and provide a larger area for the passage of the ultra-violet rays. The flattening of the coated thread may be effected either before or after it is woven into a fabric such, for instance, as by calendering.

An illustration of the use of coated threads for both the warp and weft threads is shown in Fig. 3. In this case by the use of coated threads for both the warp and the weft the area of the cloth which permits the passage of the ultra-violet rays is still further increased. Therefore, by any de-

sired combination of threads and shapes thereof the area which will permit the passage of ultra-violet rays may be varied as desired.

5 As another example of a suitable thread for the purpose of my invention, I may mercerize the thread and then partially dissolve the outside surface by the use of a
10 suitable acid, thereby to provide a thread which will have a cross-sectional area through a portion of which will pass the ultra-violet health giving rays.

While I have illustrated and described preferred embodiments of my invention, I
15 do not wish to be limited thereby, because the scope of my invention is best defined by the following claims.

I claim:

1. A pliable ultra-violet ray-transmitting
20 fabric for garments designed to aid in irradiating portions of the body with ultra-violet light from sunlight or other source of ultra-violet rays, comprising a set of pliable warp threads and a set of pliable weft
25 threads, at least one of said sets of threads being relatively closely spaced to produce a close weave fabric and said set comprising threads made up of a core of material opaque to light, carrying a coating of material transmitting ultra-violet light, said
30 coating extending laterally of said core in the body of the fabric and thus providing for transmission of ultra-violet rays through said close-weave fabric between said cores
35 by way of the coating-structure of said set of threads.

2. A pliable ultra-violet ray-transmitting close-weave fabric for the sunlight or other
40 source of ultra-violet rays, said fabric being closely woven of a set of pliable warp threads and a set of pliable weft threads, at least one of said sets of threads comprising threads made up of a core of material opaque to light carrying a coating of
45 material transmitting ultra-violet light and translucent, rather than transparent, to visible light rays, said coating extending laterally of said core in the body of the fabric and thus providing a fabric for such garments
50 relatively opaque to the eye and of close weave, but nevertheless transmissive of ultra-violet rays between said cores through the coating-structure of said set of threads.

55 3. A flexible fabric of the class described having a relatively compact body made up of relatively closely arranged threads, a substantial proportion of the number of threads of said fabric comprising an opaque
60 core carrying a coating of ultra-violet ray-transmitting material extending laterally of said core in the body of the fabric and thus serving to separate such core from adjacent threads to permit the passage of ultra-violet
65 rays through the compact body of said

fabric by way of such coating notwithstanding the closely woven structure of said fabric.

4. A flexible fabric in accordance with claim 3 in which the coating of ultra-violet
70 ray-transmitting material is translucent, rather than transparent, to visible light rays, augmenting the opacity resulting from the closely woven structure of the fabric without appreciably reducing its ability
75 to transmit ultra-violet light.

5. A flexible fabric in accordance with claim 3 in which the coating of ultra-violet ray-transmitting material is flattened to provide a wider body thereof between adjacent
80 threads than transverse of the plane of said fabric.

6. A flexible fabric in accordance with claim 3 in which the coating of ultra-violet ray-transmitting material is translucent,
85 rather than transparent, to visible light rays, and in which said coating is flattened to provide a wider body thereof between adjacent threads than transverse of the plane of the fabric.

In testimony whereof, I have signed my name to this specification.

JAMES MILLEN.

CERTIFICATE OF CORRECTION.**Patent No. 1,910,850.****May 23, 1933.****JAMES MILLEN.**

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 38, claim 2, after "for" insert the words "garments designed to aid in irradiating portions of the body with ultra-violet light from"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 1st day of August, A. D. 1933.

M. J. Moore.**(Seal)****Acting Commissioner of Patents.**