

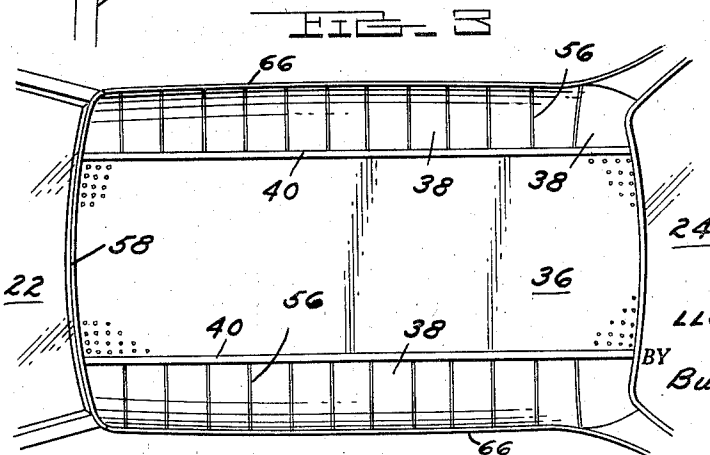
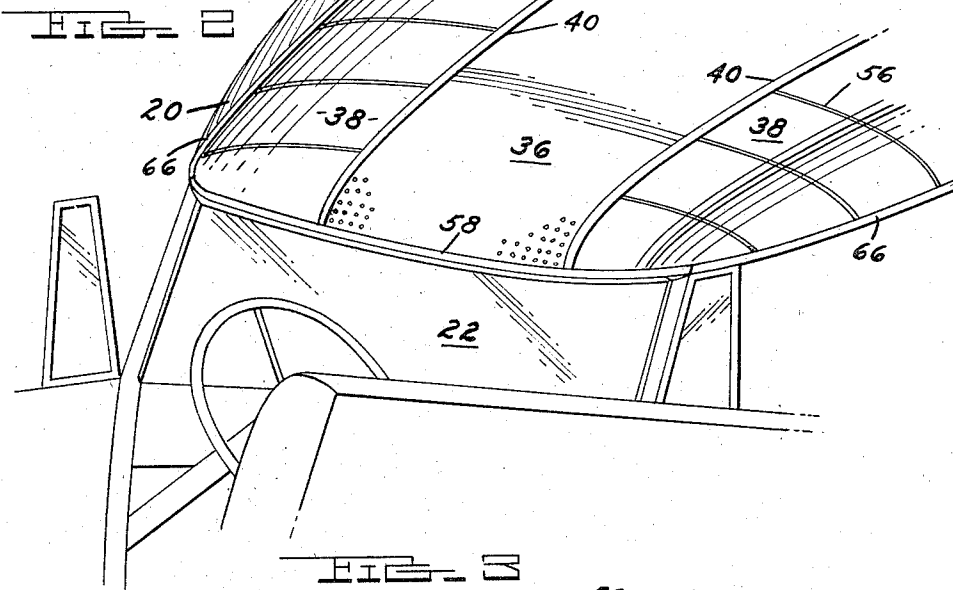
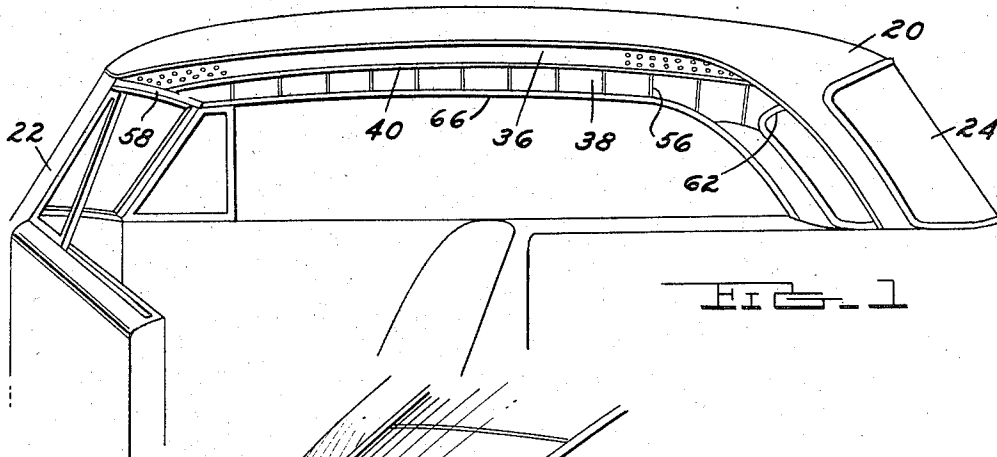
March 24, 1959

