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D. A. TAYLOR

2,810,672

FLOOR MATS FOR AUTOMOBILES

Filed June 8, 1956

2 Sheets-Sheet 1

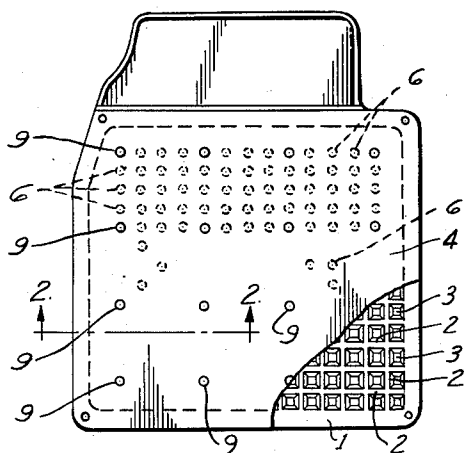


Fig. 1

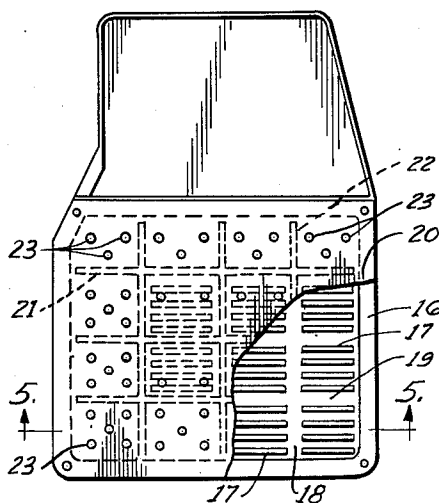


Fig. 4

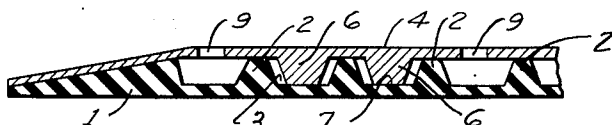


Fig. 2

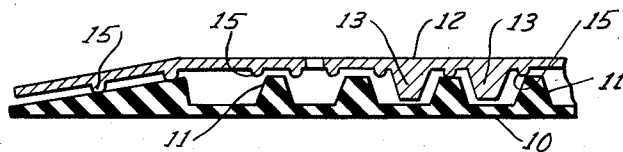


Fig. 3

INVENTOR.
DON A. TAYLOR
BY *Wah & Leonard*
ATTORNEYS.

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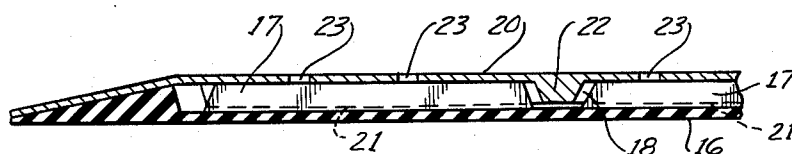


Fig. 5.

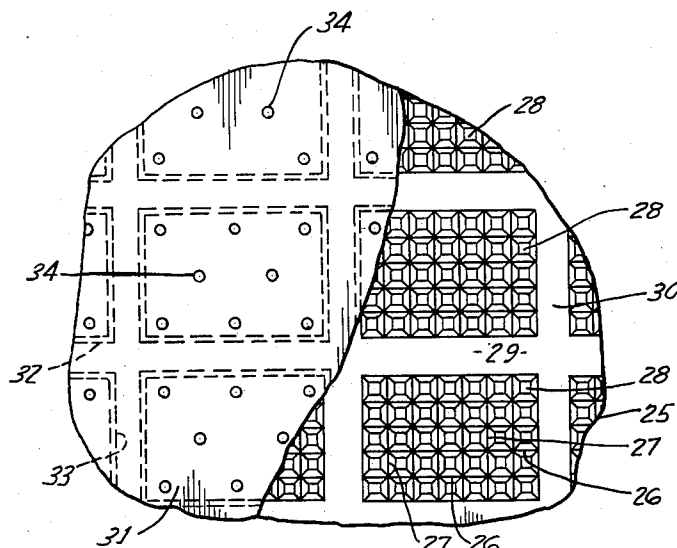


Fig. 6.

