April 12, 1949. E. E. RAYMOND 2,466,911

FABRIC FOR THE MANUFACTURE OF RAINPROOF GARMENTS

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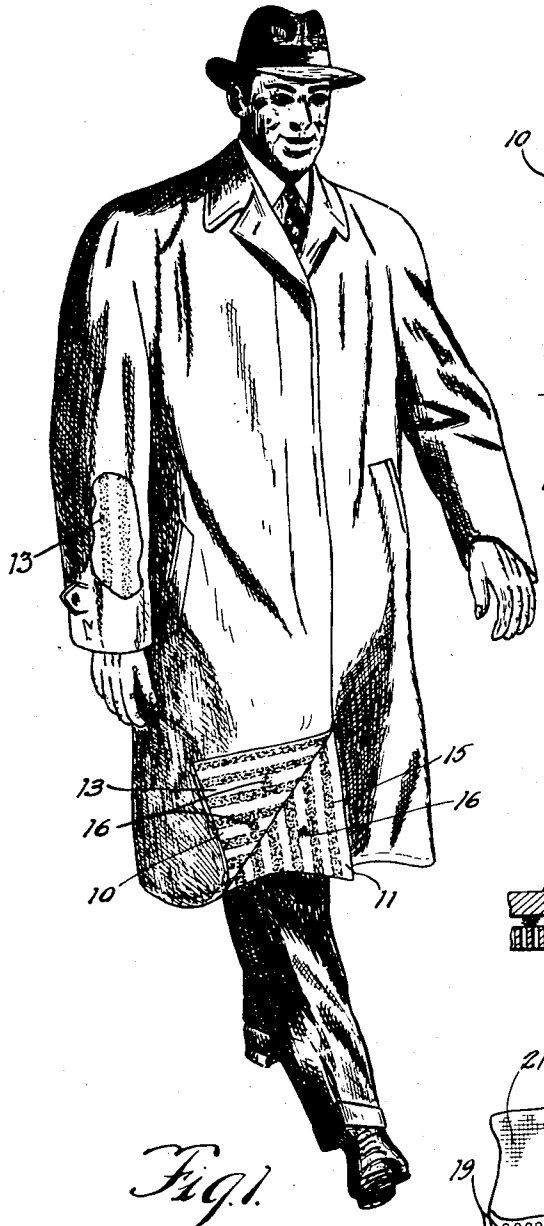


Fig. 1.

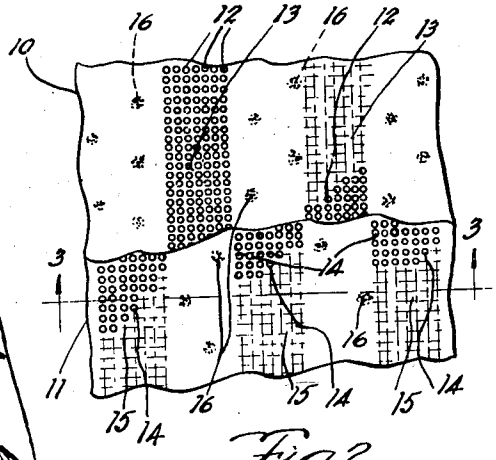


Fig. 2.

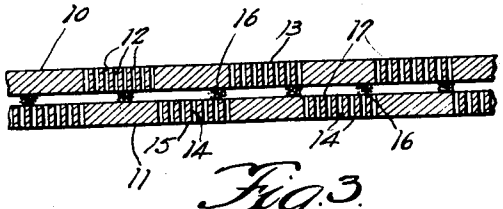


Fig. 3.

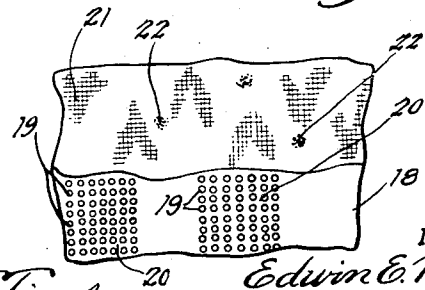


Fig. 4.

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FABRIC FOR THE MANUFACTURE OF RAINPROOF GARMENTS

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Application January 3, 1947, Serial No. 720,060

5 Claims. (Cl. 154—46)

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This invention relates to improvements in fabrics for the manufacture of rainproof garments and the like and more particularly to fabrics composed of sheets of resilient plastics such as vinyl chloride, high molecular weight vinyl ester polymer, polyethylene, cellulose acetate and natural rubber and sheets of rubberlike material such as synthetic rubbers (neoprene and Buna N).

The desirable use of plastic and rubberlike material as a fabric for the manufacture of rainproof garments and rainproof coverings has long been apparent. The qualities possessed by these materials, impermeableness and absence of capillary attraction qualifies them particularly for such use and repeated attempts have been and still are being made to manufacture satisfactory garments of such fabrics. However, while such garments are now being made there has not been a general public acceptance. Being impervious to air such garments confine body heat and cause discomfort to the wearer. This is especially true in the case of heavy duty garments which are worn for extended periods.

