Oct. 30, 1934. H. J. WOODALL 1,979,131

TRIM PANEL

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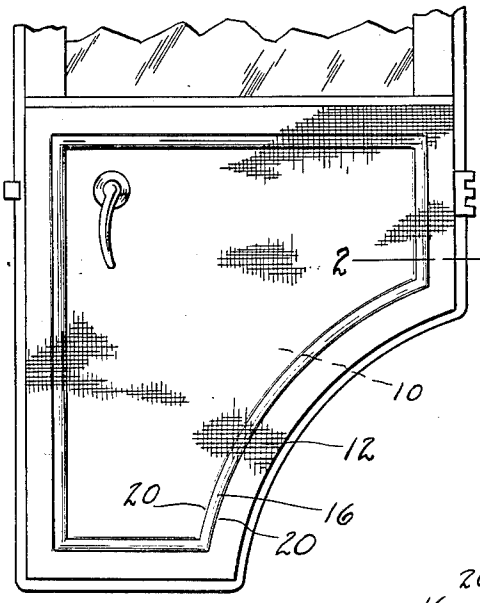


Fig. 1

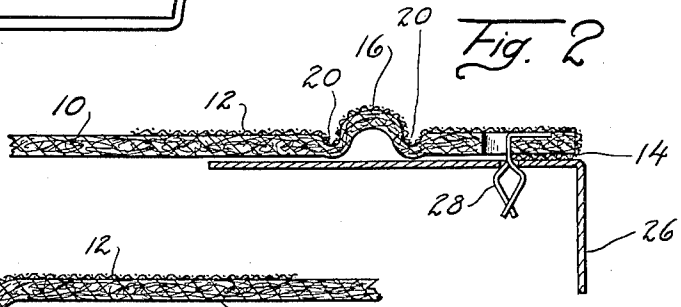


Fig. 2

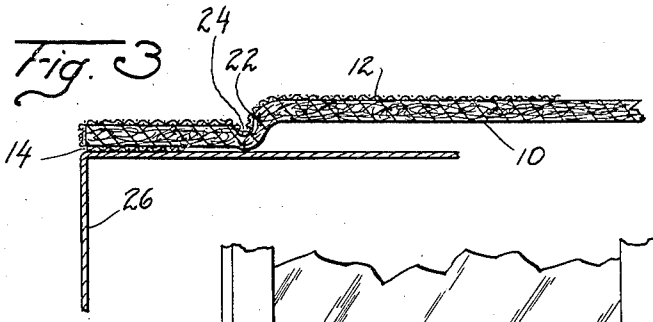


Fig. 3

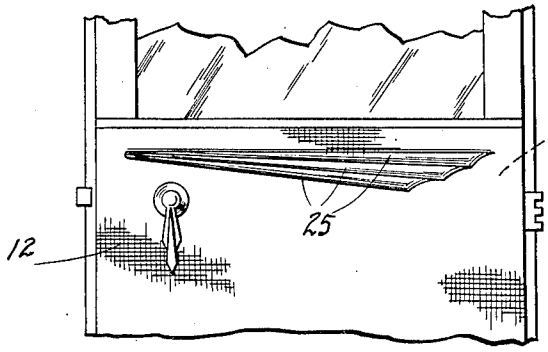


Fig. 4

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TRIM PANEL

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5 Claims. (Cl. 154—2)

My invention relates to covered panels and particularly to automobile interior trim panels wherein the foundation of the panel is formed of suitable composition fiber board or other foundation material the outer face of which is covered with suitable upholstery fabric or the like.

An object is to provide such a panel wherein the upholstery cloth or other covering material is secured directly to the surface of the foundation board and wherein decorative beadings, risers, or other embossments of design are formed in the foundation board and wherein the construction is of such a character that the covering material is drawn taut over the embossment and locked to the board at the base of the embossment in such a manner as to prevent accidental detachment along such line and so that the embossed design stands out sharp and clear against the background of the panel.

In carrying out this object I provide an outlining groove or channel adjacent to the base of the embossment into which the covering material is creased or folded and securely anchored below the outer surface of the foundation board against any tendency to loosen or withdraw therefrom.

By driving the covering material in the form of a fold into the outlining groove or channel the covering material is drawn taut over the embossment and is provided with a portion in the form of the fold which is anchored securely against any tendency of the material when under tension to pull away from the juncture of the plane which the embossment forms with the normal plane of the panel board.

