This invention relates to a two-ply knitted fabric, wherein one ply thereof is first knit in the usual manner and is composed of one kind of material, for example, natural silk thread; and wherein the second ply of the fabric is knitted as a continuation of the first ply, but of a different kind of material, for example, natural or mercerized cotton thread.

The continuous strip of fabric formed in the above manner is then folded along a line extending course-wise of the fabric at the place where the last formed course of silk thread stitches joins with the first formed course of cotton thread stitches. The fabric when folded in the above manner and laid out flat forms a two-ply or double faced fabric, having one face composed of silk and the opposite face composed of cotton. The free edges of the two-ply fabric thus formed, are subsequently joined together.

At the folding line where the silk thread joins with the cotton thread certain of the stitches may be transferred from one needle to the next at spaced intervals across the fabric, so that when the fabric is folded, in the manner above noted, a fancy edge is formed on the fabric at the fold.

In order to make the both plies of the fabric lie flat, one upon the other, when the free edges of the folded strip are joined together so that the fancy edge formed at the fold line will not overlie one or the other of the plies but will project outwardly from and lie in the same general plane as the two superposed plies of the fabric, both plies are made of substantially equal lengths.

A specific illustration of a piece of two-ply knitted fabric of a somewhat similar nature to that described above is to be found in the turned-welt of a full-fashioned, flat knit stocking, having what is known to the trade as a “picot edge” formed at the folded edge of the turned Welt, the free edges of the strip of which the turned Welt is composed being interknit with each other and with the body of the stocking.

Prior to my invention, which will be fully disclosed hereinafter, it has been found necessary, in order to have the picoting lie flat in the manner above noted, to form the back face or ply of the fabric of silk threads, the same as is employed in the formation of the front face or ply of the fabric. Any attempt to make the back face of the Welt of cotton thread has resulted in the picoting being curled from its desired flat plane, over the front silk face of the fabric.

This curling of the picoting has been found to be caused by a non-uniform contraction or shrinking between the silk and the cotton during the finishing or dyeing processes performed subsequent to the knitting of the stocking.

The above noted uneven contraction of the different materials in the different plies of the fabric has been found to be caused by the “boiling-out”, during the dyeing or finishing process, of certain substances contained in the silk and which are not present in the cotton, consequently when the silk fabric is reduced in volume, say, for example, twenty-five percent due to this “boiling-out” and no such change in the volume of the cotton is effected, the “picot” edge at the fold in the fabric is caused to curl up as the silk fabric contracts.

The “boil-out” substance in the silk usually comprises a definitely predetermined percentage of natural gum in the silk and a composition consisting primarily of oils or fats, such, for example, as olive oil, with or without certain chemicals which are sometimes included in the “boil-out” substance for various reasons, the oils or fats, however, are essentially introduced to the pure silk thread before knitting, for the purpose of maintaining the silk in a soft pliable state so that it may be readily worked by the knitting needles without fear of breaking the thread. This “boil-out” substance is introduced in definite proportions relative to the weight or volume of the pure silk thread, the silk thread being sold to the trade with the stipulation that the bulk of thread contains a definite percentage of “boil-out”, for example, a “twenty-five percent boilout”.

I have found by a series of experiments that the cotton thread, either natural or mercerized, can be similarly provided with a
“boil-out” of approximately equal percentage to that introduced into the pure silk thread; and that the percentage of “boil-out” in the cotton can be regulated to approximate percentage of “boil-out” contained in the silk with which the cotton is to be used in the formation of a two-ply fabric of the character above described; and that when a fabric, such, for example, as the turned welt of a stocking, is formed with one face of the welt composed of silk thread having a definite percentage of “boil-out” and the other face of the welt composed of a cotton thread having a definite percentage of “boil-out” equaling substantially the “boil-out” contained in the silk thread, and the knitted stocking subsequently subjected to a finishing or dyeing process wherein the temperature of the processing bath is raised to a point sufficient to dissolve or otherwise expel the “boil-off” from the fabric, the volume of the cotton face of the fabric will be decreased equally with the volume of the silk face of the fabric; and that due to the equal or uniform contraction of both faces or plies of the fabric as produced by the “boil-out” the picot or other fancy edge formed at the fold in the fabric will not curl but will assume a position substantially parallel to both faces of the fabric, the fancy edge lying flat and extending outwardly from the folded edge of the two-ply fabric.