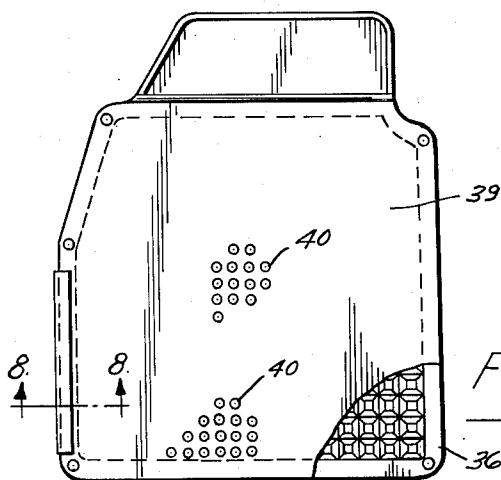


Fig. 7.

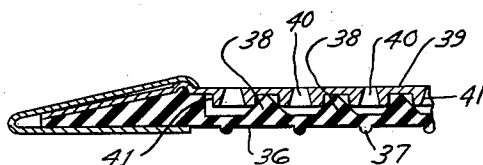


Fig. 8.

INVENTOR.
DON A. TAYLOR
BY
Behr + Leonard,
his ATTORNEYS.

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FLOOR MATS FOR AUTOMOBILES

Don A. Taylor, Wadsworth, Ohio

Application June 8, 1956, Serial No. 590,288

7 Claims. (Cl. 154-49)

This invention relates to floor mats for automobiles and particularly to floor mats of the type disclosed in my copending application Serial No. 570,775, filed March 12, 1956, and entitled Floor Mats for Automobiles.

The present mat is an improvement on the mats described in the above copending application and embodies features which are advantageous both in the manufacture and the operation thereof.

In the above entitled application, there is disclosed a composite floor mat which comprises two parts, one part being a bottom mat and the other being a cover mat. The bottom mat is composed of molded rubber or plastic material and has on its upper face upstanding integral ribs alternating with depressions which are open upwardly. The top or cover mat comprises a thin flexible sheet of plastic or rubber which is preferably of much higher quality than the bottom mat and has distributed over its under surface a plurality of lugs which cooperate with the bottom mat to prevent lateral or endwise displacement of the cover mat from its operating position on the bottom mat.

The present invention relates to a change in the ribs and lugs of the mats so that the mats can be manufactured more conveniently and the ribs and lugs can cooperate more effectively.

Various other objects and advantages will become apparent from the following description wherein reference is made to the drawings, in which:

Fig. 1 is a top plan view of a mat embodying the principles of the present invention, and including a bottom mat and a cover mat therefor, part of the cover mat being cut away for clearness in illustration;

Fig. 2 is an enlarged fragmentary cross sectional view of the assembled cover and bottom mats illustrated in Fig. 1, and is taken on line 2-2 thereof;

Fig. 3 is an enlarged fragmentary sectional view similar to Fig. 2 illustrating a modification of the cover mat shown in Fig. 2;

Fig. 4 is a view similar to Fig. 1 and illustrates a modified cover mat and bottom mat, part of the cover mat being cut away for clearness in illustration;

Fig. 5 is an enlarged fragmentary cross sectional view taken on the line 5-5 of Fig. 4;

Fig. 6 is a fragmentary top plan view of a bottom mat and an overlying cover mat, illustrating another modification thereof;

Fig. 7 is a top plan view of a bottom mat and a cover mat showing an additional modification; and

Fig. 8 is an enlarged cross sectional view taken on the line 8-8 in Fig. 7.

Referring first to Figs. 1 and 2, the bottom mat 1 is composed of rubber or other flexible or resilient plastic material which is sufficiently resistant to flexure so that the mat resists distortion and is self-restoring after deformation. The bottom mat 1 as a whole, however, is sufficiently flexible to conform to the contour of the floor of the automobile compartment when laid thereon. The

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bottom mat 1 is characterized by having a plurality of upstanding ribs 2, preferably arranged in some desired regular geometric pattern, to define concavities or depressions 3. In the form illustrated in Fig. 1, the concavities open upwardly and are relatively deep.

The cover mat 4 is of thin flexible sheet material, preferably plastic or rubber and preferably of much higher quality material than that used for the bottom mat. It is substantially the same in outline as the bottom mat so as to completely cover the bottom mat when juxtaposed thereon.

In general, the cover mat is supported on the crests of the ribs 2 of the bottom mat. However, the cover mat 4 is provided with depending integral lugs 6 distributed over the undersurface thereof and preferably arranged in rows corresponding to the rows of concavities 3 of the bottom mat 1 both transversely and lengthwise of the bottom mat. When the cover mat is laid on the bottom mat, the lugs 6 are accommodated in the concavities 3, respectively.

