(Specimens.)

G. D. MUNSING.

KNIT FABRIC.

No. 391,005. Patented Oct. 9, 1888.

Fig. 1.

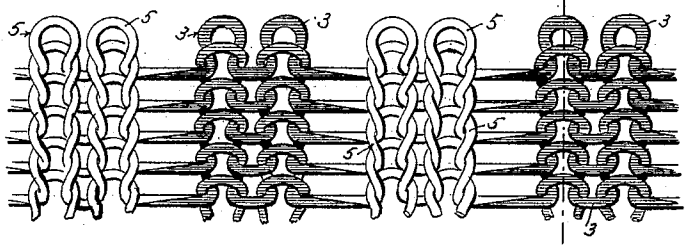


Fig. 3.



Fig. 2.

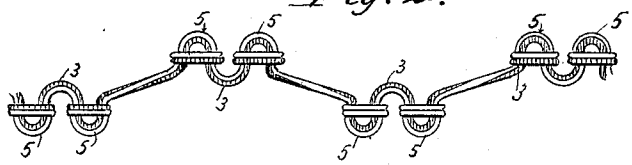


Fig. 4.

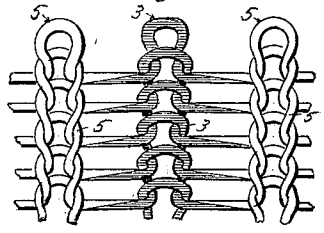


Fig. 5.

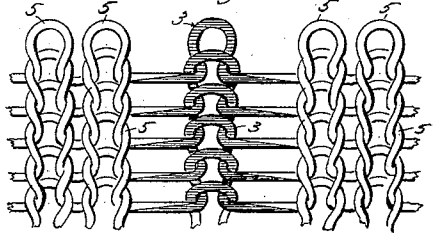
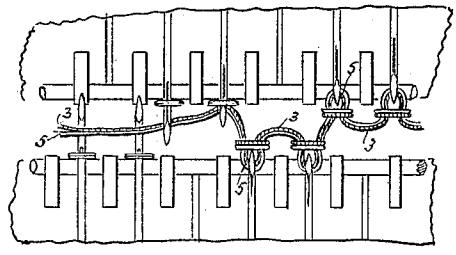


Fig. 6.



Witnesses.
A. M. Gaskell.
R. H. Sanford.

Inventor.
Geo. D. Munsing.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

GEORGE D. MUNSING, OF MINNEAPOLIS, MINNESOTA.

KNIT FABRIC.

SPECIFICATION forming part of Letters Patent No. 391,005, dated October 9, 1888.

Application filed March 21, 1887. Serial No. 231,630. (Specimens.)

To all whom it may concern:

Be it known that I, GEORGE D. MUNSING, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Knit Fabrics, of which the following is a specification.

This invention relates, particularly, to improvements in knit fabrics that are designed especially for use in the manufacture of underwear.

It will be readily understood that the desirable qualities of a fabric for this purpose are that it shall be heavy enough to be sufficiently warm; that it shall also have a fine, attractive, and handsomely finished outer surface and a soft but smooth under surface that will not irritate the flesh of the wearer.

A fabric that is composed entirely of wool possesses the requisite weight and is sufficiently warm for this purpose; but it cannot be given a finely-finished outer surface, and the woolen surface being brought next to the flesh of the wearer is decidedly irritating. A fabric that is formed entirely of silk possesses the requisite handsome finish and smooth under surface, but is too light to be worn by the majority of people in cold weather and is also too expensive to be generally used. I seek to obviate these objections by producing a fabric that is formed of a combination of wool or other heavy inexpensive material and silk or other fine or superior material, the two materials being so knit together that the silk or superior thread is thrown to the surface on both sides of the fabric.

In order that the garments may properly shape themselves and fit closely to the body of the wearer it is desirable that the fabric should also be very elastic. The fabric that I produce to fulfill these requirements and to which this application is confined I have termed a "double-ribbed jersey fabric," as contradistinguished to other double-ribbed fabrics, which are generally known as "cardigans."

In the accompanying drawings, which form a part of this specification, Figure 1 is a plan view on an enlarged scale of a portion of a two-and-two knit fabric made in accordance with my invention. Fig. 2 is a view looking at the top edge of the fabric shown in Fig. 1. Fig. 3 is a view of the same looking in the direction of the arrow in Fig. 1. Fig. 4 is a plan view showing the same invention in a one-and-one fabric. Fig. 5 is a similar view of a two-and-one fabric. Fig. 6 is a detail illustrating the process of making the two-and-two fabric.

The fabric may be formed as a one-and-one, or a two-and-two, or a two-and-one, though I consider the two-and-two preferable for most purposes.

In the drawings, 3 represents a thread of wool or other soft inexpensive material, and 5 a thread of silk or other soft smooth material that will form a handsome and attractive surface.

