

- [54] METHOD OF MOLDING A CARPET HAVING DEEP WELL AREAS
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- [73] Assignee: Nifty Products, Inc., Hamilton, Ohio
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- [51] Int. Cl.⁵ B29C 33/42; B29C 51/08
- [52] U.S. Cl. 264/322; 264/25; 264/243; 264/324
- [58] Field of Search 264/322, 324, 25, 243

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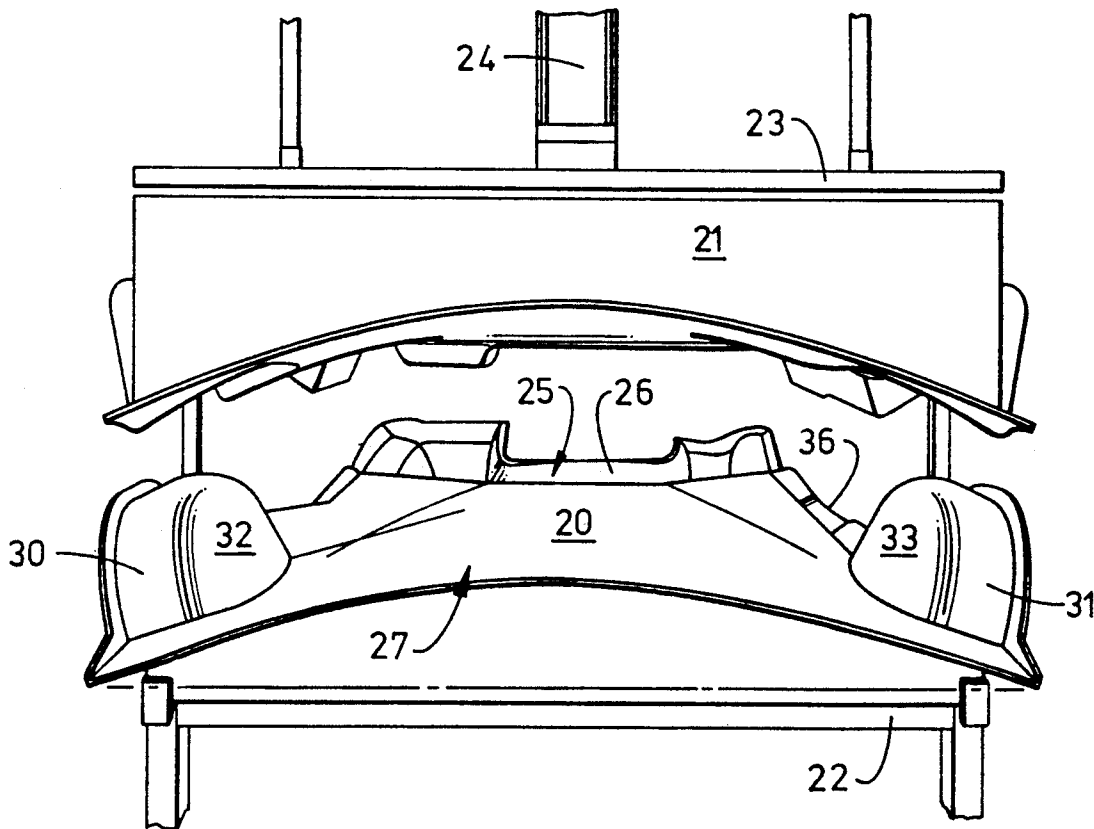
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Primary Examiner—James Lowe
Attorney, Agent, or Firm—Charles R. Wilson

[57] ABSTRACT

Molded carpet for use in motor vehicles is made by a method which allows the molding of carpet having deep well areas. The method comprises the steps of heating a plastic backed carpet blank to a degree to make its backing pliable and thereafter molding the heated carpet in a set of specially constructed molds. The molds generally have the shape of the floor area to be covered. However, they are arch-shaped from edge to edge at those portions of the mold where draws are needed to accommodate specially contoured well areas of the motor vehicle's floor area.