L. E. STAHL
HEAD LINING ASSEMBLY

2,879,105

Filed March 7, 1956

3 Sheets-Sheet 1



INVENTOR.
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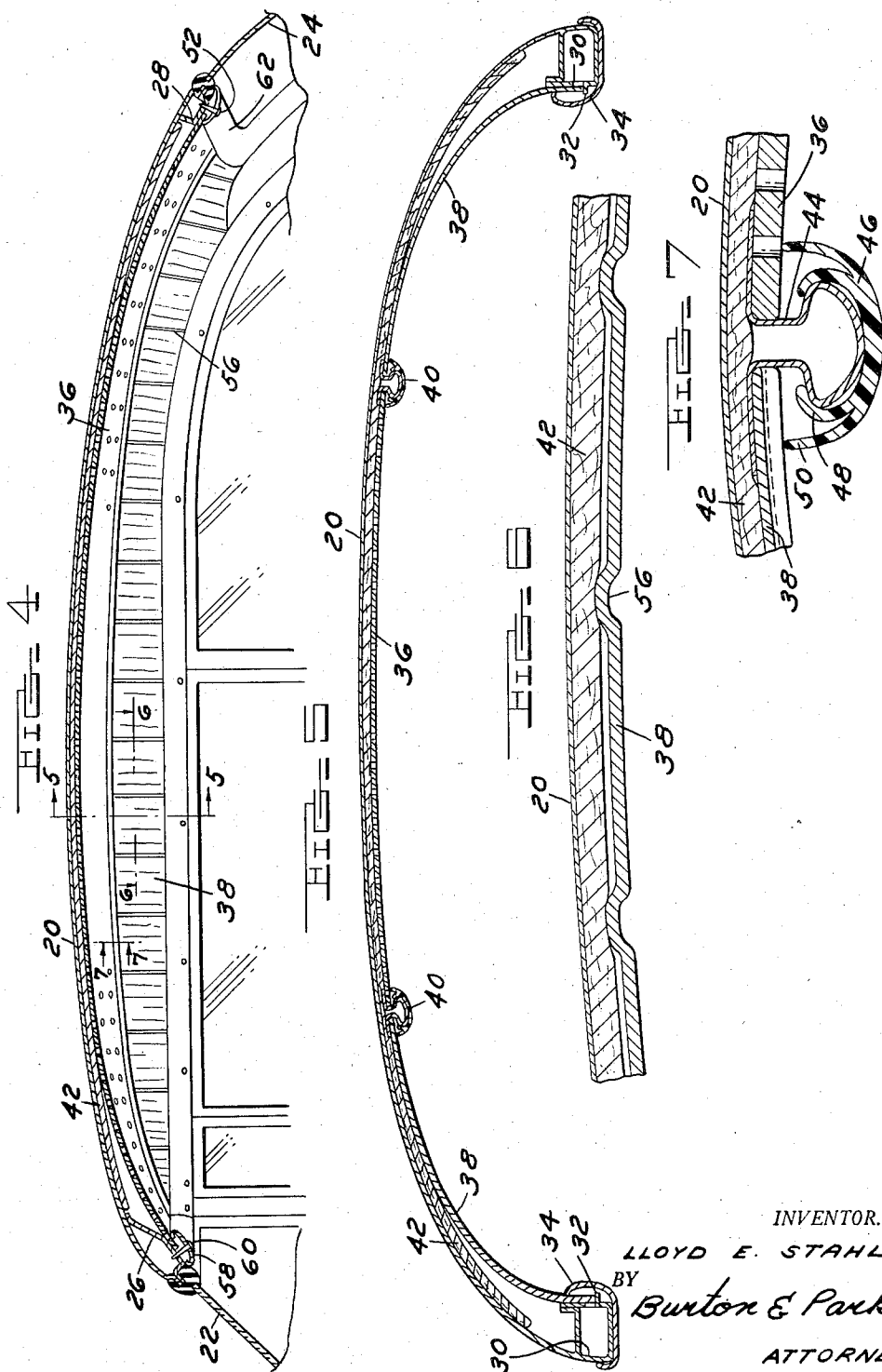
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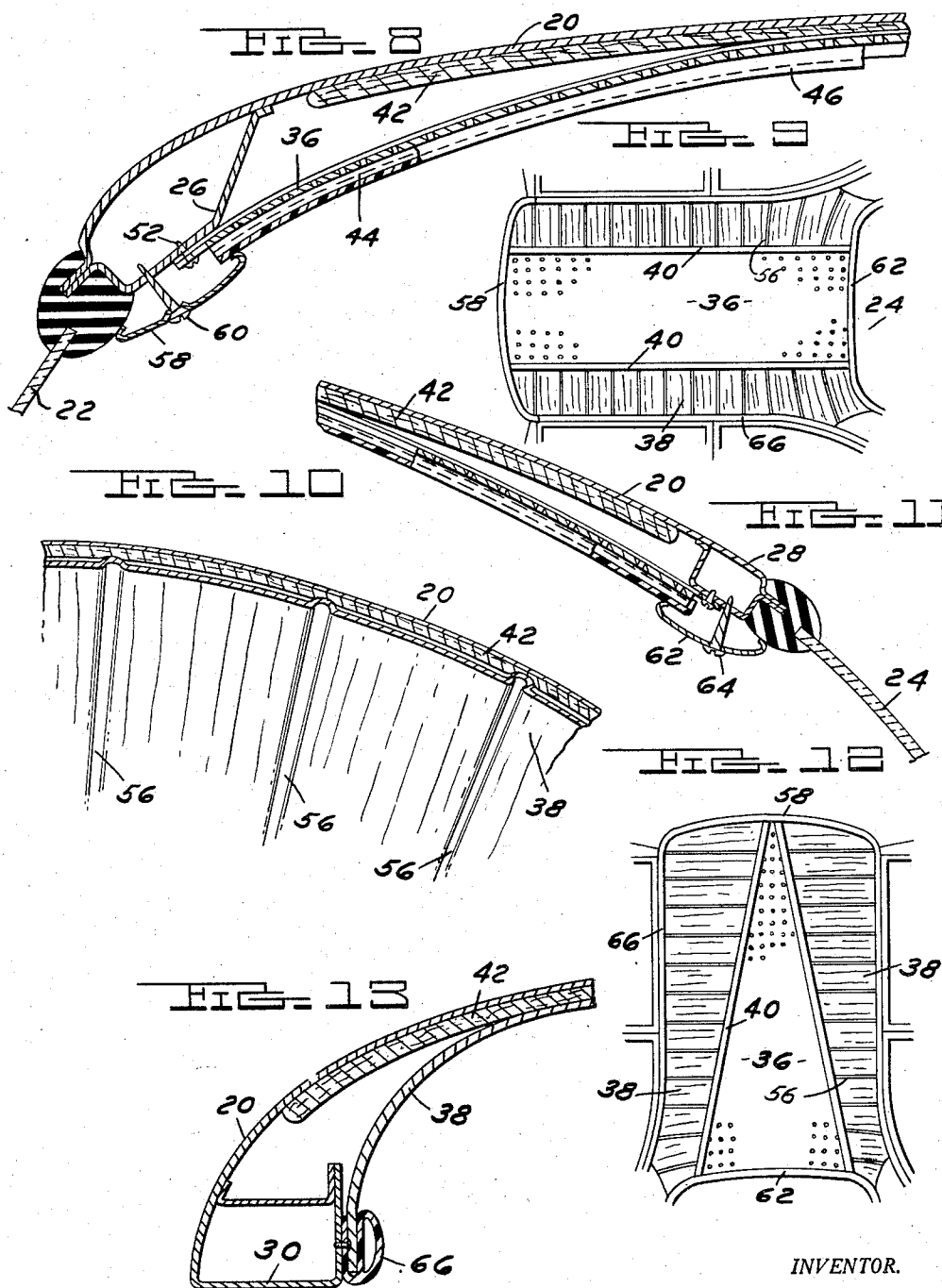
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3 Sheets-Sheet 3



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2,879,105

HEAD LINING ASSEMBLY

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Application March 7, 1956, Serial No. 570,089

6 Claims. (Cl. 296—137)

This invention relates to an improved head lining assembly for a vehicle body.

