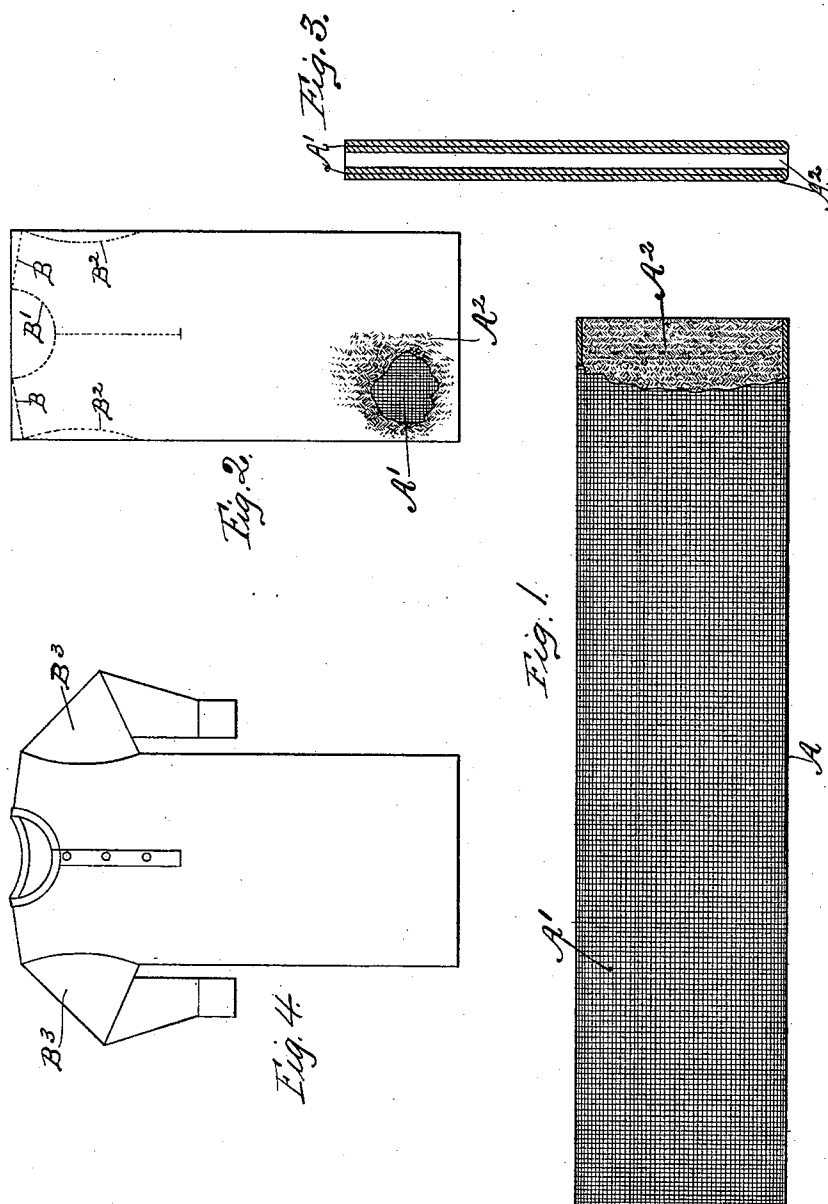


(No Model.)

C. A. BROWN.
UNDER GARMENT.

No. 465,453.

Patented Dec. 22, 1891.



Witnesses:
Frank C. Curtis.
J. H. Mosher.

Inventor:
Charles A. Brown
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att'y.

UNITED STATES PATENT OFFICE.

CHARLES A. BROWN, OF TROY, NEW YORK.

UNDER-GARMENT.

SPECIFICATION forming part of Letters Patent No. 465,453, dated December 22, 1891.

Application filed May 23, 1891. Serial No. 393,881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. BROWN, a citizen of the United States, residing at Troy, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Under-Garments, of which the following is a specification.

My invention relates to such improvements; and it consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings and the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

The special objects of my invention are to reduce the shrinkage of inter-air-space undergarments having inner and outer wool surfaces to increase their durability and cheapen their construction.

My invention consists of an under-garment composed throughout of two plies of two-thread fabric superimposed one upon the other, each ply having a smooth wool surface on one side, formed by one of the threads and approximately free from knots, burrs, and other extraneous matter, and a cotton surface on the other side, formed by the other thread composed of cotton or other substance, which can be laundered without material shrinkage, the cotton surfaces being concealed between such superimposed plies.

