

Dec. 28, 1965

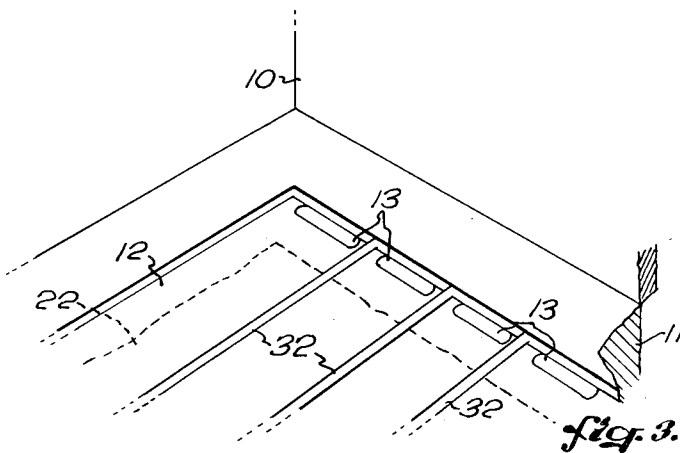
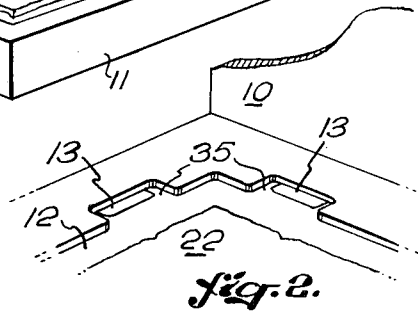
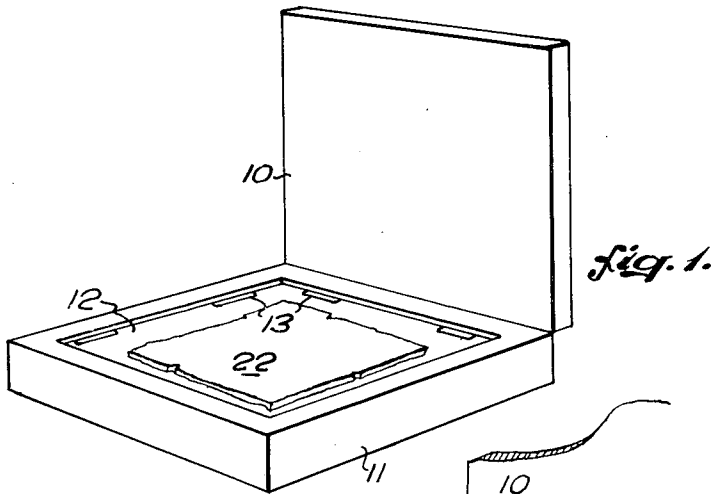
N. GRIMSHAW

3,225,366

CUSHION SUPPORTING MEMBERS

Filed Jan. 16, 1963

3 Sheets-Sheet 1



INVENTOR:

NORMAN GRIMSHAW

BY

James E. Miles
ATTY

Dec. 28, 1965

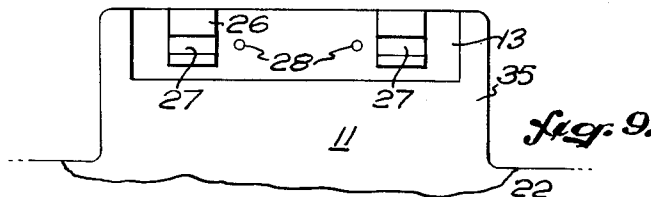
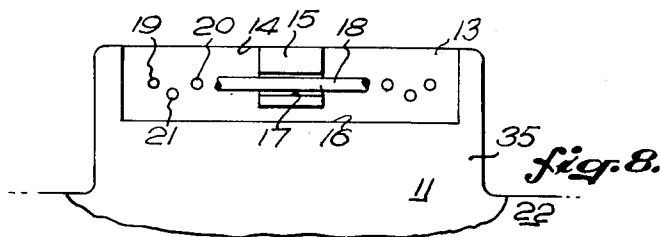
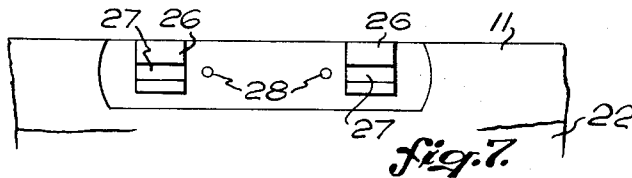
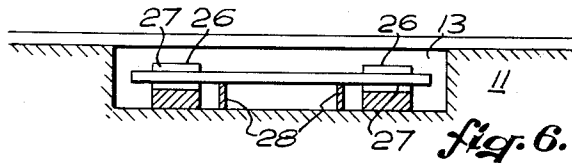
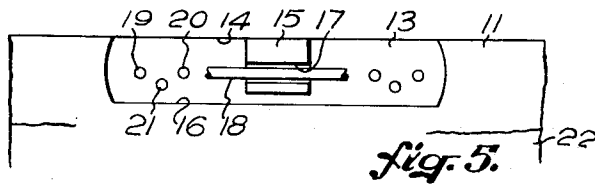
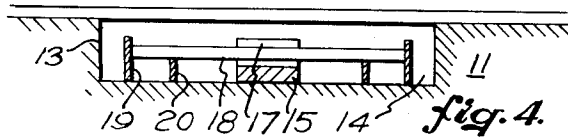
N. GRIMSHAW