10 Claims, 3 Drawing Sheets



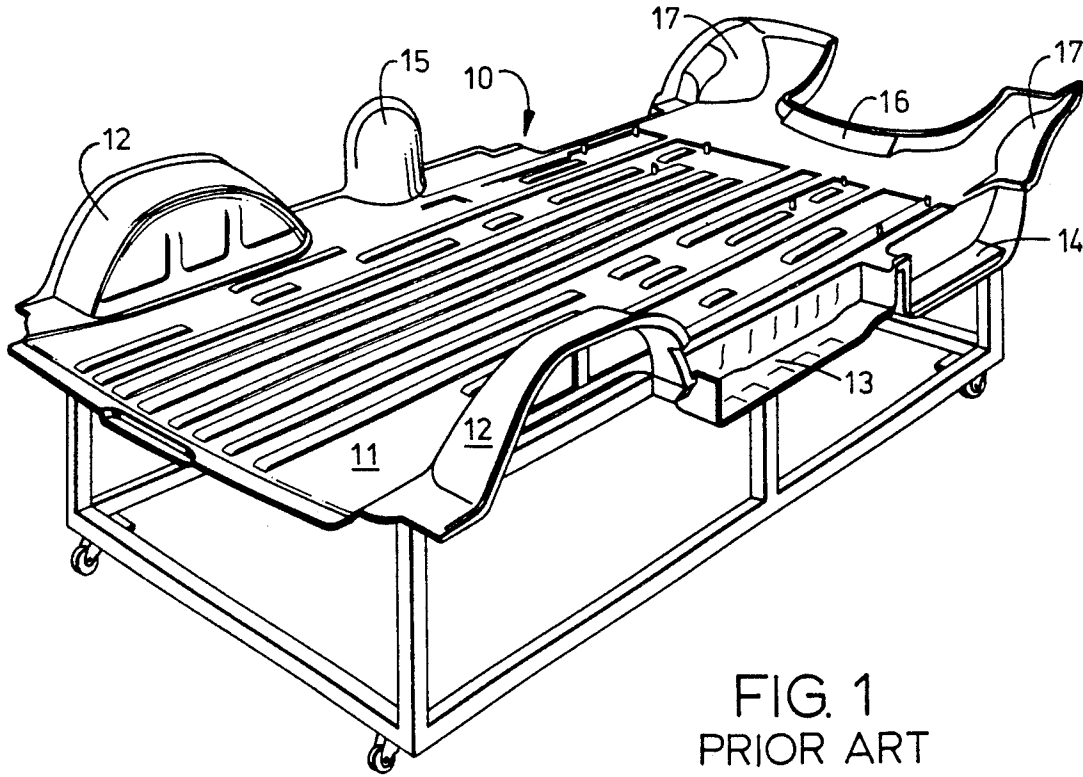


FIG. 1
PRIOR ART

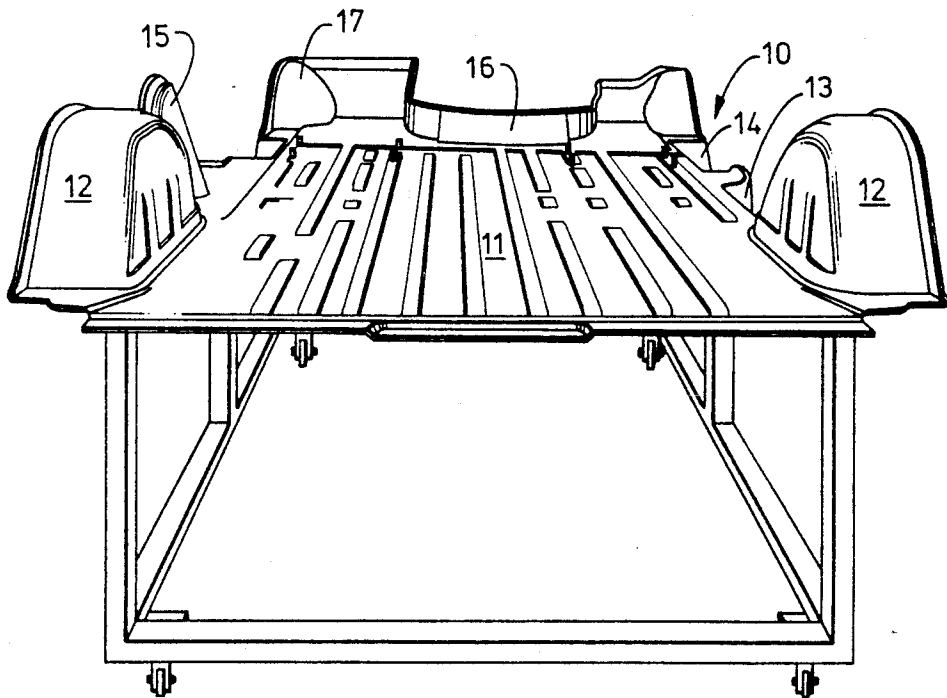


