

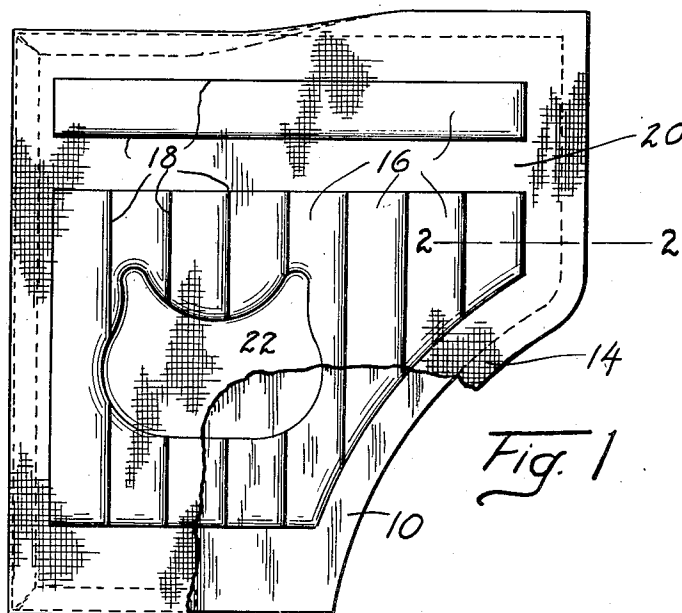
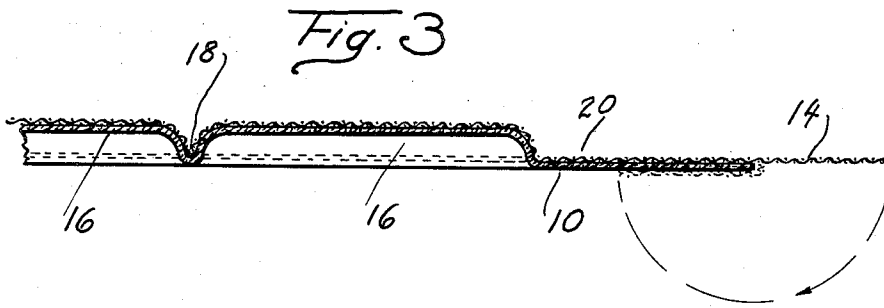
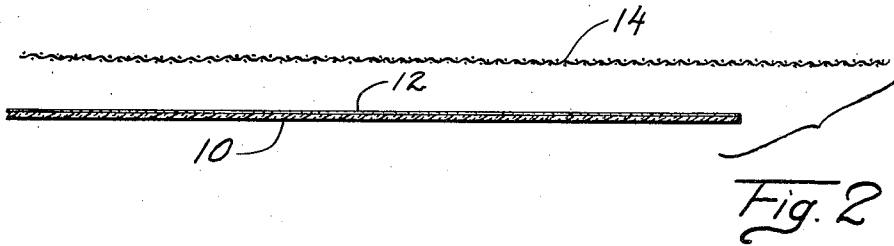
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METHOD OF CONSTRUCTING DOOR PANELS

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METHOD OF CONSTRUCTING DOOR PANELS

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1 Claim. (Cl. 154—41)

My invention relates to laminated water proof panels particularly intended for automobile interior trim use and to the method of their manufacture.

5 Trim panels for automotive vehicle bodies have in the past been made of materials so formed and arranged as to provide an imitation of other and more expensive materials. One of the most common methods of constructing trim panels has
10 been to utilize a backing of fiber board in conjunction with a layer of upholstery of any desired type which was secured to the fiber board backing. Securing a layer of upholstery material, or trim fabric, over a plane fiber board backing was
15 not entirely satisfactory. Various disadvantages were attendant upon this type of construction.

If the fabric were stretched tightly over the board it was difficult to avoid the disastrous effect of moisture to which such panels are subject.
20 Moisture tended to produce warpage or buckling of the panel board and as a result the trim fabric stretched, wrinkled, or gathered, producing an unsightly unattractive appearance.

It was also customary to provide a layer of so-called "wadding" between the fiber board backing and the trim material, not only to overcome this difficulty but to give an upholstered effect to the finished panel. This wadding was of felt, cotton batting, or other such suitable substance.
30 The trim material which covered the wadding was generally stitched to the fiber board backing at various points for the purpose of retaining the wadding in place and preventing its collection in lumps. Stitching also served to give the panel a decorative effect by breaking up what would
35 otherwise be a normally plain surface.

This operation of providing a layer of wadding and subsequently stitching the trim material to the backing added materially to the cost of production and an object of this invention is to eliminate the necessity therefor while at the same time securing equally satisfactory results insofar as maintaining a permanently smooth and decorative trim surface and providing an effect
40 of upholstery depth and body to the panel.

Several individual features of this invention, as such, may have been known before but it is believed that the association of ideas involved and the particular materials in conjunction with the process of treating the same hereafter to be disclosed are novel.
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As hitherto stated, the incorporation of the wadding between the trim material and the fiber board backing in the practice of the prior art necessarily and designedly created in the finished
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trim panel an effect of depth, body, and elegance which could not be secured by simply superimposing a layer of trim material upon a plane cardboard backing. My invention looks toward the provision of such an effect without the use of
5 wadding or stitching and in a cheap and inexpensive construction.