This outlining groove or channel at the base of the embossment also forms what might be termed a shadow line which heightens the appearance of the decorative embossment and sets the same off so that it stands out sharp and clear against the background of the panel and due to the drawing of the covering material in what might be termed a fold or crease into said outlining groove the material is drawn taut over the embossment and held secure against loosening thereby maintaining during the life of the article this desirable appearance.

The bead riser or other decorative embossment serves in certain desirable modifications another important and meritorious purpose, in that it may extend entirely around the panel spaced from its margin separating the central portion of the panel from the marginal portion by an interiorly compacted barrier. In this particular construction the outlining groove or channel alongside the base of the embossment is compacted to a density greater than and a thickness less than these normal characteristics of the panel board. This serves together with the embossment itself as a barrier against capillary seepage of moisture from the marginal portion of the panel beyond such line to the central expanse of the panel on the opposite side of the barrier line. The plane outer surfaces of the panel are waterproofed against undesirable seepage of moisture therethrough but moisture tends to enter the marginal portion through the raw cut edge which results from cutting the panel to size and it is this moisture the ingress of which is inhibited or prevented entirely by this barrier line.

Undue seepage of moisture into the interior expanse of a panel tends to produce buckling and warping. The prevention or minimizing of this seepage beyond an undesirable extent therefore prevents this disastrous result. In applicant's copending application, Serial No. 503,851, Patent 1,914,003, the provision of a marginal bead spaced from the cut edge and forming a densified barrier around the interior expanse of the panel against passage of moisture from the marginal portion is disclosed and claimed and to that extent this disclosure is there indicated.

A further feature is that the outlining groove or channel produces a lateral displacement of the material of the board upon the opposite side of the panel from the embossment forming thereby a hinge like joint along the line of the embossment and the groove which tends to compensate for warping which may occur within the marginal portion.

Other important features and meritorius characteristics will more fully appear from the following specification, appended claims, and accompanying drawing, wherein:

Figure 1 is an illustration of an embodiment of my invention in a trim panel mounted upon a supporting frame,

Figure 2 is a cross sectional view through the panel shown in Figure 1 and the supporting frame to which it is secured, as indicated by the section line 2—2,

Figure 3 illustrates an embodiment of my invention wherein a riser rather than a bead is the form of embossment employed, and

Figure 4 illustrates an embodiment of my invention wherein a plurality of beads in the form of a design are employed.

In the drawing let 10 indicate the foundation board of the panel. This foundation board may

be formed of any suitable material. A preferred type of material is a composition fiber board carrying a substantial content of a colloidal asphalt compound which imparts a thermoplastic characteristic to the board that renders it responsive under heat and pressure to assume and retain a stamped shape.

The panel foundation boards are cut from large sheets of material. The cutting of the material leaves a raw cut edge and the foundation boards which constitute the body portions of the panels are more susceptible along these cut edges to the ingress of moisture than at any other point. The treatment and process of manufacture are such that the plane surfaces of the board are rendered substantially immune to the seepage of moisture therethrough but the cut edges of the boards are susceptible to its ingresss.

After being cut to the proper size and shape the panel board is covered with suitable trim or upholstery material 12. This trim material is preferably folded over the edges of the board as indicated at 14. An adhesive suitable for the purpose is employed to secure the covering material in place on the board.

The covered panel boards are then subjected to the stanmping operation to produce the desired embossment as illustrated in the drawing. In the construction shown in Figures 1 and 2 the panel is subjected to a stamping operation which produces a bead 16 extending along and spaced from the margin of the panel and enclosing a central expanse of the panel separating the same from the marginal portion. The material within the bead is compacted to a density greater than and a thickness less than these normal characteristics of the panel board as will appear from Figure 2 of the drawing.

The stamping operation is so carried out that there is provided along the base of the embossment, the bead 16 in Figures 1 and 2, and outlining grooves or channels 20 wherein the material of the panel board is densified and compacted to an even greater degree than along the line of the embossment and into which outlining grooves the covering material 12 is forced under pressure and anchored. In the embossing operation the covering material is drawn taut over the convex embossment and is driven into the locking grooves or channels 20 wherein it is securely anchored against release.

