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C. D. GILPIN

2,149,913

PERFORATED FABRIC

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Fig. 1.

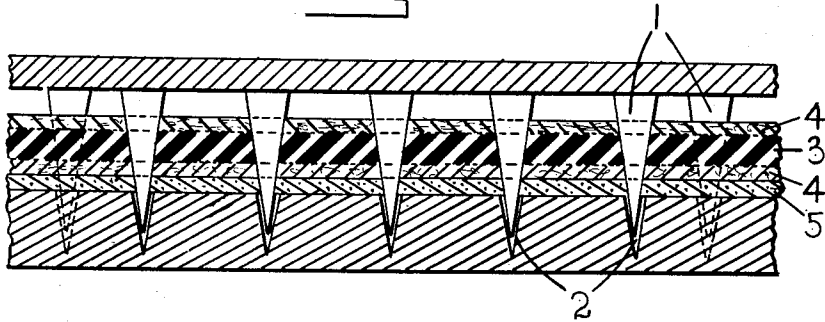


Fig 2.

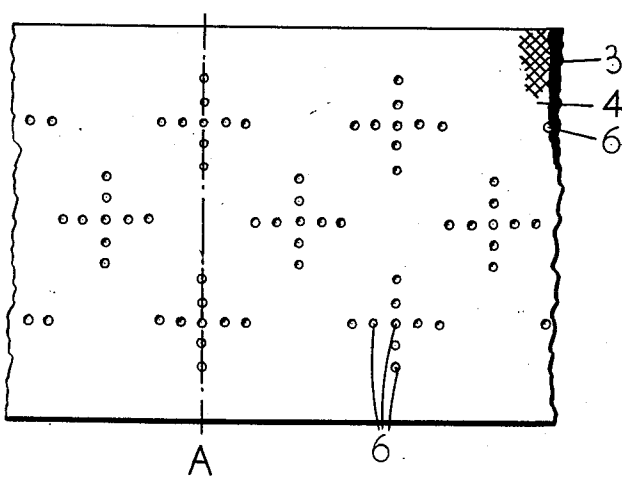
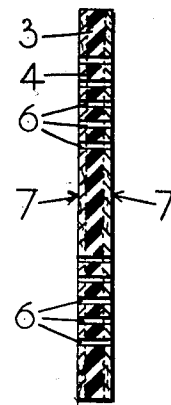


Fig 3.



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PERFORATED FABRIC

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1 Claim. (Cl. 164—125)

This invention relates to perforated sheet materials and more particularly to an improved method of perforating a rubber coated textile or the like.

5 It is common practice to perforate sheet materials such as rubberized fabrics for decoration or ventilation by passing them through a mechanism consisting essentially of a punch and a die, whereby a small hole is cut and punched out
10 when the punch pierces the rubberized fabric and penetrates the die. The holes thus punched are of various sizes but they are usually not smaller than about one millimeter. To produce smaller holes, the punches may be sharpened to
15 needle points, but when this is done the needle pushes a small amount of rubber ahead of it as it pierces the sheet material and this small particle of rubber is not removed from the surface as is the case with the larger hole punches. The
20 result is a surface with a very harsh feel and poor appearance. In some cases the small pierced portion of rubber is drawn back into the perforation when the needle is withdrawn and the perforation is thereby spoiled. Small areas
25 of the textile threads are likewise pushed away from the surface by the needle point and remain so, adding to the unattractive appearance of the perforated product.

30 If the die into which the needle point penetrates is made to fit the needle very snugly and tightly, a reasonably clean perforated surface results but it has been found to be impossible to maintain these dies and punches in such a perfect fitting condition for more than short periods
35 of time. Such maintenance is also very tedious and expensive.

There is a demand, therefore, for an economical method of obtaining clean needle point perforation.

40 This invention has as an object a method for perforating rubberized fabrics with needle point holes which will produce a smooth clean surface. A further object is to provide an economical garment material with needle point perforations.
45 A still further object is to provide an improved method of perforating rubberized fabrics and the like, whereby the dies and punches of the perforating equipment are free from expensive maintenance requirements. Other objects of
50 the invention will be apparent from the description given hereinafter.

55 The above objects are accomplished by the present invention by providing for a loose layer of paper between the material to be perforated and the perforating die. This paper "stripper

sheet" causes the perforating needles to pierce the rubber-textile layer and to be withdrawn therefrom without carrying small portions beyond the plane of the surface thereof.

In the accompanying drawing

Fig. 1 is an enlarged diagrammatic view partly in section of one form of perforating equipment in which the invention is applied;

Fig. 2 is a fragmentary plan view of one of the products made under the invention; and

Fig. 3 is a sectional view of the material of Fig. 2 taken through the line A—A of Fig. 2.

The rubberized fabric is shown as being pierced by the perforating pins 1 which fit into the complementary cavities 2 of the perforating die. 15 The rubberized fabric illustrated consists of a film of vulcanized rubber 3 having attached to each side a layer of textile fabric 4. A sheet of kraft paper 5 is placed between the perforating die and the under face of the fabric. 20

The paper layer 5, which is unattached to the rubberized fabric material, results in clean perfect perforations 6 without the roughening of the surfaces 7 which for the reasons pointed out above ordinarily occurs when rubberized 25 fabric is perforated.

Kraft, parchment, and a wide variety of other papers having a thickness consistent with flexibility and economy requirements may be used for the present purpose. A kraft paper having a thickness of about 0.004 inch is excellently suited to the practice of this invention. 30

This invention is most advantageously practiced with rubberized fabrics provided on at least one side with a fabric layer. The invention is, however, applicable to other sheet materials, as for instance leather, its substitutes and the like, which offer similar difficulties to needle point penetration. 35

The perforating equipment used in the present invention may be any of the various types in which a paper layer can be inserted between the perforating pins and perforating die. 40

The rubberized fabric, when perforated in accordance with the above description, presents a clean, smooth and pleasing surface, whereas the same material, perforated on the same machine but without the use of the above described paper stripper sheet, shows surface imperfections, small projections of fabric and rubber, which mar the appearance and spoil the feel of the product. The paper stripper sheet may be re-used one or more times in the perforation of additional strips of fabric by shifting the position of the paper sheet slightly so that the holes 45
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previously made therein do not coincide with the die cavities.

5 As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that I do not limit myself to the specific embodiments thereof except as defined in the appended claim.

I claim:

In the manufacture of perforated rubberized fabric by passing perforating pins through said fabric into complementary cavities contained in a perforating die, the steps which comprise inserting between said pins and die a rubberized fabric sheet and a loose sheet of paper, and passing the perforating pins through both of said sheets into the cavities of the die. 5

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