Nov. 7, 1939. C. H. GERLOFSON 2,179,148

UPHOLSTERY

Filed July 19, 1937 2 Sheets-Sheet 1

Fig. 1.

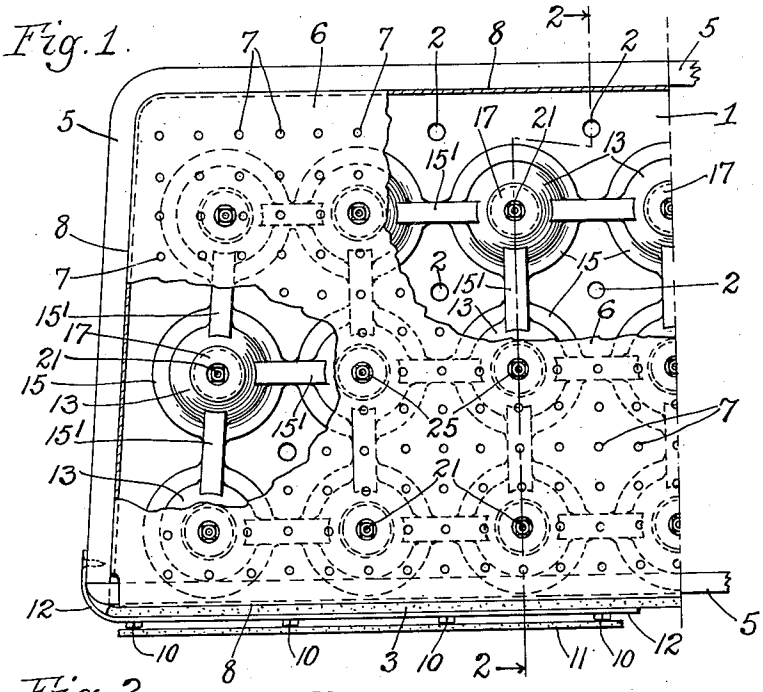


Fig. 2.

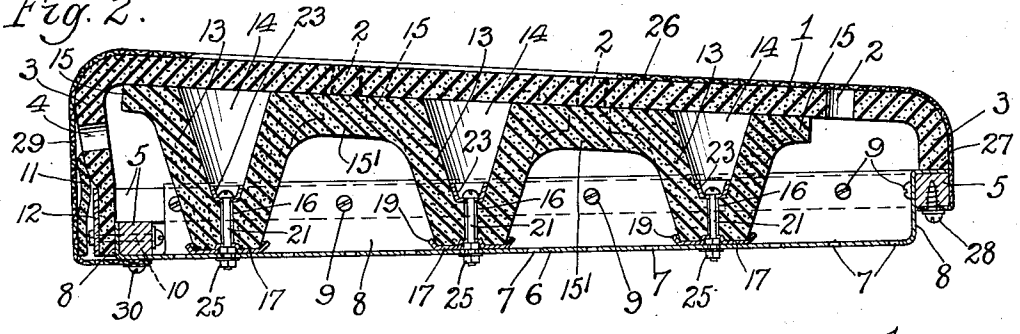
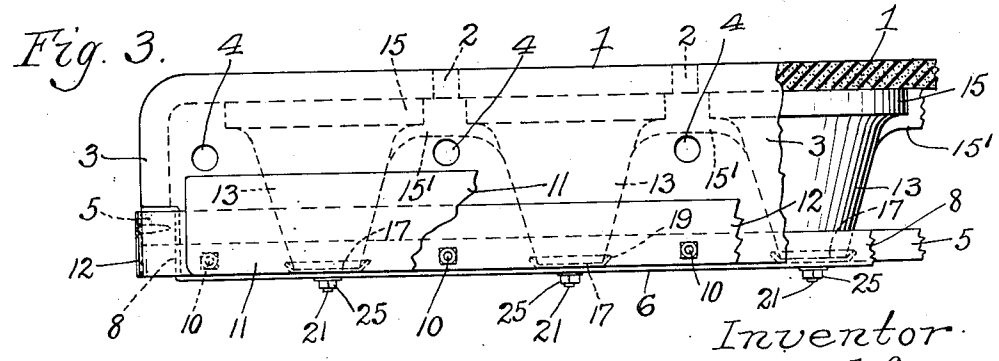


Fig. 3.



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Fig. 4.

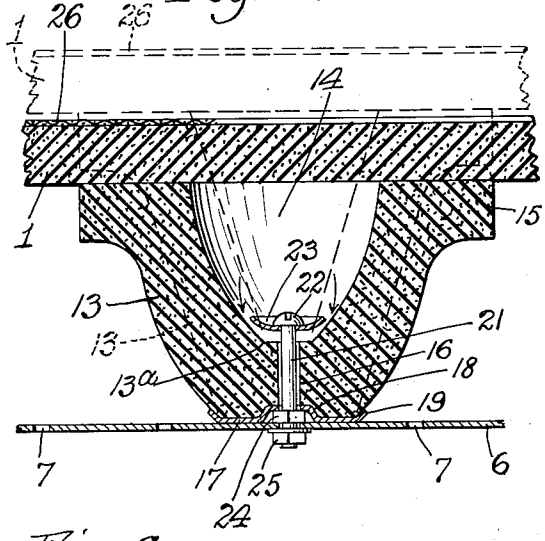


Fig. 5.