It has been heretofore found that if the bead 16 or other embossment rises directly from the plane of the panel board that, in the absence of stitching or the like, the covering material has a tendency to pull away from the base of the bead and stretch from the top of the bead to a point spaced from the base. The tendency is for it to pull away from the juncture of the two planes along which it is stretched. This destroys the appearance of the bead formation and produces an undesirable looseness in the material and renders such a construction unsatisfactory. To overcome this it has been the practice heretofore to stitch the material alongside the base of the bead. This stitching adds a costly manufacturing operation and furthermore perforates the foundation board within the boundary of the compacted line which forms the barrier to the seepage of moisture from the marginal portion and provides needles perforations from which moisture can commence its seepage into the interior of the panel. Furthermore, the stitching acts as wicking carrying moisture into the interior of the panel board to infiltrate therethrough.

By the provision of these locking grooves along the base of the bead the covering material is, during the stamping operation, creased or folded into the grooves and this crease or fold is driven into the grooves under the pressure of the stamping operation and is then locked within the thickness of the material itself and is securely held therein, stretching the covering material tight over the bead and causing the bead to stand out sharp and clear against the background of the panel board and notwithstanding the tension which has been placed on the covering material it is held therein against withdrawal or loosening during the life of the structure.

In addition the outlining grooves or channels form a compacted line wherein the material of the composition board is compressed to a maximum density and a minimum thickness consistent with the material itself and the barrier formed by the bead to the passage of moisture from the marginal portion is increased by the resistance offered by the compacted line along the grooves. Furthermore, the formation of the groove produces a deformation upon the opposite side of the panel in the form of a secondary bead extending in the opposite direction from the primary embossment bead. These two beads acting together serve to provide a line of flexibility greater than that produced by a single bead and which compensates for any tendency to warp in the marginal portion of the panel.

In Figure 3 an embossment of a different character is shown. In this construction a riser 22 is provided. Along the margin of the riser the material is compressed. The groove 24 outlining the riser is formed. The material along this groove is compacted and compressed as hitherto described. The covering material is folded and creased into the groove as shown and above described. It is thereby securely locked therein against detachment. The riser is thereby outlined sharply against the background of the panel.

In Figure 4 the same result is obtained in another form. In this figure a decorative embossment consisting of a plurality of beads 25 is shown. Such a decorative embossment may obviously be provided in many different forms. In whatever form the embossed design appears there is an outlining groove or channel into which the material is folded and locked as above described. In each case by the provision of this outlining groove and the forcing of the covering material into a crease or fold therein it is stretched taut over the embossment and is securely locked in place against pulling away from the embossment at the base and it serves to sharply and clearly outline the embossment against the plane of the board causing the material to retain its intended position and enhancing substantially the beauty and appearance of the design. Such a trim panel may be secured to any type of supporting structure in any conventional manner.

In Figure 2 the frame is indicated as 26. It is provided with an opening into which a fastener 28 is received. The fastener engages through an opening in the panel board securing the same in place. This is outside the bead line.

What I claim:

1. A trim panel comprising a board of fibrous thermoplastic material responsive under heat and pressure to assume and permanently retain an embossed design, fabric covering material adhesively secured over one surface of the board, said board and covering material being shaped under

heat and pressure providing an embossed design in the board over which the covering material is stretched taut and providing an outlining groove in the board along the base of the embossed design, said covering material being forced into said groove and securely locked therein.

2. A trim panel comprising a panel board of composition fibrous material, flexible covering material adhesively secured over one surface of the board, said board provided with an embossment over which the covering material is stretched taut, and provided with an outlining groove along the base of the embossment, said covering material being driven in the form of a fold into said groove and securely locked therein.

3. That method of forming a trim panel comprising adhesively securing trim material over one surface of a fibrous thermoplastic panel board, stamping said covered panel body under heat and pressure producing an embossment therein and producing a debossed groove along the base of said embossment and forcing the trim fabric into said debossed groove.

4. A trim panel comprising a panel board of composition fibrous material, flexible covering material adhesively secured over one surface of the board, said board provided with an embossment over which the covering material is stretched taut, said covering material being driven into the board along the base of said embossment to securely lock the same therealong.

5. A trim panel comprising a board of fibrous thermoplastic material responsive under heat and pressure to assume and permanently retain an embossed design, fabric covering material adhesively secured over one surface of the board, said board and covering material being shaped under heat and pressure providing an embossed design in the board over which the covering material is stretched taut, said covering material being driven in folds into depressions formed in the board along the base of the embossment securely locking the material therealong.

HERBERT J. WOODALL.