

UNITED STATES PATENT OFFICE.

GEORGE STREAT, OF NEW YORK, N. Y.

WATER-PROOF FABRIC.

SPECIFICATION forming part of Letters Patent No. 260,063, dated June 27, 1882.

Application filed March 31, 1882. (Specimens.)

To all whom it may concern:

Be it known that I, GEORGE STREAT, a citizen of the United States, residing in the city and county of New York, in the State of New 5 York, have invented a new and useful Improvement in Water-Proof Fabrics Especially Adapted for Use in Clothing; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will 10 enable others skilled in the art to which it app pertains to make and use the same.

The object of my invention is to produce a material which will be water-proof and yet will be very little heavier than and substantially 15 as thin and pliable as the two thicknesses of cloth which it contains when simply placed together. The two thicknesses of cloth are securely united, so as to make the complete material firm to withstand injury by wear or exposure. The waterproofing material is effect 20 ually secreted between the two cloths, and in making a seam the cloth on the front and back of the material may each be secured by the thread, so as to strengthen the seam, prevent 25 the separation of the material, and avoid any injury to the waterproofing substance. The use of the two cloths permits the use, when desired, of an outside cloth especially adapted to repel wear and to prevent injury to the portions 30 of the material within it and an inside cloth especially adapted to secure warmth and having an inside surface pleasant to the touch of the person wearing the material.

I will now proceed to describe the construction of one of the most useful materials constructed according to my invention.

I take for the outside cloth preferably cotton duck or similar cotton material which is strong and will wear well and is difficult to 40 perforate. For the inside cloth I take preferably cotton flannel or similar cotton cloth which is sufficiently warm for most purposes and presents an inner surface pleasant to the touch, while as a material it is sufficiently 45 strong to meet any strain which may be required of it. When combined the smooth surface of the cotton flannel is next the outside cloth. These two cloths I unite in the following manner: While the cloths are yet separate 50 I pass each of them along under an apparatus containing an adhesive and water-proof substance, (like what is sold as Para-rubber ce-

ment, being about the consistency of molasses,) which apparatus is arranged in any suitable manner so as to deposit a continuous layer of 55 the cement on the surface of the cloth. As soon as the cement is deposited on the cloth the cloth passes under a scraper extending across it from side to side, which scrapes off of the cloth all the superfluous cement. This 60 scraper is so placed as to rest on the upper surface of the cloth, and therefore scrapes off almost all of the cement excepting that which lodges between the ridges or most prominent points of the surface of the cloth. This opera 65 tion of depositing a layer or coat of the cement on the fabric and then passing it under the scraper is repeated from about four to ten times on each of the cloths to be used, each coat of the cement being allowed to dry slightly 70 before the application of the next. When sufficient cement has been applied the contiguous surfaces of both of the cloths have their pores or depressed portions between their ridges or most elevated threads filled with the cement, 75 so that the cement, while not rising substantially above the surface of either material, fills up all the depressions of the surface to a level with the projections and makes each surface level. Next I place the two cloths with their 80 cemented surfaces together and pass them between calendar-rollers, to which great pressure is applied, so as to press the two cloths intimately together. The cement on each of the cloths then unites with that on the other, and 85 combines the two so firmly together that the material is as durable as though it were homogeneous.

The material I have described possesses an outer cloth especially calculated to encounter 90 wear and an inner cloth for warmth and comfort, and the two are cemented or united together by a cement which prevents the passage of water and secures the materials firmly 95 together, but which, instead of forming a layer between them, allows their surfaces to come practically in contact and adds very little to their weight or stiffness or thickness.

I have described the cloths which I prefer to use; but I sometimes use woolen cloth both 100 inside and outside, or cotton cloth outside and woolen inside, or cotton inside and woolen outside.

The cement which I have named, and which

contains Para rubber cut with naphtha or gasoline, I believe to be the best for the purpose, though there are other cements—such as African cement and Highland cement—which can be used with less success, and I should consider their use as coming within my invention, the object being to have a water-proof cement which, when applied, is of proper consistency to enter and stay in the depressions in the surfaces of the cloth, which will become sufficiently solid to hold the two cloths firmly together, but will not render the material offensive, heavy, or stiff.

By the process of manufacture herein set forth I make a material in which only the depressions or hollows between the woven fabrics are filled with cement and the high portions of the contiguous faces thereof are brought together by the pressure between the rollers, whereby I produce a thoroughly water-proof material without inconvenient thickness or rigidity.

I am aware that it is not new to coat fabrics with layers of dissolved, or partially dissolved, rubber and then to unite such fabrics by laying the coated sides together; but in such cases the material thus coated contained so much rubber that when thin textile materials were used the rubber layer or layers became the principal thickness of the material and made it so heavy, thick, and cumbersome as to make it comparatively useless for clothing; but fabrics made water-proof by my process have so little rubber between the united fabrics that the difference in thickness caused by the rubber (if any) is inappreciable, which makes the compound material perfectly fitted for clothing, and it can be made into garments by sewing the same as ordinary cloth.

I am also aware that it has been proposed

to coat textile fabrics with a thin coating of rubber and to sift over such coating a layer of some granular substance—such as flock, cloth shearings, or cork cuttings—but the textile fabric was not scraped down to the protuberances, as in my case; nor was the material thus formed adapted to be sewed together with a lap-joint, as mine can be, because the line of stitching would cut through the granular material, and thus the stitching, although tight at first, would become loose as it worked through the granular substance, and for this reason all such materials require it to be united by cement.

I claim—

1. As a new article of manufacture, a water-proof material composed of two cloths united by water-proof cement filling the depressions or hollows between them and having the projecting portions of their contiguous faces in contact, whereby the compound material is rendered water-proof without essentially increasing the thickness, substantially as described.

2. As a new article of manufacture, a sewed garment composed of water-proof material formed of two cloths having the projecting parts of their contiguous faces substantially in contact and the depressions filled with water-proof cement, substantially as described.

3. As a new article of manufacture, the sewed garment composed of a material formed of an outside cloth of cotton duck and the inside cloth of cotton flannel, cemented together, substantially as described.

GEO. STREAT.

Witnesses:

MICHAEL SIEGMANY.
MARK HAMILTON.