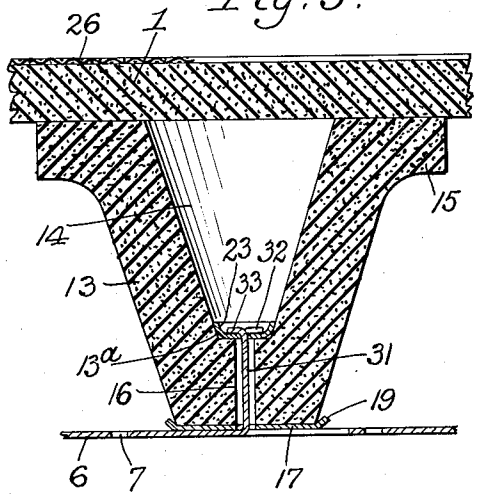


Fig. 6.

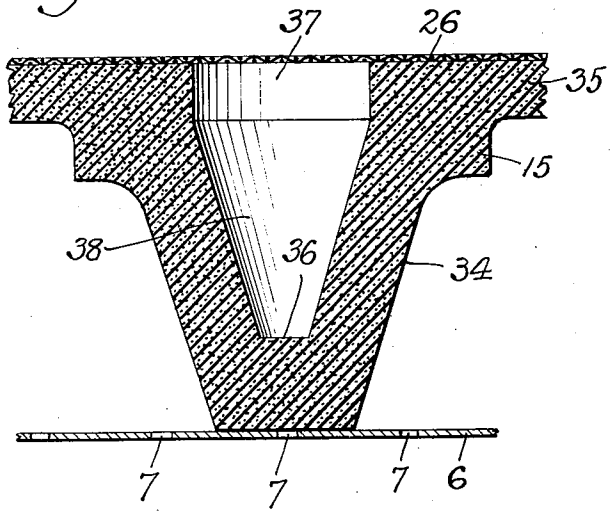


Fig. 7.

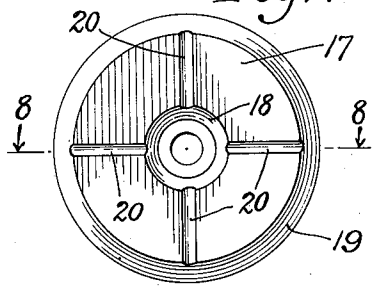
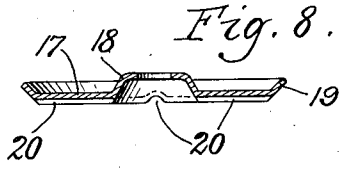


Fig. 8.



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Patented Nov. 7, 1939

2,179,148

UNITED STATES PATENT OFFICE

2,179,148

UPHOLSTERY

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Application July 19, 1937, Serial No. 154,472

9 Claims. (Cl. 155—179)

This invention relates to an article of upholstery and while it has many uses and applications, the form of the present application illustrated herewith is intended primarily as a cushioning member in connection with upholstery and is particularly adapted for use as a seat of an automobile or other vehicle, although the invention is equally applicable to any upholstery and may be used on chairs, sofas, or beds, to furnish a main supporting surface, a back surface, or to be applied to any other place where it is desired to apply a cushioning member. Mattresses made in accordance with the showings of the present invention are within the contemplation of that invention.

An object of the invention is to provide an upholstery member formed of sponge rubber or its equivalent, and arranged to provide adequate cushioning to retain its resiliency and to be ventilated.

Another object is to provide in connection with such a cushion, means for resisting deformation with progressive increase in resistance as the deformation is increased, and for doing this by means of a cushion which is fully ventilated.

Another object is to provide a particular form of cushion supporting finger or leg, which may or may not be arranged to have air passed through it under valved control.

Other objects will appear from time to time in the course of the specification and claims.

The invention is illustrated more or less diagrammatically in the accompanying drawings, wherein:

Figure 1 is a plan view of the bottom of one form of cushion to which the upholstery members of the present invention are applied, with parts broken away and parts in section;

Figure 2 is a transverse generally vertical section taken on an enlarged scale at line 2—2 of Figure 1;

Figure 3 is a front elevation of the cushion of Figures 1 and 2 with parts broken away and parts in section;

Figure 4 is a cross sectional detail on an enlarged scale showing the finger or supporting leg of the cushion and illustrating one form of attachment means, showing the finger in depressed position in full lines and in erect position in dotted lines;

Figure 5 is a section generally similar to Figure 4 showing the finger only in erect position and showing also a modified form of attaching means;

Figure 6 illustrates a modified finger in section;

Figure 7 is a plan view of one form of a receiving cup for the lower end of the finger; and

Figure 8 is a transverse section taken at line 8—8 of Figure 7.

Like parts are designated by like numerals throughout the specification and drawings.

