May 27, 1969 L. F. KUTIK 3,446,341

PLASTIC PRODUCT

Original Filed Oct 31, 1966 Sheet 1 of 2

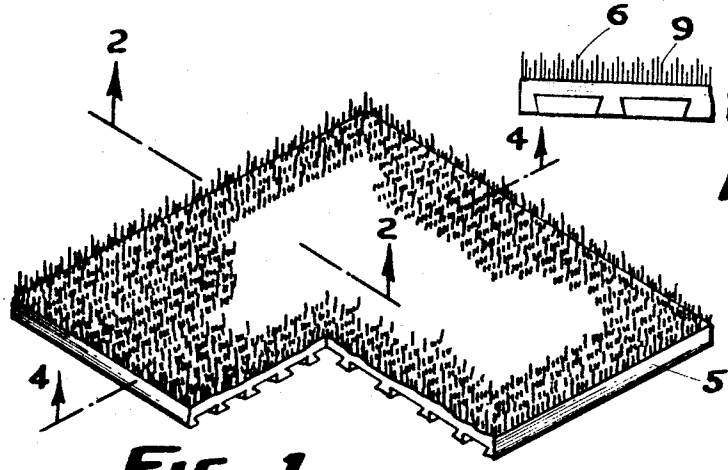


FIG. 1

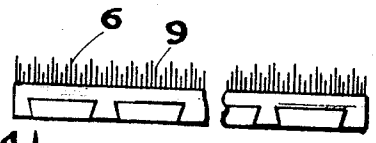


FIG. 2

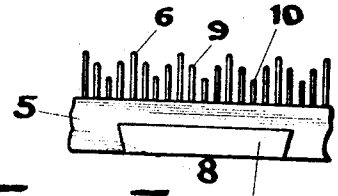


FIG. 3

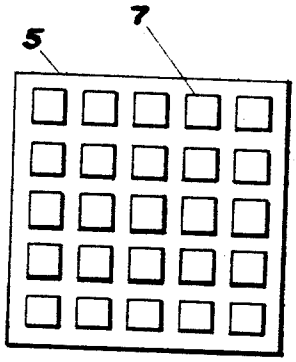


FIG. 4

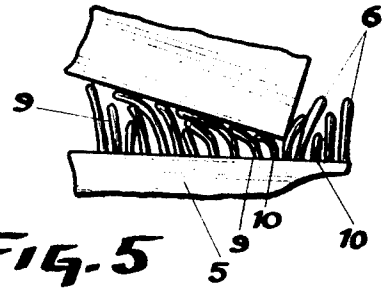


FIG. 5

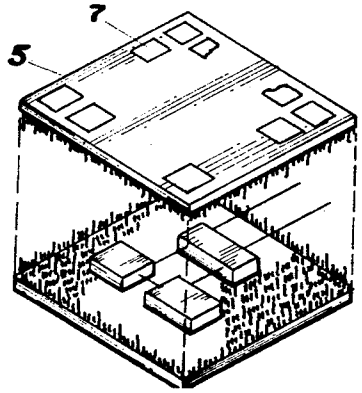


FIG. 6

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PLASTIC PRODUCT

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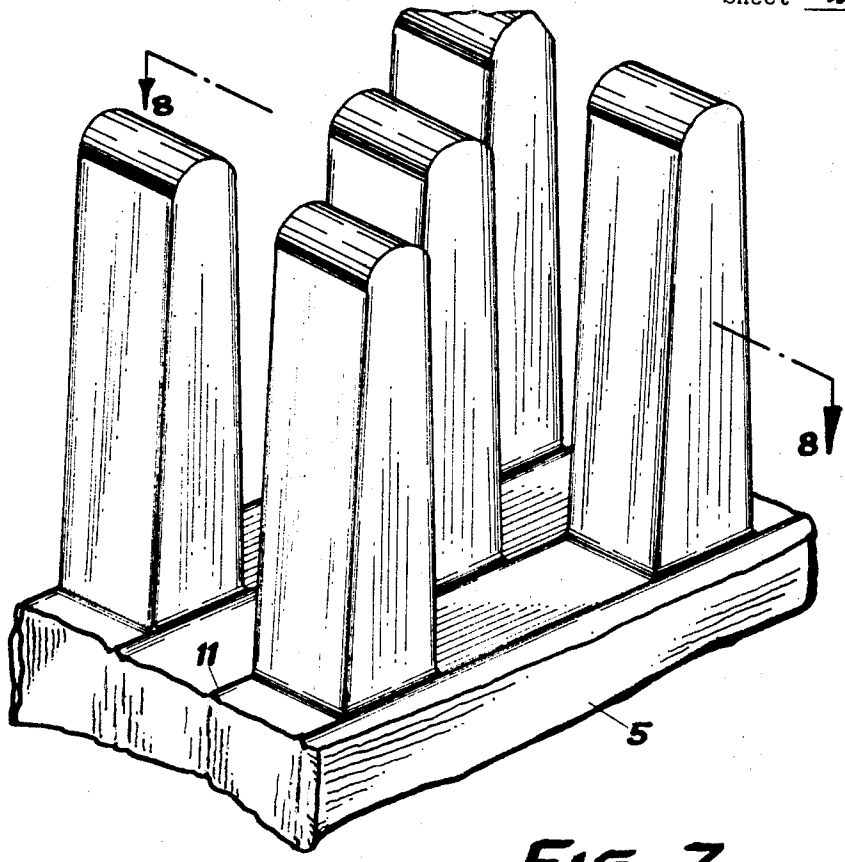