It is an object of the present invention to provide a fabric for the manufacture of rainproof garments and the like which avoids this and other undesirable features and which can be made into garments that are comfortable and good looking.

It is a further important object to provide a fabric of plastic or rubberlike material which is practically rainproof and will permit the free passage of air.

It is further the object of this invention to provide a rainproof garment composed of a fabric of plastic or rubberlike material which is cool and comfortable, yet rainproof.

Numerous other objects and advantages will be apparent throughout the progress of the following specification.

The accompanying drawing illustrates selected embodiments of the invention and the views therein are as follows:

Fig. 1 is a perspective view of a raincoat as worn, partly broken away and magnified to show fabric composition.

Fig. 2 is a face view of a two sheeted fabric, greatly enlarged, with one sheet partly broken away.

Fig. 3 is a cross section taken on line 3—3 of Fig. 2.

Fig. 4 is an enlarged face view of a modified two sheet fabric with one sheet partly broken away.

The fabric herein shown for the purpose of

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illustrating the present invention comprises a pair of sheets 10 and 11 composed of plastic or rubberlike materials and of any desired size and thickness. The sheet 10 is provided with perforations 12 which are definitely grouped in zones as shown at 13. The sheet 11 is also provided with perforations 14 which are similarly grouped in zones as shown at 15. The size of the perforations 12 and 14 is a matter of importance as will hereinafter be explained.

The sheets 10 and 11 are superposed to bear at areas whereby the zones 13 and 15 are out of register with each other as shown in Figs. 2 and 3, and are secured together in such position by disks 16 in a manner as to leave air space 17 between the two sheets. The disks 16 may be of any desired shape and of like material as sheets 10 and 11. Plastic cement, dielectric heat or other well known means may be used to secure the disks to the material.

The complete structure constitutes a fabric which is practically rainproof yet will permit air to pass therethrough and may be fashioned into a rainproof garment wherein body heat is dissipated and which may be worn in comfort for extended periods.

Care must be exercised in making the perforations 12 and 14. It is preferred to make the perforations almost microscopic in size and approximately 100 to the square inch. These ordinarily cannot be seen by the naked eye and the appearance of the fabric is not affected as illustrated by the raincoat in Fig. 1.

In use, discrete droplets of water may pass through the minute perforations 12 of the upper sheet 10 but will impinge upon the impermeable portions of the lower sheet 11, and either run down the air space 17 between the sheets or will evaporate without passing through the perforations 14 of the lower sheet 11. The perforations will, however, permit the passage of air.

It has been found that so little water will pass through the minute perforations of the upper sheet as to permit the employment of another embodiment of the invention as illustrated in Figure 4. The upper sheet 18 is composed of resilient plastic or rubberlike material having perforations 19 grouped in zones 20. The lower sheet 21 may be of any desired woven material treated in any well known manner with any well known water repellent material. The sheets are secured together as previously described by disks 22. In the modified embodiment it has been found that any discrete droplets of water which may pass through perforations 19 will evaporate before

penetrating or passing through the lower sheet 22. The free passage of air, however, is unimpeded.

The fabric as described may be employed for any purposes where rainproof qualities are desired but will, of course, find greatest use in the manufacture of garments and the like. It is inexpensive to manufacture and pleasing in appearance and is in effect a "breathing" plastic fabric.

Changes may be made in the form and construction without departing from the spirit of the invention or sacrificing any of its advantages and the right is hereby reserved to make all changes as fairly fall within the scope of the following claims.

What is claimed as new and desired to be secured by Letters Patent of the United States is as follows:

1. A multiple ply fabric comprising a plurality of impermeable sheets with spaced zones of perforations, said sheets being secured in spaced relationship and with the perforations of the sheets out of register with each other.

2. A multiple ply fabric comprising a plurality of impermeable sheets of predetermined thickness having predetermined zones of physical perforations, said sheets being secured to each other in spaced relationship and with the zones of perforations out of register with each other.

3. A gas-permeable duplex fabric comprising two impermeable sheets of predetermined thickness having spaced zones of perforations, said sheets being secured to each other in spaced relationship and with the zones of perforations out of register with each other.

4. A gas-permeable duplex fabric comprising a pair of impermeable sheets of predetermined thickness provided with spaced longitudinal zones of perforations to permit the passage of gas therethrough, said sheets being superposed and secured to each other in spaced relationship and with the zones of perforations sufficiently out of register to prevent complete passage of impinging liquid through the duplex fabric.

5. A gas-permeable duplex fabric comprising a pair of impermeable sheets of predetermined thickness provided with spaced horizontal zones of perforations to permit the passage of gas therethrough, said sheets being superposed and secured to each other in spaced relationship and with the zones of perforations sufficiently out of register with each other to prevent complete passage of impinging liquid through the duplex fabric.

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REFERENCES CITED

The following references are of record in the file of this patent:

FOREIGN PATENTS

Number	Country	Date
446,943	Great Britain	May 6, 1936