FIG. 2
PRIOR ART

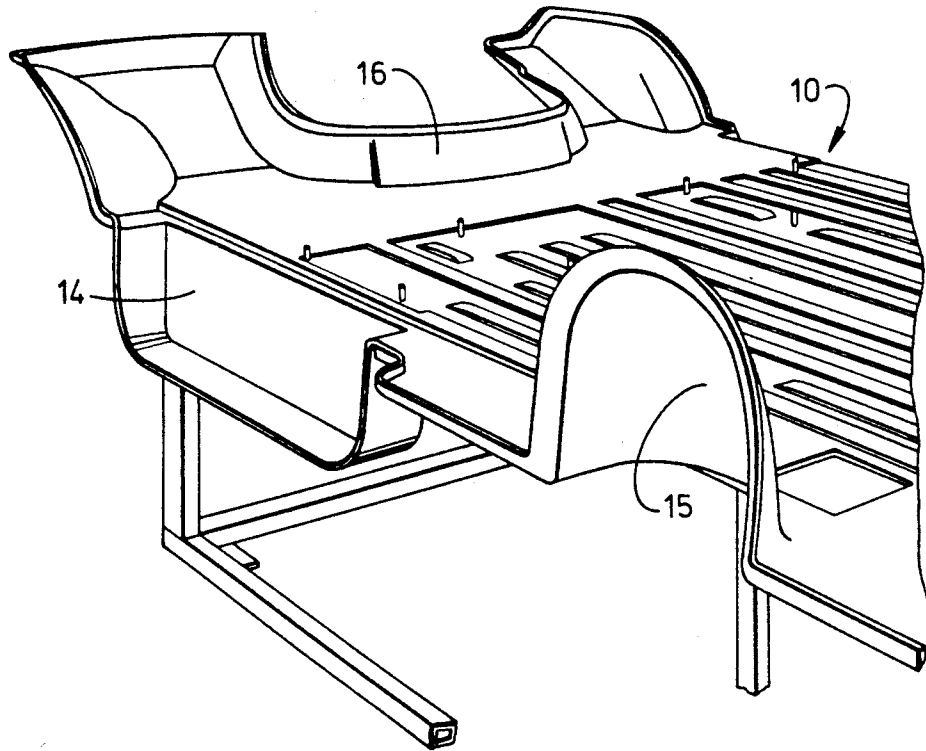


FIG. 3
PRIOR ART

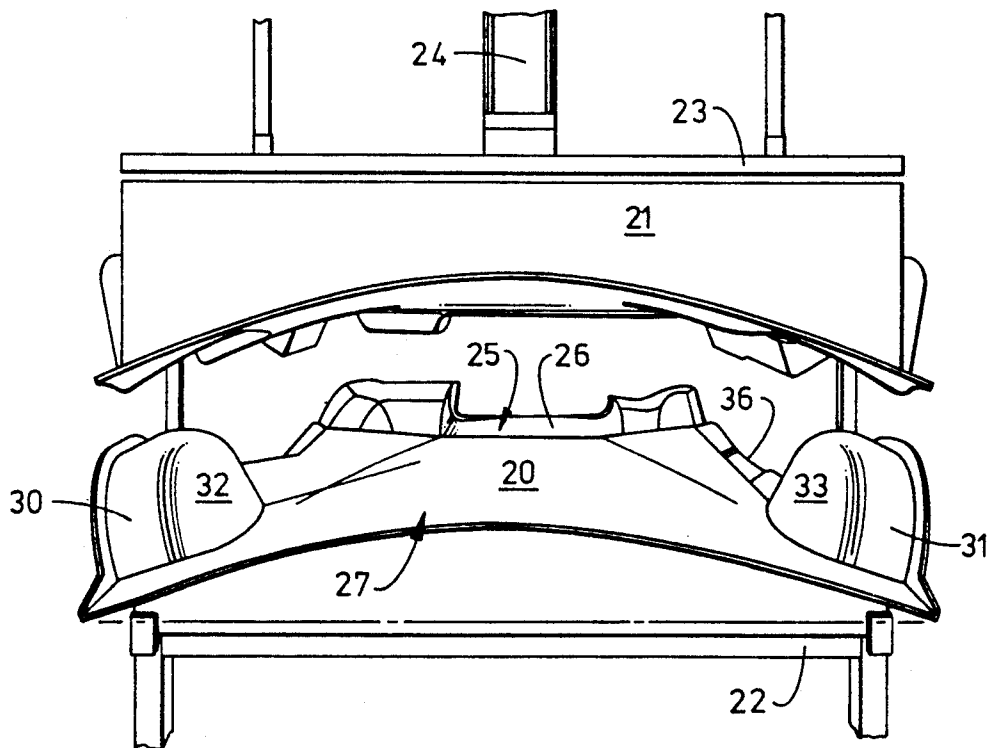