3,225,366

CUSHION SUPPORTING MEMBERS

Filed Jan. 16, 1963

3 Sheets-Sheet 2



INVENTOR:

NORMAN GRIMSHAW

BY

James E. Nilles
ATTY

Dec. 28, 1965

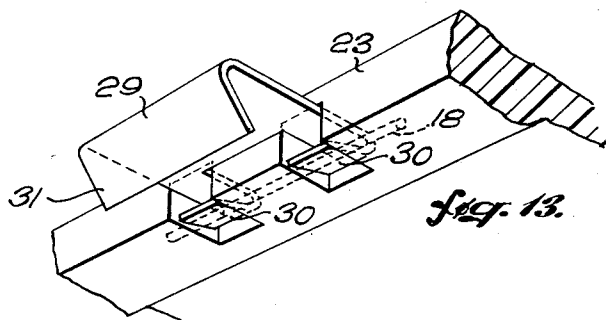
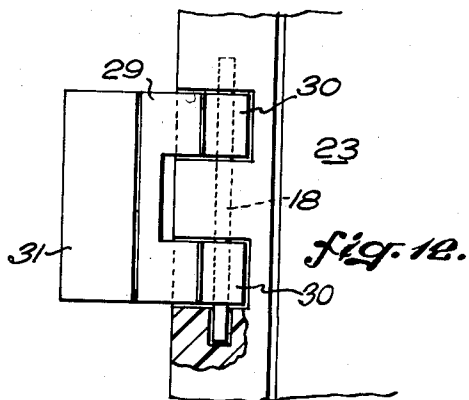
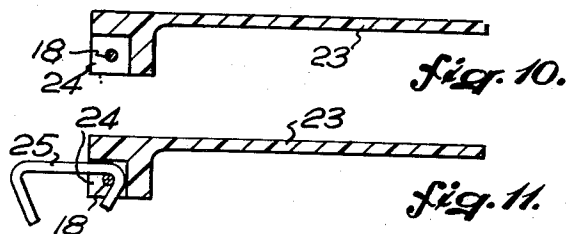
N. GRIMSHAW

3,225,366

CUSHION SUPPORTING MEMBERS

Filed Jan. 16, 1963

3 Sheets-Sheet 5



INVENTOR:
NORMAN GRIMSHAW

BY
James E. Miles
ATT'Y

1

2

3,225,366

CUSHION SUPPORTING MEMBERS

Norman Grimshaw, Ashton-under-Lyne, Lancashire, England, assignor to Vitafoam Limited, a company of Great Britain, Northern Ireland and the Isle of Man

Filed Jan. 16, 1963, Ser. No. 251,922

Claims priority, application Great Britain, Jan. 16, 1962, 1,584/62

5 Claims. (Cl. 5—236)

This invention concerns cushion supporting members, which term is to be construed as a member or members capable of being attached to the framework of a piece of upholstered furniture to support a cushion, seat back or seat squab. The term upholstered furniture is to be construed as including seating such as road, sea, rail and aircraft seating both private and commercial.

The manner in which cushions have been supported in the past has varied considerably and recently it has been found that rubber or like material is particularly useful for the purpose. Due to the variety of types of cushion to be supported however it is found that in some instances straps are the most acceptable whilst in other instances moulded rubber or like material straps do not enable the cushion to be supported exactly as desired and as a result it has been proposed to provide a platform of material upon which the cushion can be located. For example, the cushions used in vehicle seating vary in size, shape and use, namely some cushions form seats squabs whilst others form back rests. The seats themselves may be bench type, individual or bucket type or may consist of a bench type squab with individually adjustable back rest parts. In the furniture industry the variety of shapes and sizes of cushioned seats is enormous.

One of the difficulties associated with the methods used for securing cushion supports lies in the length of time taken to secure the support to the frame.

In some cases the support given to the cushion is unevenly distributed and localised relatively large non-supported areas exist which tend, after a period of use, to result in deformation of the cushion.