It is particularly designed as a head lining for a motor vehicle which travels over the road and wherein the roof and head lining of the body are subjected to vibration during such travel.

An object is to provide a head lining assembly which is neat and attractive in appearance and is capable of being quickly and easily installed in position with a minimum of effort.

Another object is the provision of such a head lining wherein the lining is supported at its edges by supporting means secured to the opposite side walls of the vehicle and the lining is bowed upwardly toward the roof and tensioned upwardly to resist any downward pressure of the roof and to damp out vibration thereof.

It is customary in automobile body trim work to provide an insulation pad or the like on the underside of the metal roof of the body which pad may serve the purposes of sound insulation and heat insulation. This improved panel assembly is so formed and tensioned upwardly toward the roof as to directly engage this pad throughout at least the intermediate area of the roof and exert an upward tension thereagainst toward the roof.

In automobile body design the roof normally exhibits a relatively flat or slightly arcuate area throughout its central portion. Along opposite side walls of the body there are cove portions wherein the roof blends into the side walls. This is generally true along not only the opposite longitudinal side walls but the front and rear walls. These cove portions present areas which exhibit compound curves or arcs and wherein a panel to conform generally thereto must be bent to exhibit such a compound curve. In the instant construction the head lining assembly comprises panels which extend fore and aft of the vehicle. These panels are held in alignment by matching and supporting strips extending between and embracing adjacent margins of adjacent panels. The strips and the panels constitute the head lining assembly. These panels and strips are flexible, self-supporting, and preferably resilient.

When the assembly is secured within the body opposite ends of the supporting and matching strips are secured to supporting means provided within the body at the front and at the rear and so secured that the strips are bowed upwardly and the panels held by the strips are bowed upwardly toward the roof. The assembly includes an intermediate panel which extends generally along the longitudinal center line of the body and two side panels or cove panels disposed on either side of this intermediate panel. This intermediate panel and the two cove panels are held in alignment by the matching and supporting strips. The outer margins of the cove panels are supported upon panel supporting means extending along opposite sides of the body below the roof. These cove panels are so supported that their opposite longitudinal margins exert a pressure against the longitudinal margins of the intermediate panel so as

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to assist in holding such intermediate panel bowed upwardly toward the roof. The entire panel and strip assembly is therefore bowed in a fore and aft direction and in a transverse direction underneath the roof and held tensioned upwardly toward the roof in both directions. It therefore exerts a strong force to resist any downward deflection of the roof and to damp out any vibration thereof.

In shaping the panel assembly to conform with the underside of the roof and particularly through the cove portions thereof the side panels or cove panels are bent on compound curved lines. To facilitate this bending without resulting rupture or breakage of the panel these cove panels are provided with a plurality of beads or corrugations which extend transversely of the panel and which form hinge lines to facilitate bending of the panel. These beads may be expanded or contracted. Along one longitudinal margin of the panel a bead may be extended or flattened, while along the other longitudinal margin of the panel it may be compacted. This is important in facilitating the accommodation of the cove panel to the curvature demanded.

A meritorious feature is that to augment the resiliency of the cove panels the fiber grain may be extended in the same direction or parallel to the direction of extension of the beads.

This application is a continuation-in-part of an application this day filed, Serial No. 569,998, and now abandoned, which is a continuation-in-part of my abandoned application Serial No. 529,243 filed August 18, 1955, and a companion case to my abandoned application Serial No. 529,188 also filed August 18, 1955.

Other objects, advantages, and meritorious features will more fully appear from the following description, appended claims and accompanying drawings, wherein:

Fig. 1 is an interior view of an automobile showing a portion of the head lining embodying this invention;

Fig. 2 is an interior view of the front end of an automobile showing the head lining;

Fig. 3 is a view looking upwardly at the head lining in a motor vehicle embodying the invention;

Fig. 4 is a longitudinal sectional view through the roof at the head lining of a vehicle body embodying the invention;

Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 4;

Fig. 7 is a fragmentary sectional view taken on the line 7—7 of Fig. 4;

Fig. 8 is an enlarged fragmentary view taken on a longitudinal sectional line through the front end portion of the head lining;

Fig. 9 is a plan of a head lining assembly of one embodiment of the invention;

Fig. 10 is a fragmentary sectional view through the cove panel portion of the head lining assembly;

Fig. 11 is a fragmentary longitudinal sectional view taken through the head lining assembly at the rear end thereof;

Fig. 12 is a plan showing a modification of the assembly as compared with the structure of Fig. 9; and

Fig. 13 is a fragmentary sectional view through the cove portion of a head lining adjacent to the side wall of the body.