FIG. 4

FIG. 5

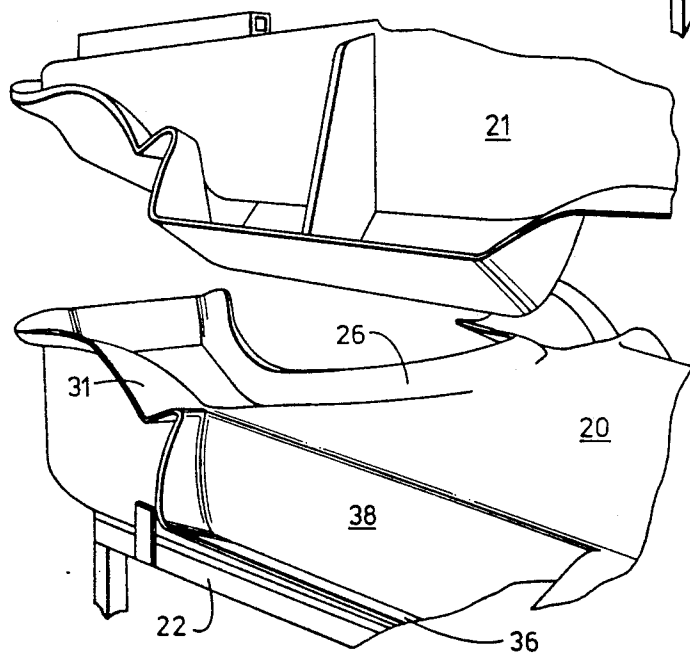
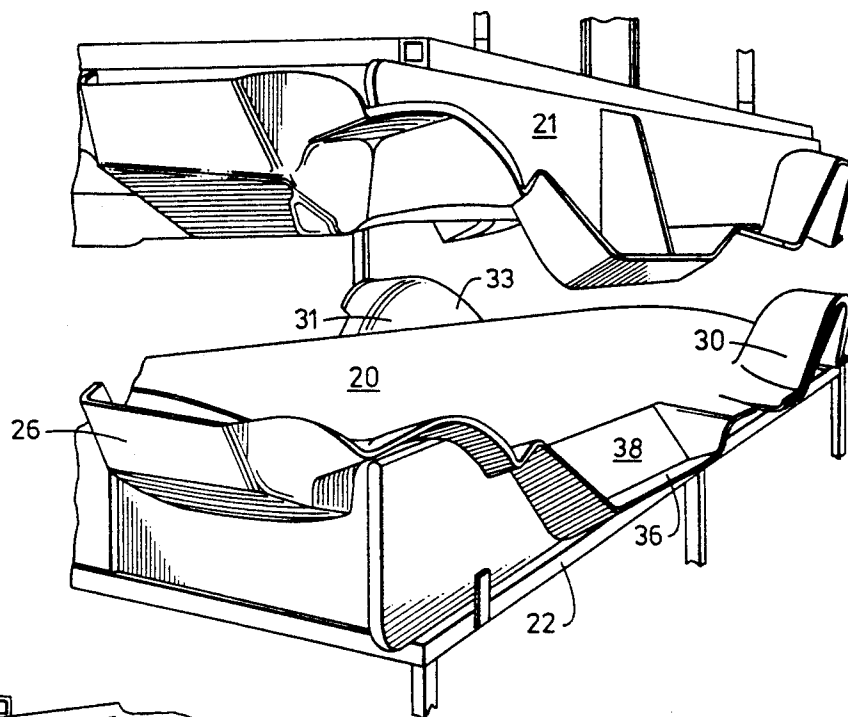