FIG. 7

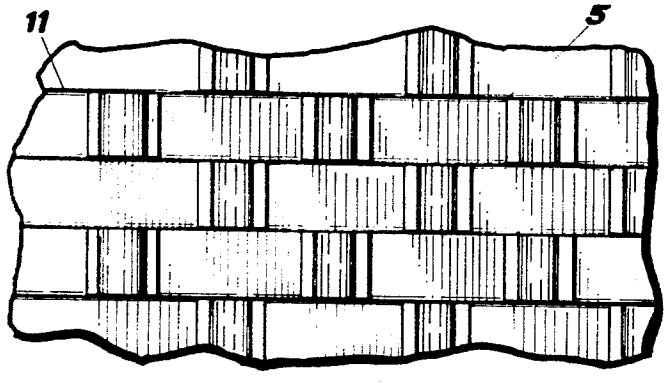


FIG. 8

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PLASTIC PRODUCT

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Original application Oct. 31, 1966, Ser. No. 590,834. Divided and this application May 27, 1968, Ser. No. 747,400

Int. Cl. B65d 85/00

U.S. Cl. 206—46

1 Claim

ABSTRACT OF THE DISCLOSURE

A package for fragile components including a pair of plastic plates provides on opposite sides of a fragile component and each having a plurality of integral bristles which are interdigitated to confine the component and individually deflectable to accommodate the component. The distance between the plates is at least as great as the corresponding dimension of the component, and the length of each bristle is at least one-half as great as that dimension to allow the interdigitating of the bristles. The plastic elements protect the component and securely hold it against shifting.

This invention relates to a plastic product having integral monofilament bristles extending from the upper surface of a floor tile or similar device.

This application is a division of my application S.N. 590,834 which is a continuation-in-part of my application S.N. 479,979, which is a divisional application of my earlier application of Mar. 17, 1964 now issued as Patent 3,214,777.

The invention contemplates a floor tile or similar article that embodies a sheet of plastic material, forming a base and with the material having a multiplicity of rows of monofilament bristles extending upwardly from its top surface and with the base having a multiplicity of recesses extending over its entire surface and with the recesses being undercut whereby the tile may be molded in a suitable molding machine and with the plastic engaging in the recesses, to assist in detaching the tile from the mold by pulling all of the bristles out of bristle forming cavities of the mold and also to receive a suitable cement for fastening the tile to a supporting surface.

A further object of the invention resides in forming a floor covering, such as a tile and with the surface of the tile being provided with spaced apart rows of monofilament bristles of varying length whereby the longer bristles, when pressure is exerted upon their tops will bend over and pick up the next adjacent shorter bristles, progressively increasing the resistance of the longer bristles and to also assist in causing the longer bristles to return to the vertical position.

The invention further contemplates a packaging device for holding electronics circuitry, ceramics or other delicate products upon the tops of the bristles of one tile to be covered by a similar tile that is placed upon the tile supporting the electronics device etc. and pressed into engagement with each other so that the bristles have interlocking engagement between the two tiles and to subsequently be heat sealed around the marginal edges of the two tiles, or held together by other means forming a package that is shock absorbing and vibration-proof with respect to the electronics elements and securely holds the electronics elements or other delicate products against shifting or otherwise becoming damaged.