This invention is illustrated as embodied in an automobile body having a roof portion 20, a front windshield portion 22 and a rear window portion 24. The roof is commonly formed of metal. The body construction other than as described herein is conventional in motor vehicles. Opposite ends of the roof merge into a front

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wall defined by the windshield and a rear wall defined by the rear window. Opposite sides of the roof merge into side walls which are commonly provided with doors and windows. The metal roof at the front may be provided with a boxlike frame portion 26 shown in Figs. 4 and 8. It may be provided at the rear with a boxlike frame portion 28 shown in Figs. 4 and 11. At the side the roof may be shaped and reinforced to provide a boxlike side frame 30, as shown in Figs. 5 and 13. The side frame 30 may have a series of lugs 32 struck therefrom as shown in Fig. 5 to serve as a head lining supporting means and a molding plate 34 may be provided associated with the boxlike frame 30 as shown in Fig. 5.

The head lining assembly itself comprises a plurality of flexible panel sections which extend fore and aft of the vehicle under the vehicle roof. These panel sections have associated therewith panel supporting and matching strips which are also flexible and preferably resilient. In Figs. 1, 2 and 3 the assembly is illustrated as comprising a center line panel 36 and two side panels 38. The matching and retaining strips are indicated generally by the numeral 40 as shown in Figs. 1, 2 and 3. The construction of this application is generally similar to the construction of my co-pending application referred to hereinabove in that each comprises an assembly of panels and supporting and retaining strips so associated together that the assembly is bowed upwardly toward the underside of the roof and held bowed and tensioned upwardly toward the roof and against the underside of the roof. The instant construction differs from the construction of the co-pending application, supra, in that the panel assembly is tensioned upwardly toward the roof and against the roof both fore and aft and transversely. It also differs in the provision of the particular side panel or cove panel sections and the manner in which they are associated with an intermediate panel disposed therebetween, all as herein described.

In the several figures of the drawings the underside of metal roof 20 is shown as having adhesively secured thereto an insulation pad 42 of suitable fibrous wadding such as fiberglas or the like. This serves as sound and heat insulating insulation.

The intermediate or central panel 36 may be formed of Masonite or the like provided in the form of a relatively dense normally resilient thin hard board which may be provided with a multiplicity of perforations as shown to permit passage of sound waves therethrough to the insulation pad 42. This perforated Masonite panel may have a suitable lacquer or other finish coat applied to its undersurface. As shown in Figs. 1, 2, 3 and 9 such panel is of substantially uniform width and extends fore and aft along the center line on the underside of the roof. As shown in Fig. 12 such panel may be of a generally triangular shape having a greater width at one end than at the other.

Along opposite linear margins of this panel 36 I provide matching and supporting strips identified generally in Figs. 1, 2 and 3 as 40. Each of these strips is a two piece strip as shown in Figs. 5 and 7. These strips are the same as those shown in my said co-pending application. There is a base or male portion of the strip identified in Fig. 7 as 44 and a cap or female portion 46. The base portion is formed generally in cross section somewhat in the fashion of a railway rail. The cap portion has a pair of spring lips 48 which are adapted to be snapped over the head of the rail. The cap portion has a pair of side walls 50 which are adapted to engage panels received over the base portion when the lips 48 of the cap are snapped over the head of the base portion, all as shown in Fig. 7. This is all more particularly described in the co-pending application.

Opposite ends of the base portion 44 of the strips may be secured by screws 52 or the like to front boxlike frame portion 28 as shown in Fig. 4. These strips are of such a length that when the ends are secured as shown

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the strips are bowed upwardly toward the underside of the roof. The strips are preferably of resilient metal or the like so that they are tensioned upwardly against the underside of the roof throughout the longitudinal mid section of the roof. When these strips are secured in position as described and the center panel is placed thereon and the cap strips are secured in their overlying relationship, all as shown in Figs. 5 and 7, the center panel is secured bowed upwardly against the underside of the roof and held there by the strips. This center panel of perforated Masonite or the like is also resilient.