Each of the lugs 6 preferably is smaller in horizontal cross section at all points along its depth than the horizontal cross section of its associated concavity at the same depth. Consequently there is clearance between the peripheral walls of each lug 6 and the adjacent peripheral walls of its associated concavity 3. This clearance provides a distinct advantage in manufacture in that extreme accuracy in fit is not necessary and the problem of fitting, which occurs due to shrinkage upon curing, is substantially eliminated. However, the cover mat may be made of elastically deformable material of such quality that it can be stretched edgewise and endwise so as to dispose the lugs 6 in proper alignment with the concavities 3 so as to be receivable therein. In such case, the problem of fitting is not so great and the cross section of each lug 6 may be substantially the same as that of its associated concavity 3 at the same depth. Each of the lugs 6 is of such a depth that, when the underface of the cover mat is resting on top of the ribs 2, the bottom of each rests on the top face of the bottom mat at the base of the depressions or concavities 3, as indicated at 7.

If desired, there may be a slight clearance between the bottom of each lug 6 and the top face of the bottom mat at the base of the associated concavity 3, when no pressure is exerted on the top mat, so as to eliminate some of the problems of fitting resulting from shrinkage during manufacture. The bottom clearance should be so small, however, that under slight pressure applied on the top mat adjacent a lug, the bottom of the lug will engage the upper face of the bottom mat.

The lugs 6 cooperate with the peripheral walls of the ribs 2 to prevent lateral and endwise displacement of the cover mat 4 relative to the bottom mat 1. Furthermore, the engagement of the bottom of the lugs 6 with the upper surface of the bottom mat exposed in the base of the concavities eliminates the danger of damage to the cover mat by the pressure of small high heels of women's shoes and the like. Also, it prevents the deflecting of the cover mat into the concavities in a manner which might cause slush, water, soft mud, and the like to squirt or squeeze out from between the mats.

The cover mat 4 may be provided with a plurality of apertures 9 spaced a considerable distance apart from each other but which communicate with certain ones of the concavities 3 for draining water therethrough so that it can be entrapped between the mats within the concavities 3.

In Fig. 3 there is illustrated a bottom mat 10 which is the same as the bottom mat illustrated in Fig. 1 and which has upstanding ribs 11. The cover mat 12 has dependent lugs 13 similar to the lugs 6. In addition it has small

lugs or ribs 15 which are well distributed over its under-surface, but in a more or less random relation to the concavities therebeneath so that some of the ribs may lie within the concavities while others engage the tops of the ribs. The ribs 15 assist in preventing shifting of the cover mat in the plane of the mats. Furthermore, insofar as they may engage the top of the ribs 11, they tend to hold the cover mat slightly spaced above the ribs of the bottom mat and thus permit better air circulation between the mats.

Referring next to Figs. 4 and 5, a bottom mat 16 is illustrated in which ribs 17 are arranged in groups. The groups are arranged in rows transversely and the ribs of one group preferably are aligned with the ribs of the next group in the same row. In between the groups are spaces 18 which extend endwise of the bottom mat and spaces 19 which extend transversely of the bottom mat. The spaces 18 and 19 provide a grid of passages which are connected with the spaces or passages between the ribs. The cover mat 20 is provided on its underside with ribs 21 which extend transversely of the cover mat and ribs 22 which extend lengthwise of the cover mat. The ribs 21 are adapted to fit into the spaces 19, respectively; and the ribs 22 are adapted to fit into the spaces 18, respectively. Thus the cover mat is anchored against movement both endwise and transversely of the bottom mat by the coaction of the lugs 21 and 22 and lateral and end surfaces of the ribs 17. The lugs 15 also stiffen the cover mat. The cover mat may be provided with apertures 23 distributed over the surface so as to provide drainage from the top surface of the cover mat into the depressions between the ribs of the bottom mat.

The bottom mat has a raised continuous margin which defines with the adjacent ends of the ribs channels which are in communication with the spaces or passages between the ribs and with the grid of passages 18 and 19 so that the water may flow from some of the passages into the others. The channels between the margin and ribs may be substantially coextensive in depth with the passages between the ribs and the passages 18 and 19.