FIG. 6

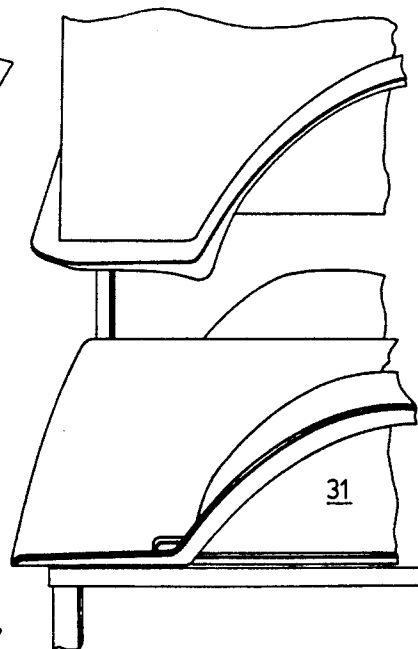


FIG. 7

METHOD OF MOLDING A CARPET HAVING DEEP WELL AREAS

This invention relates to a method of molding carpet. 5
More particularly, the invention relates to a method of molding a plastic backed carpet blank to a contoured shape having abrupt angled well areas.

Motor vehicles, especially automobiles and vans, typically have a carpet installed on a floor surface area. 10
The carpet is primarily for aesthetic reasons, but additionally is used for comfort and noise reduction reasons. The carpet is often a plastic backed carpet which has been molded to impart a particular shape to the carpet. The floor areas of motor vehicles are very contoured to 15
accommodate wheel wells, drive train humps and other functional and styling needs. Properly molded carpet will fit neatly into a contoured floor area without excess material or wrinkles.

Molded carpets as used in motor vehicles are produced in a method involving the application of heat and pressure. 20
Initially, a flat carpet blank with a thermoplastic backing is cut to a length and width slightly larger than the planar dimensions of the floor area to be covered. The carpet blank is passed through an oven to 25
soften the plastic backing to a state sufficient to make it pliable. The heated carpet blank is then placed between complimentary male and female carpet molds having a desired shape and contour. Necessarily, the carpet molds are uniquely designed to produce molded carpet 30
which fits into a prescribed vehicle make and model. The molds are closed under pressure. The carpet blank between the molds assumes the shape of the molds and, upon cooling, permanently retains that shape. Excess material is trimmed off the edges and ultimately the 35
molded carpet is installed in the motor vehicle.