In the case of transport seating due to vibrations in the seat a phenomenon known as "bottoming" is also experienced. This phenomenon occurs when the limit of resilience of the support has been reached and in most cases results in an uncomfortable ride. The phenomenon becomes more noticeable as the age of the vehicle increases.

It is the object of the present invention to provide a cushion support which may be moulded to any particular requirements in one operation to the desired shape and size with consistent great accuracy and at the same time is provided with means whereby the support can easily be attached to the framework of the seat for which it was designed.

According to the present invention a cushion support moulded from a material which will flow when subjected to heat and pressure and will be resilient when cool includes at least one non-resilient rod-like member located in a position adapted for attachment of the support to a framework, the rod-like member being integral with the moulding and arranged directly to receive an attachment member of the support.

The invention also includes the method for producing the moulding including the steps of prepositioning the rod-like member in one part of a two part mould, placing in the mould a piece of the said material whose dimensions are less than the total extent of the mould, closing the mould and subjecting it to heat and pressure to cause the material to cure and encase parts of the rod-like member and thereafter removing from the mould the resilient cushion support so formed.

Preferably the cushion support is in the form of a platform and is produced by locating a plurality of rod-like members at pre-determined positions around the periphery of the mould.

In a further form the cushion support is in the form of a strap having a rod-like member at each end, the mould in this case being formed so that a plurality of straps may be produced simultaneously and if necessary subsequently separated one from the other.

Preferably the mouldable material used is uncured rubber compound which under the influence of heat and pressure flows and becomes vulcanised and resilient.

The invention will be described further, by way of example, with reference to the accompanying drawings in which:

FIG. 1 is a diagrammatic perspective view of one form of mould showing a piece of mouldable material located therein;

FIG. 2 is a diagrammatic perspective view of part of a modified form of mould;

FIG. 3 is a diagrammatic perspective view of part of yet a further form of mould;

FIGS. 4 and 5 are respectively a part sectional view and a plan view of part of the mould of FIG. 1 drawn to a larger scale;

FIGS. 6 and 7 are views similar to FIGS. 4 and 5 of modification of the mould part of those figures;

FIGS. 8 and 9 are views similar to FIGS. 4 and 5 of part of the mould of FIG. 2 drawn to a larger scale;

FIG. 10 is a sectional view of part of a cushion support moulded in the mould of FIGS. 1, 2 or 3;

FIG. 11 is a view similar to FIG. 10 showing an attachment member in position; and

FIGS. 12 and 13 are respectively an underneath plan and a perspective view of part of an article moulded in the mould of FIGS. 1, 2 or 3 showing a modified form of attachment member in position.

In the following description like parts will be given like reference numerals.

The production of a simple rectangular platform will be described but it is to be appreciated that in fact platforms of any shape can be produced by the method referred to, as can be seen from the accompanying drawings.

A mould for producing the platform consists of a lid 10 and base 11. The base 11 is formed with a rectangular depression 12 and at spaced intervals along each side of the rectangle and within its periphery are formed slots 13 referred to in detail hereafter. In the platform now being described there are eight slots 13, two of each side of the rectangle and located adjacent its corners. Since all the slots 13 in any type of mould part 11 are identical one only of each kind will be described in detail.

Extending into the first form of slot 13 (as shown in FIGS. 4, 5 and 8) from the outermost face 14 is a centrally disposed lug 15 which terminates adjacent the inner face 16. The lug 15 is provided with a slot 17 parallel to the outermost face 14 of the slot 13 and this groove 17 has a depth such that a circular rod 18, when placed therein is spaced equidistantly from the top and bottom of the slot 17. Adjacent each end of the slot 17 is a group of three pins 19, 20 and 21 which project upwardly from the base thereof. The pins of each group are located at the apices of a triangle in such a manner that the outermost pin 19 of each group (that is the pin nearest the end of the slot 17) forms an abutment for the end of the circular rod 18; the innermost pin 20 of each group serves as a rest for the rod 18 (that is to ensure that the rod 18 lies parallel to the base of the slot 17); and the intermediate pin 21 of each group serves to locate the rod parallel to the outermost face 14 or the slot 13.

To mould the platform a rod 18 is located in each slot

13 and, if necessary, the slot 13 is partially filled with small pieces of uncured rubber compound. A rectangular sheet of uncured rubber compound 22 (shown in full line except on FIG. 3 where it is shown in broken line) is placed in the depression 12 in the mould part 11. The sheet of compound 22 is smaller than the extent of the depression 12. The mould lid 10 is closed and heat and pressure are applied. The heat and pressure serve to cause the compound 22 to flow and form a homogeneous mass in the mould, completely filling it and also to vulcanise the rubber. When the rubber is vulcanised it becomes resilient and the moulded platform 23 (see FIGS. 10 to 13) so formed can be removed and any flash trimmed off. The platform 23 in the position of each lug 15 is provided with an aperture 24 so that a hook 25 (see FIG. 11) can be clipped around the exposed section of the rod 18.