On either side of the center panel 36 the side panels 38 form cove panels overlying the cove portions of the roof but spaced therebelow and inwardly therefrom by the dimension of the box frame elements 30, all as shown in Figs. 5 and 13. These side panels are formed of suitable flexible sheet material. Composition fiberboard may be employed. These panels must be bent to exhibit a compound curvature because of the shape of the cove portions particularly at their ends as illustrated in Figs. 2 and 4. The curvatures which must be assumed by opposite margins of these side panels vary not only from place to place but on opposite sides.

To facilitate this bending into more than one arcuate design the side panels are provided with a plurality of beads or corrugations 56 which are shown as extending generally transversely of the panels. These beads are deformed out of the plane of the panels. These beads constitute hinge lines along which the panel bends readily. The beads may be flattened permitting expansion. The beads may be compacted permitting contraction. The beads may expand at one end and contract at the opposite end so that the curvature lines can be varied. This is shown in Fig. 10 where the beads are shown expanded at one end and contracted at the other, and are also shown as variably expanded and contracted.

When the side panels are inserted in place as shown in Fig. 5 with one longitudinal margin seated upon the head lining retaining means in the form of lugs 32 along the side walls of the body and the opposite longitudinal margin of the side panel engaged with the matching and retaining strip as shown in Fig. 7 these panels are bowed transversely as shown in Fig. 5 and exert a pressure through the web portion of the strip against the margin of the center panel 36. The construction is particularly secure and rigid in the sense of exerting a tension upwardly against downward deformation of the roof.

Normal variations in body width which may vary in different bodies of the same model up to half an inch or so are taken care of in the bend of these panels and in certain permitted compressibility of the web portion of the supporting and retaining strip as is heretofore more particularly set forth in my application Serial No. 529,188 filed August 18, 1955.

In order to augment the resiliency of these side panels it has been found desirable in certain embodiments that the grain of the fiber of the board run transversely of the panel board and therefore parallel to the beads. This seems to increase the normal resiliency of the panel board and serves to improve the tensioning of the assembly in its upwardly bowing.

It will be noted that the front and rear margins of the longitudinally extending panels are not directly seated upon head lining retaining means fore and aft, although such might be the case. The panels are held by their gripped engagement by the panel supporting and matching strips and these support the panels in their fore and aft bowed position. Along the side margins, however, the side panels or cove panels have their outer longitudinal margins seated as shown on the side retaining elements. A molding piece 58 may be secured by

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screws 60 to the boxlike frame 26 at the front end of the vehicle and extending across the front over the windshield. A molding 62 may be secured by screws 64 to the boxlike frame section 28 at the rear end of the vehicle which molding extends along over the rear window. Along the sides the molding 34 is shown as overlapping the margins 38 in Fig. 5. In Fig. 13 a slightly different type of molding is provided. Such molding is indicated at 66 and it is a deformable molding strip which is adapted to be secured to the box frame 30 and to be folded upwardly over the margin of the panel.

What I claim is:

1. A head lining for a vehicle body, said body having a roof, opposed longitudinal side walls, opposed end walls, and opposed head lining supporting means located inwardly of said walls and below the roof, comprising: a plurality of flexible, self-supporting head lining panels and a plurality of flexible panel matching and supporting strips disposed between and embracing adjacent margins of adjacent panels holding them in alignment and constituting a head lining panel and strip assembly disposed underneath the roof and supported bowed and tensioned upwardly both fore and aft and transversely toward and against the mid portion of the roof, said assembly panels including two outer side panels extending fore and aft of the body and a center panel portion disposed therebetween, said two outer side panels bowed upwardly transversely of the panels toward the roof and supported along their outer longitudinal margins upon said head lining supporting means holding said two panels toward the center panel portion disposed therebetween and bowed upwardly transversely and longitudinally toward the roof, said two outer side panels being provided with a plurality of beads extending generally transversely thereof to facilitate compound bending of the side panels so that a portion of the longitudinal margin of each panel may be compacted throughout a bead area at said margin and a portion of the opposite longitudinal margin of the panel may be expanded throughout a bead area at said margin.