In producing the fabric, which may be done upon a straight machine, such as a Lamb or upon a circular, the threads are together led into the needles with the silk thread 5 in advance of the woolen thread 3, as illustrated in Fig. 6. The two threads may be under substantially the same tension, though I find it preferable in most instances to put the silk thread under a greater tension than the other. The silk thread lies under the other in the throat of the needle, and when the stitches are cast off from the needles the silk thread lies on the outer surface of the other thread in the loop and practically covers the same. After one, two, or more stitches have been formed by one set of needles (thus making the rib that is on one side of the fabric) the opposite needles are raised and in a similar manner form the stitches that make the rib on the other side of the fabric. The silk is thrown upon the outside of the loop in this instance, as before, and covers the other thread. The silk thread, it is seen, thus passes from the outer surface of one rib across to the outer surface of the other. The two surfaces of the fabric are substantially alike, and either may form the outer surface of the garment when in use. The heavy woolen thread gives the fabric sufficient weight, while the light silk thread, lying over the other, gives it a finished glossy appearance, and forms a smooth surface that may be worn next to the flesh without irritation.

When the fabric is removed from the needles and is in its normal condition, the ribs lie close together and the fabric has the appearance of a silk surface. As this will generally be the condition of the fabric when the garments are exposed for sale, they will have a very attract-

ive appearance. When the fabric is stretched as the garments are worn, the uncovered portions of the woolen thread between the ribs will be exposed. As the fabric is especially designed for underwear, this will not be a disadvantage, it being especially desirable that they should present an attractive appearance when not in use, thus making them more salable.

The silk surface of the tops of the ribs on the under surface of the garments will be against the flesh of the wearer when the garments are in use, while the uncovered portions of the woolen thread, being at the bottoms of the valleys between the ribs, will not ordinarily come against the flesh. A garment formed of this fabric will not only be more pleasant and agreeable to the wearer and also be much handsomer than one formed of wool, but it will also be much less expensive and much warmer than one formed entirely of silk. An under-garment formed of this fabric will therefore combine the desirable qualities of both woolen and silk garments without the undesirable features of either.

By leading a second silk thread to the needles behind the woolen thread I may cover the wool both on the tops of the ribs and in the valleys between the ribs; but in this instance, as before described, the thread which forms the tops of the ribs on one side of the fabric will pass through the fabric and form the tops of the ribs on the other side, and the thread which forms the bottoms of the valleys on one side of the fabric passes through the fabric and forms the bottoms of the valleys on the opposite side of the fabric. In other words, the silk thread which is led in advance, together with the woolen thread, will be arranged exactly the same as they would if the third thread were not used, the first silk thread passing back and forth through the material from one side to the other in the manner already described, while the additional silk thread merely follows the woolen thread and covers it at the bottoms of the valleys upon both sides of the fabric.

Plain fabrics have heretofore been knitted of two yarns of different colors or materials, which in the manufacture of the fabric are so laid within the hooks of the needles of the knitting-machines that in the fabric one thread is thrown to one face and the other to the opposite face. It has also been proposed to lay together four threads, two of one quality or material and two of another, the two of superior quality or material being caused to lie on opposite sides of the two of the other material, and the two of superior material alone being caused to appear on the faces of the fabric. By contrast with these, in my fabric there are but two threads employed in the construction of a double-ribbed fabric in which, as described and shown, one and the same thread forms both surfaces of the fabric.

What I consider of importance in my invention is, first, the presence of two threads of different kinds; second, the fact that the silk or superior thread appears on or forms the tops of the ribs on both sides of the fabric throughout the entire fabric; third, the object—not broadly to produce a double-ribbed fabric, and not broadly to produce a double-ribbed fabric composed of two threads, but a fabric having both the silk or superior outer surface and the silk or superior under surface throughout, and an interior of another material, the one for the finish and to provide a smooth surface to the flesh of the wearer and the other to give body and warmth-retaining properties to the fabric.

I claim as my invention—

1. A double-ribbed fabric formed of threads of different materials knit together, the finer or superior thread passing through the fabric from one side to the other and covering the other thread on the surfaces of the ribs, substantially as described.

2. A double-ribbed fabric formed of woolen and silk thread knit together, the silk thread passing through the fabric from one side to the other and covering the woolen thread on the surfaces of the ribs.

3. A double-ribbed fabric formed of two threads, one of wool, the other of silk, knit together, the silk thread passing through the fabric from one side to the other and forming a covering for the woolen thread on the surfaces of the ribs, substantially as described.

4. A double-ribbed fabric formed of threads of different materials knitted together and of substantially the same tension, the finer or superior thread passing through the fabric from one side to the other and lying over the other thread on the ribs on both sides of the fabric, substantially as described.

In testimony whereof I have hereunto set my hand this 16th day of March, 1887.

GEORGE D. MUNSING.

In presence of—

A. M. GASKELL,

R. H. SANFORD.