In the carrying out of my invention I employ as a backing or foundation for my improved panel a fiber board possessing thermoplastic and water resistant characteristics. Such material is capable of being embossed to provide any desired surface contour and is capable of retaining the shape so imparted to it throughout its normal life. A fiber board having a substantial
10 content of asphaltum has been found very suitable for this purpose. By so embossing the backing to produce a desired surface contour, the effect of the wadding on the exterior surface of the trim material may be reproduced in all its
15 detail, the embossing being of a nature to reproduce the effect of normal upholstery.

While it is possible to secure the trim material to such a backing after the latter has been embossed to produce the desired surface contour, this practice is attended with difficulties and it is not my intention so to do. I prefer to first associate the trim material with the thermoplastic cardboard backing by a suitable adhesive and to subsequently emboss the entire composite
25 structure. Several important advantages attend this procedure, one being that a continuous strong bond between the trim material and the backing throughout the entire adjacent surfaces of the two may more readily be secured in this
30 manner and that the fabric and adhesive are molded, as it were, with and into the shaped contour of the foundation board so as to provide a smooth exposed surface throughout the entire exposed face of the panel as if every portion had been carefully stretched by hand and in a similar manner secured in position.
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It is important that the adhesive be in a viscous condition at the time the composite material is embossed to reproduce the "wadding" effect. When the adhesive is in its viscous condition it is capable of flowing, upon being subjected to the pressure of the embossing operation, with sufficient freedom to insure a continuous adhesive bond over the entire adjacent
40 surface, as distinguished from intermittent and scattered points of attachment of the materials.

There are several ways of insuring a satisfactory flow of the adhesive during the embossing operation. One of them is to subject the com-
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posite material, the backing with the trim material spread thereover upon a layer of adhesive, to the embossing operation shortly after the trim has been spread over the backing. By so doing the adhesive will not have had time to dry and crystallize, but will still retain a certain amount of its viscosity and flow with sufficient freedom for the purpose. Another procedure, and this one is particularly adaptable for use in conjunction with thermoplastic material of the nature heretofore described, is to subject the composite material to a certain amount of heat during the embossing operation.

The preferable manner of manufacturing the improved panel will now be described in some detail in conjunction with the drawing wherein:

Fig. 1 is a side elevation of the semi-completed panel, partly broken away,

Fig. 2 is a fragmentary sectional elevation illustrating one stage of the process, and

Fig. 3 is a section through 2-2 of Fig. 1.

A plane surfaced backing 10 of thermoplastic material such as commercial K-B fiber board, which is a composition fiber board carrying a substantial asphaltum content as a binder and water resistant agent, is coated with a layer of a suitable adhesive 12. An adhesive should be used which does not have a tendency to "bleed" the asphalt or binder from within the sheet to the surface thereof and which would also serve as a barrier to prevent bleeding of binder from the board to the fabric such as latex. A layer 14 of trim material of any suitable type is then spread over the adhesive and the composite laminated panel structure so formed is then placed in the embossing dies and subjected simultaneously to such heat and pressure as is necessary to shape the surface contour of the thermoplastic sheet as desired.

In the structure illustrated in the drawing, my composite panel has been embossed to produce a series of decorative elevated portions 16. These may be of any desired size and shape and create the same effect as if the backing had been provided with layers of wadding over these particular portions and the trim stitched to the backing through the wadding along the lines 18. This effect is possible only because the bond between the backing and the trim produced by this particular process is sufficiently strong and con-

tinuous to retain the fabric closely united to the backing over the entire area of the panel, along the lines of joinder 18 which simulate the stitch lines, and the plane expanse 20 of the finished panel.

In the form illustrated a pocket depression 22 has been included in the embossed portion of the panel. The necessity of stitching along the periphery of this pocket portion is also eliminated.

The result is a composite panel comprised of inexpensive component materials securely and permanently united into a single composite panel possessing all of the advantages, both as to appearance and structure, inherent in the wadded and stitched type of panel without the disadvantage of wadding, cost of manufacture, or tendency of the wadding to deterioration. The overlapping edges of trim material may be folded back and glued to the rear surface of the backing board, or they may be cut off and a binding secured about the edges of the panel.

While as is hitherto stated, the individual materials and operations involved in this invention are not necessarily of and in themselves novel, the use of the materials in the combination specified in conjunction with the steps indicated heretofore result in an extremely inexpensive and suitable trim panel which is superior to the structure hitherto utilized and which is far less costly to produce.

I claim:

That method of manufacturing a laminated trim panel comprising applying to the surface of a composition fiber board carrying an asphaltum binder a layer of moisture resistant adhesive neutral to the asphaltum content of the board to form a barrier thereover sealing the asphalt in the board against migration, spreading a sheet of fabric finish material over the adhesive coated surface of the board, subjecting the covered board to a forming operation employing heat and pressure to impart a determined design to the covered surface of the board causing the adhesive to secure the fabric thereto without impregnating the same sufficiently to affect the outer surface thereof and without breaking the barrier layer so as to expose the asphaltum impregnated foundation board.

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