Referring next to Fig. 6, the bottom mat 25 is similar to the bottom mat illustrated in Fig. 4, except that, instead of the ribs indicated at 17, which extend generally in one direction only, it is provided with ribs 26 and 27 which extend at right angles to each other and form concavities 28 which are isolated from each other. These ribs are arranged in groups separated by passages 29 extending transversely of the mat and passages 30 extending lengthwise of the mat, these passages criss-cross each other to form a grid. A cover mat 31 is provided with depending ribs or lugs 32 and 33 arranged to fit within the passages 29 with lateral clearance and clearance between their bottom ends and the upper surface of the bottom mat which is exposed within the passages 29 and 30. Occasional drainage apertures 34 are provided in the cover mat.

In Figs. 7 and 8, the bottom mat 36 is provided on its lower surface with ribs or lugs 37 and on its upper surface with upstanding ribs 38. The cover mat 39 is provided with apertures 40 and depending lugs 41. The depending lugs 41 are preferably annular and are arranged coaxial with the apertures 40 and they are so related to the ribs 38 and the concavities therebetween that at their lower edges they engage the peripheral walls of the concavities at a point between the bottom of the concavities and the crests of the ribs 38. The ribs 38 are so shaped that the concavities are of inverted frusto-pyramidal shape.

The ribs 37 are preferably spaced so that the cover mat can be laid and stored beneath the bottom mat and when so disposed the ribs 37 can engage the apertures 40, thus attaching the cover mat to the underside of the bottom mat and preventing lateral displacement of one

relative to the other. The annular lugs 41 also reinforce the cover mat at the margins of the apertures 40.

Having thus described my invention, I claim:

1. A floor mat for automobiles comprising an imperforate flexible molded bottom mat having a plurality of upstanding integral ribs on its upper face and dividing the upper face into a plurality of isolated concavities with imperforate bottom and side walls, a thin flexible cover mat of waterproof material detachably overlying said upper face and having a plurality of reinforcing lugs depending from the undersurface thereof, said lugs being accommodated in spaces between said ribs of the bottom mat and being adapted to engage lateral faces of the ribs for limiting lateral movement of the cover mat relative to the bottom mat, and said lugs being of smaller cross section than the cross section of the spaces in which they are received, taken at the same depth, and said lugs of the cover mat being of such length in the direction normal to the under surface of the cover mat that their lower ends are substantially at the upper faces of the bottom mat at the locations between the ribs.

2. The floor mat according to claim 1 characterized in that a plurality of small integral ribs also are provided on the underside of the cover mat and are distributed thereover at random relative to the pattern of the ribs of the bottom mat.

3. The floor mat according to claim 1 characterized in that the ribs of the bottom mat are arranged in groups with a grid of spaces between and separating the groups from each other, some of the spaces extending in one direction along the bottom mat surface in a direction angularly disposed to others of the spaces, and said cover mat is provided on its undersurface with depending lugs which are arranged in corresponding relation with the passages so that the lugs may extend within said passages which divide the ribs into groups and limit, by engagement with the ribs, the movement of the mats relative to each other.

4. A floor mat for automobiles comprising an imperforate flexible molded bottom mat having on its upper face a plurality of upstanding integral ribs with passages therebetween, a thin flexible cover mat of waterproof material detachably overlying and supported on the bottom mat, said bottom mat having a raised margin which, with said ribs, defines a channel along the margin of the mat connecting a plurality of the passages together so that water may pass from some of the passages to others of the passages through the channel, said cover mat having apertures in communication with said passages, and means limiting bodily movement of the mats laterally relative to each other.

5. The floor mat according to claim 4 characterized in that the ribs of the bottom mat are arranged in groups with a grid of spaces providing a grid of passages between and separating the groups from each other, some of the passages of the grid extending in one direction along the bottom mat top face in a direction angularly disposed to other passages of the grid, and the passages between the ribs being connected to the passages of the grid of passages, and the passages of the grid of passages being connected to the channel.

6. The floor mat according to claim 4 characterized in that the margin is continuous and the channel is continuous and coextensive in length with the margin, and all of the passages communicate with the channel.

7. A floor mat for automobiles comprising an imperforate flexible molded bottom mat having a plurality of upstanding integral ribs on its upper face with spaces therebetween, and said ribs being arranged in groups with a grid of passages between and separating the groups from each other, some of the passages of the grid extending in one direction along the top face of the bottom mat in a direction angularly disposed to others of the passages, a thin flexible cover mat of waterproof material detachably

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overlying and supported on the bottom mat, said bottom mat having a raised margin, said margin and ribs defining a channel along the margin of the mat connecting a plurality of the passages together so that water may flow from some of the passages to others of the passages through the channel, said cover mat having apertures in communication with said passages, and means limiting bodily movement of the mats laterally relative to each other.

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