The “picot” edge may be formed of either the silk or the cotton thread as desired.

Experiments have proven that the cotton will not retain the “boil-off” oils to the same extent as will the silk, without the introduction of some other agent and while various and numerous chemicals or substances may be used for the purpose I have found a very efficient and economical combination to be had in the use of starches and suitable gums with oils or fats forming the base of the “boil-off” composition.

From the above description, it will be quite obvious to those familiar with the art of knitting, and especially to those engaged in the knitting of hosiery, that I have provided an innovation in the art, which will permit the hosiery manufacturer to use a cotton thread in the knitting of the back ply of the turned welt of a stocking, and at the same time permit the manufacturer to form the desirable picot or other fancy edge on the stocking such as is demanded by the greater portion of the trade.

Pure silk thread obviously is more expensive than cotton, therefore, it will be obvious that by providing a cotton thread which can be incorporated in the stocking at unobservable places where it has been necessary heretofore to use silk, for the reasons above noted, the manufacturer is able to provide a better article for less money than heretofore.

The cotton back on the welt not only reduces the cost of the stockings but being of a stronger nature than silk is less liable to become damaged by the garter grips.

Obviously, the basic principle of the invention, that is, providing silk and cotton threads which are to be worked into a piece of fabric, with equal amounts of “boil-off” substance which is adapted to be subsequently removed by a suitable extracting process, may be applied in the manufacture of various kinds of fabric, for example, I may form a knitted foundation fabric of silk thread and plat the foundation fabric by the use of a cotton thread, or vice versa, it being understood that both kinds of thread are treated in the manner above noted. Or I may weave a fabric having cotton warp and silk weft or vice versa, or a warp composed of part cotton and part silk, or a fabric in which certain of the wefts are silk and others are of cotton.

The advantage of the invention is that no matter in what kind of fabric or in what combination the threads are used in the fabric when the fabric is subsequently passed through a process which will extract the “boil-off” substance the volume of the fabric will contract uniformly and will consequently lie flat.

I claim:

1. An article of manufacture consisting of a fabric composed of silk thread containing a predetermined amount of boil-off substance and cotton thread containing a predetermined amount of boil-off substance substantially equal to that contained in the silk thread.

2. An article of manufacture consisting of a knitted fabric composed of silk thread containing a predetermined amount of boil-off substance and cotton thread containing a predetermined amount of boil-off substance substantially equal to that contained in the silk thread.

3. An article of manufacture composed of two knitted fabrics disposed in parallel relation to each other and joined together at least two of their oppositely disposed edges, one of said fabrics being composed of silk thread containing a definite amount of boil-off substance, and the other of said fabrics being composed of cotton thread containing an amount of boil-off substance substantially equal to that contained in the first said fabric.

4. A stocking having a turned welt of which the fabric forming the front face is composed of silk thread containing a predetermined amount of boil-off substance, the fabric forming the back face of said turned welt being composed of cotton thread containing a definite amount of boil-off substance substantially equal to the amount contained in the silk thread of front-face fabric of the welt.
5. A stocking having a turned welt of which the fabric forming the front face is composed of silk thread containing a predetermined amount of boil-off substance, the fabric forming the back face of said turned welt being composed of cotton thread containing a definite amount of boil-off substance substantially equal to the amount contained in the silk thread of front-face fabric of the welt, said welt having a fancy edge formed at the line on which the welt is turned and extending outwardly from said edge in a plane substantially parallel to the general plane of the turned welt.

6. A process for treating fabric consisting of silk and cotton threads, said process comprising the application of suitable "boil-off" substance to the silk and cotton thread in substantially equal parts alike prior to the formation of the fabric, and the extraction of the boil-off substance subsequent to the formation of the fabric.

7. A process for treating stockings having turned welts, of which one face is composed of silk thread while the reverse face is composed of cotton thread, said process consisting of the application of suitable boil-off substance to the silk and cotton threads in equal parts alike prior to the knitting of the stocking and the extraction of the boil-off substance subsequent to the knitting of the stocking.

MAXWELL MEYERS.