

# UNITED STATES PATENT OFFICE.

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## WATERPROOFING STARCHED FABRIC.

SPECIFICATION forming part of Letters Patent No. 303,616, dated August 19, 1884.

Application filed July 11, 1883. (No specimens.)

*To all whom it may concern:*

Be it known that we, RICHARD H. BUEL and HENRY L. BREVOORT, both of the city, county, and State of New York, have made a new and useful invention in Waterproofing  
5 Certain Fabrics, which are stiffened, given a finish or surface by starch, gum, or other material, which is readily and injuriously affected by water at the ordinary temperatures, and  
10 which fabrics will withstand benzine or naphtha and paraffine when applied thereto.

The kind of goods which are adapted for treatment in order to form the articles of manufacture which are the subject of our present application, are all goods which derive their value  
15 from the fact that they are stiffened, surfaced, or finished with starch, gums, or their equivalents, and which materials are readily affected by water at the ordinary temperatures, but  
20 which stiffening, surfacing, or finishing material is not injuriously affected by benzine, naphtha, or paraffine. For example, the goods which can be treated, and which form the articles herein claimed, are ladies' and gentlemen's  
25 neck-wear, such as laces or ruffings made of material called "crêpe lisse," "bobbinet," "swiss," "mull," "Victoria lawn," linen or paper collars or cuffs, shirt-fronts, &c., all of which are either stiffened, surfaced,  
30 or finished with a material which is injuriously affected by water or moisture at the ordinary temperatures, and which are not injuriously affected by paraffine and benzine or naphtha.

The ordinary waterproofing compounds consist of materials which are solvents of or injuriously affect the substances used to stiffen, finish, or surface such articles as we have enumerated, or their equivalents, and consequently  
35 when a piece of goods completely manufactured and finished in all other respects is treated by such waterproofing mixtures the goods are spoiled by such treatment, and they lose their commercial value. We use such  
40 materials as do not appreciably affect the stiffening, surfacing, or finishing material or materials used in such goods, and consequently the above difficulty is avoided. We take commercial paraffine and dissolve it, either hot or  
45 cold, in benzine or naphtha, or a mixture of both—such as is procurable in large quantities commercially. The purer forms of the

materials are perhaps the best, but need not be used in practice. We take, by volume, one part of paraffine and from five to thirty volumes of benzine or naphtha, and allow the  
55 former to be dissolved by the latter, when a thin colorless liquid results, resembling water in appearance. For the finer goods—such as ruffings, lace, &c.—we use the compounds having the smallest amount of paraffine, and for  
60 the coarser articles—such as collars, cuffs, &c.—the compounds having the greatest quantity of paraffine. The exact proportion depends upon the quality of the goods to be treated.

To water-proof such articles as are adapted  
65 to our process, we immerse them in the liquid, either hot or cold, for such articles as collars or cuffs, preferably, (the time is not material;) or for such articles as crêpe lisse or very fine  
70 goods, we prefer to spray them with the waterproofing-liquid through such nozzles as are ordinarily used for atomizers which serve to distribute in fine spray perfumes or medicines. In no case must the coating be one  
75 which is readily detected, and it must be graduated in quantity according to the delicacy of the articles to be made water-proof or water-repellent. After the goods have been  
80 thus treated we dry them, and we have found that the best mode of doing this is to heat them in a chamber the temperature of which is above that of melting paraffine—viz: 130° to 150° Fahrenheit. This treatment removes  
85 the smell of the waterproofing materials used, and makes the goods as water-repellant as they can be rendered by our process. The heating in the hot-chamber should last a sufficient length of time to remove all smell of the applied material, and we have found that from  
90 a few minutes to two hours' treatment will remove the smell from the various articles which we have enumerated, the finer articles requiring the shortest treatment in the hot-chamber. When the goods are treated by spraying them, it is advisable to confine them in a chamber,  
95 through which they may be passed, and from one to four or more jets of spray can be advantageously used.

The waterproofing compound which we use being of such a nature as not injuriously to  
100 affect the stiffening or finishing material used in the goods, and which stiffening, surfacing,

or finishing material would be injuriously affected by water at ordinary temperatures, our compound can be applied without causing the goods either to lose their color, shape, stiffness, finished appearance, or surface when they are treated after being completely finished in all other respects. Articles which can be washed—such as linen collars or cuffs—may have our waterproofing compound washed out therefrom in water warm enough to dissolve paraffine. Goods thus treated are water-repellent, and nearly, though not completely, water-proof.

Previous to the making of our invention we were not aware of the fact, and do not believe that others were, that such a compound as we have described would not attack the starch, gum, or other stiffening, surfacing, or finishing material used, which would be readily attacked by water at ordinary temperatures when such stiffening, surfacing, or finishing material was in the goods, or at least we are not aware and do not believe that the adaptability of this property of our compound was known or recognized.

Articles stiffened, finished, or surfaced by any materials, which are injuriously affected by benzine, naphtha, or paraffine are not adapted for our treatment, and do not form the articles claimed herein when treated with our compound.

We are aware of Reissue No. 9,776, and we do not claim anything therein described or claimed.

We are also aware that paraffine preparations have been used to impregnate goods and articles of various kinds for waterproofing and preservative purposes, and make no claim

to such use, nor to coating preparations, except in connection with goods previously stiffened or finished with such materials as are readily affected by water, as described.

What we desire to claim and secure by Letters Patent is—

1. As a new article of manufacture, goods stiffened, finished, or surfaced with such materials as are readily affected by water at ordinary temperatures with an outer coating resulting from treating the surfaced goods with a solution of paraffine and benzine or naphtha, and afterward subjecting the goods to heat, to render them water-repellent, substantially as described.

2. As a new article of manufacture, goods stiffened, finished, or surfaced with such materials as are readily affected by water at ordinary temperatures with an outer coating resulting from treating the goods with a solution of paraffine and benzine or naphtha, and then heating to a temperature above the melting-point of paraffine in order to render them water-repellent, substantially as described.

3. As a new article of manufacture, ruffling or neck-ruffling rendered water-repellent, substantially as described.

4. As a new article of manufacture, paper or linen collars or cuffs rendered water-repellent, substantially as described.

5. As a new article of manufacture, lace rendered water-repellent, substantially as described.

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Witnesses:

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