The invention has additional use as a filtering medium when a liquid, such as washing machine water is passed over the rows of bristles, the lint is caught and held captive between the rows of bristles until released and the tile is also in demand in the gold mining industry where

small particles of gold are held captive between the rows of bristles until the bristle material is bent, thereby widening the spaces between the bristles and releasing the entrapped gold particles.

In the accompanying drawings, wherein has been illustrated the preferred form of the device and wherein like characters of reference are employed to denote like parts throughout the several figures:

FIGURE 1 is a perspective view of a floor covering tile, parts being broken away,

FIGURE 2 is a fragmentary sectional view taken substantially on line 2—2 of FIGURE 1,

FIGURE 3 is a fragmentary sectional view illustrating the base of the tile with the undercut recess and the filament bristles extending upwardly,

FIGURE 4 is a bottom plan view of the tile,

FIGURE 5 is a fragmentary sectional view illustrating the bristles with pressure exerted thereon,

FIGURE 6 is a perspective view of a pair of tiles constituting a package,

FIGURE 7 is a greatly enlarged perspective view illustrating the spacing of the bristles, and

FIGURE 8 is a section taken on line 8—8 of FIGURE 7 illustrating mold marks.

Referring specifically to the drawings, the numeral **5** illustrates a sheet of plastic material having a multiplicity of rows of integral resilient monofilament bristles **6** upon its upper surface and with the base **5** upon its bottom being provided with multiple rows of cavities **7**. The cavities **7** are inwardly and upwardly beveled as indicated at **8** and around which the plastic material will flow so that the tile when removed from the mold will be held to such a degree that the bristles may be pulled from the bristle forming cavities of the mold. The recesses **7** also function to securely attach the tile to a floor area since a bonding cement will also enter the undercut cavities **7** and securely hold the tile in position by mechanical interlocking, even though the adhesive will not wet the backing position.

Referring to FIGURES 3 and 5, long bristles **6** are spaced apart a suitable distance to the adjacent shorter bristles **9** and between the bristles **9**, to the shortest bristles **10** providing collective support, as shown in FIGURE 5, that when pressure is exerted upon the bristles, such as the heel of a shoe, the longer bristles are bent over and contact the bristles **9** and bristles **10** which thus increase the resistance of the longer bristles to bending and aid longer bristles to return to an upright position when pressure is removed. It may be seen in FIGS. 3 and 5 that shorter bristles **9** and **10** surround each longer bristle **6** and are within reach of the longer bristle when it is bent. Each of the bristles **6**, **9** and **10** are square in cross section having two parallel sides and two tapering sides and having four sharp corner edges and a rounded top and, when the product is released from the mold, the product shows mold line **11** in the form of a ridge, constituting a marking of the product that will identify the article as being formed by the mold for the product, said line interconnecting all parallel sides of all bristles. The ridges or lines **11** are extensions of fillets at the roots of the bristles which inhibit deflection of the bristles only at the roots thereof.

It will therefore be apparent, of all bristles that a very novel form of floor covering has been provided, wherein a base sheet of the plastic product is provided with cavities upon its bottom and with the several rows of bristles extending from the upper surface and with the bristles being of varying lengths and so that the soft longer bristles have increased resistance in flexing under pressure exerted thereon, causing the longer bristles to engage the shorter bristles and as pressure is increased, more resistance is obtained.

In FIGURE 6 of the drawings, a package for fragile components is provided. The two tiles or plates **5** having integral bristles are superimposed in parallel relation, the bristles of each tile being directed toward the center. When the tiles are moved into engagement, the bristles intermingle and deflect to retain the component therebetween. The tiles then are secured in assembly by a peripheral band or by heat-sealing.

Of course, the space between the tile backing portions must be at least as great as the height of the component and the bristles must be at least as long as one-half the component height.

I claim:

1. In a package for fragile components, a pair of superimposed plates, having a plurality of bristles substantially parallel, each projecting therefrom, the bristles of the plates being interdigitated to confine a component therebetween and the bristles being individually deflectable to accommodate the component, the distance between said plates being at least as great as the corresponding dimension of said component and the length of each bristle being at least one-half as great as said dimension, and means securing said plates in assembly.

References Cited

UNITED STATES PATENTS

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JAMES B. MARBERT, *Primary Examiner.*