It is well known that an all-wool garment is subject to considerable shrinkage each time it is laundered unless more than ordinary care is bestowed upon the operation.

After an extended experience in the manufacture of inter-air-space undergarments composed throughout of two plies I have ascertained that the fineness of the thread required to produce a fabric sufficiently light to be doubled throughout the garment requires the best material and most skilled treatment to provide woolen thread sufficiently strong to be knitted or woven without breaking at frequent intervals. With the best material obtainable breakage causes a large loss of stock and time, and the necessary tension upon the thread weakens the fabric at points where the thread does not actually break. By introducing a fine closely-spun cotton thread along-

side of the woolen thread I am able to carry the woolen thread through the fabric-forming process and relieve it of a great part of the tensional strain which it would sustain if unaided. When a weak point in the woolen thread is reached, it stretches sufficiently to enable the cotton thread to carry it along into the fabric without a break or material injury, whereby finer and more loosely-spun woolen thread can be employed and without waste or loss of time.

It is well known to those skilled in the manufacture of fabrics that a mixture of cotton with woolen fibers will reduce the shrinkage of the latter.

By feeding the cotton thread to the needles of a knitting-machine above or inside of the woolen thread the woolen thread is made to appear upon one side of the fabric and the cotton upon the other side, or any known method of knitting or weaving may be employed to cause the woolen to appear upon one side and the cotton on the other side of the fabric. Approximately all of the knots and other extraneous matter can be forced to one side of the fabric, as explained in said Patent No. 429,310. I force them to the cotton side, leaving the woolen side smooth and approximately free from such extraneous matter. I then superimpose one ply of such fabric upon another, so that the cotton and rough side of each is concealed between the plies, and make in any known manner undergarments of the desired pattern, which are composed throughout of such superimposed plies of fabric.

I have shown a preferred manner of making one of my improved undergarments in the accompanying drawings, in which—

Figure 1 is a plan view of a flattened tubular web of fabric having an interior wool surface and an exterior cotton surface, a portion of the web being broken away to show the wool surface. Fig. 2 is a plan view of the tubular web folded by drawing one end over the other, so as to superimpose one ply upon another and inclose and conceal the cotton surfaces between the superimposed plies, a portion of one of the outer superimposed plies being broken away to show the inner cotton surface of the other ply. Fig. 3 is a vertical longitudinal section of such superimposed

plies, taken on the broken line 3 3 in Fig. 2. Fig. 4 is a view in elevation of a finished shirt.

The drawings represent an undershirt made from knitted fabric. The flattened tube A is
 5 knitted from two threads, one cotton and the other woolen, with the cotton thread forced to the outer side of the tube to form the cotton surface A' and the wool thread forced to the inner side to form the wool surface A².
 10 One half of the tube is drawn over the other half, so as to practically form a tube composed throughout of two plies or thicknesses of fabric superimposed one upon another, as shown in Figs. 2 and 3, the cotton surfaces
 15 being concealed between the plies, the smooth wool surface being exposed both interiorly and exteriorly of the tube. In Fig. 2 a portion of the outer ply is broken away to show the cotton surface of the inner ply. The tube
 20 can then be made into an under-garment in any known manner. By closing one end of the flattened tube with a line of stitching B, cutting out a neck-opening (indicated by dotted lines B' in Fig. 3) and sleeve-openings
 25 along dotted lines B² and securing sleeves B³ in such openings I am able to make an undershirt of a cotton-and-wool-thread fabric

having a smooth wool surface both interiorly and exteriorly, with the cotton-surfaces concealed between the superimposed plies. 30

I do not wish to be limited to exactly two threads, as other threads may be added when desired.

By the term "cotton" I include any vegetable fiber adapted to be spun into thread or yarn. 35

What I claim as new, and desire to secure by Letters Patent, is—

As an improved article of manufacture, an under-garment composed throughout of two 40 plies of two-thread fabric superimposed one upon the other, each ply having a smooth wool surface on one side formed by one of the threads and a cotton surface on the other side formed by the other thread, the cotton sur- 45 faces being concealed between such superimposed plies, substantially as described.

In testimony whereof I have hereunto set my hand this 14th day of May, 1891.

CHAS. A. BROWN.

Witnesses:

GEO. A. MOSHER,
FRANK C. CURTIS.