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METHOD OF MAKING FLOOR MATS OF IRREGULAR CONTOUR

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FIG. 1

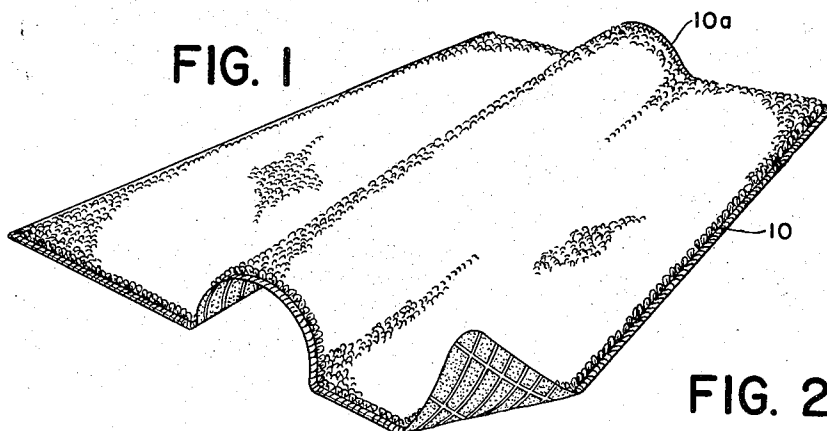


FIG. 2

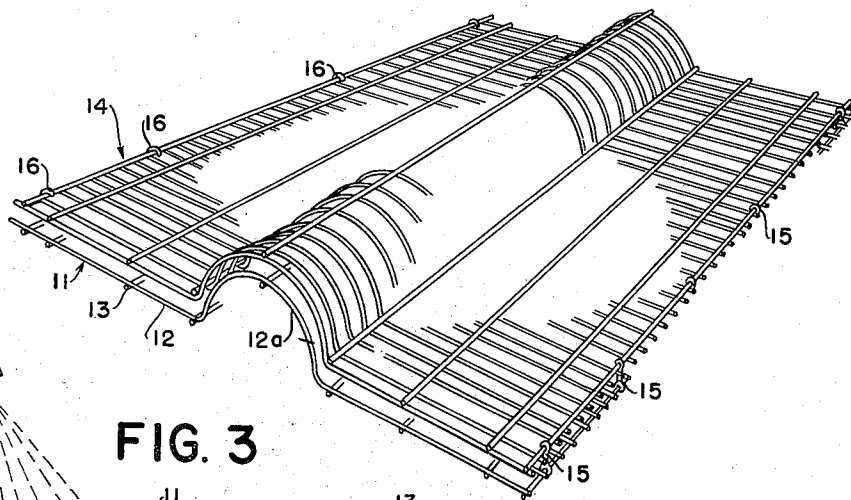
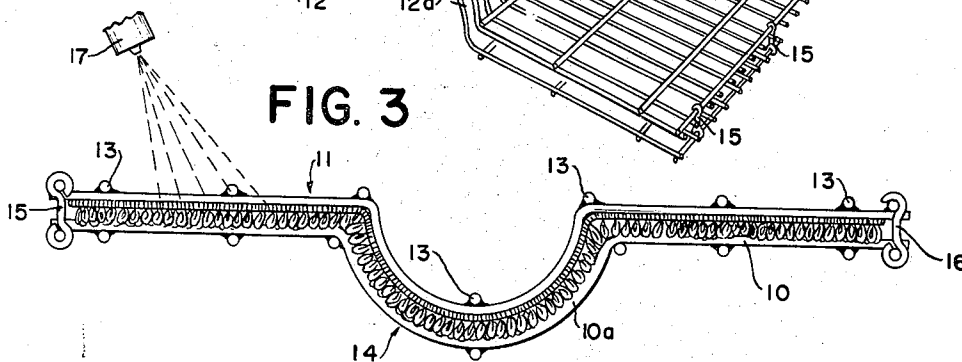


FIG. 3



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## METHOD OF MAKING FLOOR MATS OF IRREGULAR CONTOUR

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5 Claims. (Cl. 28—74)

This invention relates to mats for use as floor coverings and is concerned more particularly with a novel method, by which a mat for covering a floor area of irregular contour can be made rapidly and at low cost. The new mat is made of a fabric, which is flat as produced and, in the formation of the mat from the fabric, the fabric is distorted to conform to the shape of the floor area, on which it is to be laid, and is then treated to cause it to retain its distorted condition. As a result of its method of manufacture, the mat makes a tight fit with the area, on which it is intended for use, and, when in place, is free of bulges or wrinkles. While the mat may be employed for many purposes, all the advantages of the invention are realized in mats for automobile use and a mat suitable for that application and a method of making such a mat will be illustrated and described in detail for purposes of explanation.