In a modification of the basic arrangement and as shown in FIGS. 6, 7 and 11 there are provided in each slot 13 two lugs 26. The lugs 26 are located at positions equispaced from the centre of the slot 13 and two exposed sections of rod are produced. Each lug is provided with a slot 27 parallel to the outermost face of the slot 13. Locating pins 28 are provided adjacent each lug 26 to enable a rod, see FIG. 6, to be positioned in the central region of the slots 27. In this case a plate-like member 29 (see FIGS. 12 and 13) provided with hook formations 30 can be clipped onto the rod 18. In the case where the platform is to be attached to a wooden frame, for example, the base frame of a motor coach or like seat the plate would be flat to allow it to be nailed or screwed to the base. In the case where the plate is to be inserted in a groove in a furniture frame it would be provided with a hook end 31 as shown.

In a further modification of the basic process a plurality of straps can be produced simultaneously, see FIG. 3, each strap having a rod 18 at each end. There may be one or two exposed sections of rod 18 to allow for a variety of clips to be used. In the mould of FIG. 3 a plurality of small ribs 32 are formed in the depression 12 so that the straps when formed are only joined together by a thin lamina and may thus easily be separated.

In a still further modification the mould is provided with short extending tongues 35 (see FIGS. 2, 8 and 9) and the rods 18 are positioned at the free ends of the tongues 35 by forming the slots 13 in the parts 35 of the mould depression 12. One or two exposed sections of rod 18 may be provided.

If desired the whole of the periphery of the platform 23 may be provided with a moulded beading, not shown, to provide high resistance to tearing at the edge of the platform. To provide this beading the mould part 11 would be grooved around the periphery of the depression 12.

To attach a furniture support to a framework the desired clips 25 or 29 are attached to the rods 18 and one end or side of the platform is attached to the furniture frame, the remaining clip or clips being attached to the frame whilst the rubber is held under tension.

One advantage of the invention lies in the fact that the support is produced in a single moulding operation. In addition the strength of the assembly is extremely high since the rods 18 become in effect integral with the rubber and except for a short section or sections for the attachment of clips 25 or 29 is completely em-

bedded in the rubber. Since the rod extends over substantially the whole length of the slot the cushion support when moulded is capable of withstanding high loading due to the fact that the load applied is evenly distributed over a relatively large area of the support due to the length of the rods 18.

It will be appreciated that in the case of a platform the design of the latter of the positioning of the rods can be made to suit any specified requirements and that the positioning of the rods can be arranged to suit any particular loading requirements.

I claim:

1. A resilient sheet-like cushion support moulded from a material which will flow when subjected to heat and pressure and will become resilient when cold, at least one rod-like non-resilient member located in said support in a position in which it can receive an attachment member which serves to attach said cushion support to a framework, said rod-like member being located in said material during moulding.

2. A cushion support as set forth in claim 1 in which said material which will flow when subjected to heat and pressure and will become resilient when cold is uncured rubber compound said rubber compound being resilient when vulcanised.

3. A resilient sheet-like cushion support moulded from a material which will flow when subjected to heat and pressure and will become resilient when cold, a plurality of rod-like non-resilient members located in said support in positions in which they can receive attachment members which serve to attach said cushion support to a framework, said rod-like members being located in said material during moulding to become integral therewith.

4. A resilient and flat cushion support moulded from a material which will flow when subjected to heat and pressure and will become resilient when cold, said support being, when moulded, in the form of a strap, a rod-like non-resilient member located at each end of said strap each to receive an attachment member to enable said strap to be secured to a framework, each of said rod-like members being located in said strap during moulding to become integral therewith.

5. A resilient and sheet-like cushion support moulded from a material which will flow when subjected to heat and pressure and will become resilient when cold, said support, when moulded, being in the form of a sheet, a plurality of rod-like non-resilient members located at spaced intervals around said sheet each to receive an attachment member to enable said sheet to be secured to a framework, each of said rod-like members being located in said sheet during moulding to become integral therewith.

References Cited by the Examiner

UNITED STATES PATENTS

2,706,832	4/1955	Frost et al.	18—38
2,736,907	3/1956	Fernroth	5—191
2,788,531	4/1957	Dye et al.	5—191
3,039,146	6/1962	Engel	18—38
3,049,730	8/1962	Wall et al.	297—455 X
3,068,493	12/1962	Farstrup	5—191
3,087,756	4/1963	Flint	297—456 X

FRANK B. SHERRY, *Primary Examiner*.