2. A head lining for a vehicle body, said body having a roof, opposed longitudinal side walls, opposed end walls at the front and rear, and opposed head lining supporting means located inwardly of said walls and below the roof, comprising: a plurality of flexible head lining panels disposed underneath the roof and extending lengthwise thereof, a plurality of flexible panel supporting and retaining strips disposed between and embracing adjacent margins of adjacent panels holding the same in alignment, said strips extending lengthwise of the roof and secured at their ends to front and rear head lining supporting means holding the strips and panels bowed upwardly fore and aft toward the roof, said panels including an intermediate panel and two side panels, said side panels being formed of composition fiberboard wherein the fiber grain runs transversely of the length of the panel, said side panels having beads formed therein extending generally transversely of the length of the panel and being deformed out of the plane of the panel and being expansible and compressible lengthwise of the panel along each longitudinal margin of the panel.

3. A head lining for a vehicle body, said body having a roof, opposed longitudinal side walls, opposed end walls, and opposed head lining supporting means located inwardly of said walls and below the roof, comprising: a plurality of flexible, self-supporting head lining panels and a plurality of flexible panel matching and supporting strips disposed between and embracing adjacent margins of adjacent panels holding them in alignment and constituting a head lining panel and strip assembly disposed underneath the roof and supported bowed and tensioned upwardly both fore and aft and transversely

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toward and against the mid portion of the roof, said assembly panels including two outer side panels extending fore and aft of the body and a center panel portion disposed therebetween, said two outer side panels bowed upwardly transversely of the panels toward the roof and supported along their outer longitudinal margins upon said head lining supporting means holding said two panels toward the center panel portion disposed therebetween and bowed upwardly transversely and longitudinally toward the roof, said two outer side panels being provided with a plurality of beads extending generally transversely thereof to facilitate compound bending of the panels so that a portion of one longitudinal margin of a panel may be compacted throughout a bead area and a portion of the opposite longitudinal margin of the panel may be expanded throughout a bead area, said opposed longitudinal margins being of different lengths.

4. A head lining for a vehicle body, said body having a roof, opposed longitudinal side walls, opposed end walls, and opposed head lining supporting means located inwardly of said walls and below the roof, comprising: a plurality of flexible, self-supporting head lining panels and a plurality of flexible panel matching and supporting strips disposed between and embracing adjacent margins of adjacent panels holding them in alignment and constituting a head lining panel and strip assembly disposed underneath the roof and supported bowed and tensioned upwardly both fore and aft and transversely toward and against the mid portion of the roof, said assembly panels including two outer side panels extending fore and aft of the body and a center panel portion disposed therebetween, said two outer side panels bowed upwardly transversely of the panels toward the roof and supported along their outer longitudinal margins upon said head lining supporting means holding said two panels toward the center panel portion disposed therebetween and bowed upwardly transversely and longitudinally toward the roof, said two outer side panels being provided with a plurality of beads extending generally transversely thereof and disposed laterally out of the plane of the panels, the end portions of said beads along each longitudinal margin of the panel being independently compressible and expansible.

5. In a head lining assembly for a vehicle roof having a central portion and a cove portion disposed between the central portion and a margin of the roof, said cove portion exhibiting a compound curvature and having spaced apart head lining panel supports extending along two opposite margins thereof, one support extending along said margin of the roof and the other support extending along the linear margin of the said cove portion adjoining the said central portion, a head lining panel comprising a flat resilient sheet of self-supporting material having opposed longitudinal margins and substantially of a size and shape to be sprung into place between said supports and to overlay the underside of said cove portion of the roof between said supports, said sheet having a plurality of beads extending transversely thereacross between opposed longitudinal margins, and said beads being expansible and compressible lengthwise of the panel along each longitudinal margin of the panel allowing the flat panel to assume a compound curvature when sprung into place between said supports, said sheet being bent to conform generally to the curvature of the roof portion between said supports and disposed thereunderneath with its edges supported upon said supports and with the beads contracted and/or expanded to accommodate for the curve of the sheet.

6. A head lining panel as defined in claim 5 characterized in that said two opposed longitudinal margins are dissimilar as to length and certain beads adjacent to one of said margins are contracted and certain beads adjacent to the other of said margins are expanded, when the panel

is sprung into place between said supports underneath said cove portion.

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