The floors in both the front and rear compartments of passenger automobiles are usually quite irregular in contour because of mechanical features of the vehicle. In the front compartment, the top of the transmission casing ordinarily lies above the level of the floor area on either side of it, so that the floor has a central upward bulge, and the floor of the rear compartment usually has a raised central section forming a tunnel for the propeller shaft. Floor mats of ordinary fabrics, such as pile fabrics, do not conform as snugly as desirable to the floor in either compartment and are likely to bulge and wrinkle.

The present invention is directed to the provision of a novel method for making a floor mat for use on a floor area of irregular contour, which has been given a permanent shape conforming to that of the area and, accordingly, fits the area smoothly, when laid in place. The mat is made of a stretchable fabric and, when made by the method of the invention, a piece of the fabric of suitable size and shape is distorted to give it the contour of the area, on which it is to be used, and the distorted fabric is then held in that condition by the application to its under surface of a coating of a fluid capable of setting. The finished mat thus has a permanently distorted shape such that it mates with the floor area to be covered.

For a better understanding of the invention, reference may be had to the accompanying drawing, in which

Fig. 1 is a view in perspective of a typical mat made in accordance with the invention;

Fig. 2 is a view in perspective of a device, by which a piece of flat fabric may be converted into a mat of the invention; and

Fig. 3 is a view in end elevation showing a piece of fabric distorted in the device and receiving a coating on its under surface.

The mat 10 shown in Fig. 1 is typical of mats of the invention and it is for use in a compartment in an automobile, in which the floor has a raised longitudinal section forming a tunnel for the propeller shaft. The mat has an outline, which is the same as that of the floor, and it has a raised section 10a adapted to mate with that of

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the floor. The mat shown is made of a pile fabric and the fabric selected for the purpose is one, which is stretchable in both directions. A knitted pile fabric produced on a warp knitting machine and having a tricot base or ground and pile yarns laid therein and provided with upwardly projecting loops may be advantageously used, since such a fabric can be readily stretched as may be necessary.

In the formation of a mat to cover a floor area of irregular contour, a form having a surface of the same contour as the floor area is first prepared. This form may be a grid, such as the grid 11, which is made up of a plurality of spaced transverse wires 12 connected by longitudinal wires 13 welded thereto at suitable intervals. The wires 12 and 13 are bent so that the upper surface of the form has the contour of the floor area, and since the grid 11 is to be used in the production of the mat 10, the wires 12 have an upward bend indicated at 12a. In the use of the form 11, a piece of the fabric to be converted into the mat is placed on top of the grid with its under surface exposed through the grid. In the next operation, the fabric is stretched and distorted so that it fits the upper surface of the grid with a tight fit. For this purpose, a second grid 14 similar to grid 11 is prepared and the two grids are secured along one edge by links 15 and are provided at the opposite edge with hooks 16. The two grids may be swung apart on the links to permit the piece of fabric to be laid on grid 11, after which the grid 14 is swung down upon the fabric and caused to press it tightly against grid 11. The two grids are then secured together by hooks 16 and act to hold the fabric distorted to the desired shape.

After the piece of fabric has been clamped between the two grids, the grids are inverted so that the grid 11 is on top and a coating of a material capable of setting is applied to the under surface of the fabric exposed through grid 11. A suitable coating material for the purpose is a latex compound and such a compound can be applied by spraying by means of a nozzle 17. After a coating of the desired thickness has been applied, the coating is caused to set and, for this purpose, the grids with the coated fabric between them may be passed through a dryer in which the coating is subjected to heat to drive off the moisture content of the coating. Upon completion of the drying operation, the grids are separated and the finished mat is removed.

As the fabric has been distorted in the formation of the mat to the desired final condition and is then held permanently in that condition by the setting of the coating, the mat produced as described will make a snug fit with the floor area, on which it is intended to be laid. Accordingly, in laying the mat on the floor area, it is not necessary to stretch or press it in place and it lies tightly against the area without wrinkles or bulges.

I claim:

1. A method of forming a mat for covering a floor area of irregular contour, which comprises distorting a piece of stretchable fabric to give it the contour of the floor area to be covered by applying force to the opposite faces of the fabric, the force being applied to at least one surface of the fabric at a plurality of spaced points, applying to said surface between the points of application of the force a coating of a fluid capable of setting, and maintaining the fabric in distorted condition by the application of force until the coating has set.
2. The method of claim 1, in which the fabric is a knitted pile fabric stretchable in both directions.
3. The method of claim 1, in which the coating fluid is sprayed on the fabric.
4. The method of claim 1, in which the coating fluid is a latex compound.

5. The method of claim 1, in which the coated fabric is heated to drive off the moisture from the coating and to cause the coating to set.

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