A particular problem for the molded carpet manufacturer in recent years has been the need to supply molded carpet for use in wide bodied vans having a number of 40
deeply contoured floor areas. It can be appreciated that carpet blanks are originally planar in shape. When the plastic backing is softened and pressure from a set of mating molds is applied, the carpet will stretch in certain directions while it will contract in other directions. 45
There is only a limited amount of stretch obtainable from a small area of carpet blank. Excessive stretching, which can result from deep well areas, can cause the carpet to tear. This, of course, will cause the molded carpet to be rejected. Modern vans pose a problem because of their large floor areas and typical deeply 50
contoured floor areas.

In accord with a need, there has been developed a method to produce a molded carpet using a minimum of carpet material. Additionally, the method is able to 55
handle deep well areas in a mold without tearing of the carpet.

SUMMARY OF THE INVENTION

The method of molding a substantially flat narrow width plastic-backed carpet blank to a substantially flat 60
carpet piece having a contoured shape with deep well area designed to fit the interior floor area of a motor vehicle, comprises the steps of: (a) heating the carpet blank to a temperature sufficient to soften the plastic 65
until pliable; and (b) molding the carpet blank by positioning it between a set of male and female molds and thereafter closing said molds under pressure to impart the general shape of the molds to the carpet blank. Each

of the molds is characterized in having a generally arch-shape extending across its width in at least one area where an extensive draw of carpet is required because of the mold's design.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view in perspective of a prior art mold used to produce a molded carpet.

FIG. 2 is an end view of the mold of FIG. 1.

FIG. 3 is another perspective view of a part of the mold of FIG. 1 showing two deep well areas.

FIG. 4 is an end view of a set of arch-shape molds used in the method of this invention.

FIG. 5 is a view in perspective of the arch-shape molds of FIG. 4.

FIG. 6 is another perspective view of a part of the molds of FIG. 4 showing a deep well area of a step well.

FIG. 7 is a partial side view of the molds of FIG. 4.

DETAILED DESCRIPTION OF THE INVENTION

The description of the invention which follows is made with particular reference to the drawings. FIGS. 1-3 show a mold used in one step of a prior art method while FIGS. 4-7 show the molds used in the method of this invention. The method of the invention is first generally described and then specifically described with reference to the drawings.

The method of the invention uses a plastic backed carpet material. Such carpet materials are commercially available. The particular weight and color of the carpet are usually specified by the vehicle manufacturer for new vehicles or the vehicle's owner for those vehicles whose original carpet is being replaced. A carpet weight of at least about 8 oz., preferably about 8 oz. to about 30 oz. is generally used. A thermoplastic material which is tough, elastic and non-tacky is used as the backing. Examples of such backings include polymers of ethylenevinyl acetate, ethylene, and acrylic acid. The backings are applied to the carpet in any manner, e.g. from a dispersion or by extrusion. The thermoplastic backing material is preferably capable of being softened at a temperature of from about 300° F. to about 500° F. to a sufficient degree to be readily molded.

The carpet to be molded is cut to a size which is sufficient to result in a complete molded carpet piece, yet with as little excess as possible. Obviously, excess carpet material which must later be trimmed off the molded carpet and discarded is a waste. As discussed in the following paragraphs, the method of this invention is able to use less carpet material without affecting the quality of the molded carpet product. Interior floor surface areas of most motor vehicles are rectangular in shape; accordingly, the carpet blanks are also cut to this same general shape. The carpet's dimensions approximate the outside dimensions of a mold used in a later stage of the method. Generally, the resultant carpet blank is from about five feet to about seven feet in width and about eight feet to about fifteen feet in length to result in an area of from about 40 square feet to about 100 square feet.

The carpet blank is initially moved into a heating zone. Several transport means can be used. In one preferred method, a portable open rack is used for this purpose. The carpet blank is clamped into the open rack by yieldable holding means. The rack has a set of wheels to allow it to be moved into the heating zone and subsequent zones of the method. Other modes of trans-

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