As illustrated in Figures 1, 2 and 3, the upholstery member of the present invention is embodied in an automobile seat cushion which includes, in addition to the upholstery member, a frame and the necessary parts for securing the upholstery to the frame as well as a cover about the upholstery. The upholstery member proper includes a more or less sheet-like part 1 having perforations 2. It may or may not have a downwardly depending flange 3, but if such flange is used, it is preferably perforated with one or more perforations, such as those shown at 4. A framework formed of suitable members 5 extends around the seat cushion and may or may not be provided with stiffening metallic members. In general, the bottom of the cushion as a whole is formed by a sheet of material 6 having perforations 7. This sheet may have an upwardly extending flange 8, which may extend completely around it or be provided merely at its front or rear, and this flange is secured to the frame 5 by screws 9 or by bolts 10 or otherwise.

In the particular form of seat cushion shown in Figures 1, 2 and 3, an additional cushioning or protecting member is provided along the forward edge of the seat cushion. This comprises a flap or strip of rubber 11, which is secured to the flange 3, or if none is used, is secured to the sheet-like member 1 itself. As a means for providing a smooth and soft front edge of the cushion as a whole, where the downwardly depending flange 3 is used, a metal strip 12 may engage it and be held by the bolts 10 so that this flange 3 is held to the frame members 5 along the front of the cushion by the bolts 10 and the flap or strip 11 overlies the bolts 10 and the metal strip 12 and thus provides a cushioning means over them.

Secured to the lower face of the sheet-like member 1 are a plurality of fingers. These may be made integrally with the sheet or they may be made separately, individually, and secured thereto, or they may be made in a group so that several such fingers are formed integrally with each other as a finger assembly or finger sheet, and that assembly or sheet is then secured to the sheet-like member 1 in any desired manner, by cementing, by vulcanizing, or otherwise. In the forms shown in Figures 1, 2 and 3, a finger

assembly is made. In the forms shown in Figures 4 and 5, the fingers are separately made and secured to the sheet, and in the forms shown in Figure 6, the fingers are made integrally with the sheet.

As shown in Figures 1, 2 and 3, a plurality of fingers 13 having hollows 14 are made as a unit and they have adjacent their upper ends enlargements or flanges 15 and are secured together by integral joining portions 15'. The fingers may be of any shape, but it is convenient to make them tapering as shown. In the form of these fingers last mentioned, the fingers are perforated in their lower ends as at 16 and their lower ends are positioned in cup-like members 17 which are provided with raised perforated central bosses 18 and raised peripheral flanges 19. They may be indented to provide a plurality of air circulating passages 20, as shown in detail in Figures 7 and 8, and the central boss may be omitted as in Figure 5. Also, where desired, the indentations to produce the air circulation passages 20, may be omitted and adequate air circulation is provided by making the parts loose enough to permit sufficient movement of air past them.

The fingers are preferably individually attached to the bottom plate 6 by bolts 21 which pass through the perforations 16 in the lower ends of the fingers. These bolts in the forms shown in Figures 1 to 4, inclusive, are provided with heads 22, which are positioned within the hollow 14 of the finger 13, and may also carry cup-like members 23 to engage shoulders 13a formed on the interior of the fingers about the perforations 16. The shoulders may or may not be used, depending upon the shape of the attaching parts. At their lower ends, each of the bolts 21 carries a nut 24 which on one side engages the cup member 17 and on the other side engages the plate 6 of the seat frame. Below this, nuts 25 are used to secure the bolt, plate and cup assembly to the member 6. This is the construction illustrated generally in Figures 1, 2 and 3, and in detail in Figure 4. Any other desired means of securing the fingers to the frame or plate may be used. The invention is not limited in its application to this particular means of attachment.

It is generally desirable to provide the cushion with a cover, although for some purposes this is omitted. In the particular forms shown in the first three figures, a cover, which will ordinarily be of cloth, it might be of leather or any other desired material, is shown in place. It comprises a flexible member 26, which will either be perforated or porous in order to permit the escape of air through it. It depends downwardly at the rear as at 27 and is secured by a suitable means which may include screws 28 to the frame member 5. At the forward end of the cushion it depends similarly as at 29 and is secured to the frame member 5 by screws 30 or otherwise. The particular details of securing the covering form no essential part of the present invention. Any covering securing means may be used and, as above noted, the cover may be entirely omitted if desired. As shown in Figure 3, the cover has been omitted or removed for purposes of clearness. It appears generally in Figures 1 and 2 and some covering is indicated in Figures 4, 5 and 6.

In Figure 5 a modified means of securing the fingers to the base plate 6 is used. The cup 17, while it might be omitted, is shown in place, but the raised central boss 18 has been omitted, as was suggested above. Instead of using bolts 21 or similar separate attaching means, the plate 6 is used as the attaching means and one or more finger-like members 31 are bent upwardly from it to project through the perforation 16 and the finger 13 and through the cup-like member 23. If one finger is used only, it is split to provide at its top members which may be bent laterally to retain the cup. Such members are shown at 32 and 33 in Figure 5. The flexibility of the material of which the fingers are made permits the initial insertion of the cup and the subsequent insertion of the finger and the bending of the members 32 and 33 to engage the cup. If desired, the fingers 13 may be secured in place individually or by groups before the sheet 1 is applied, and it may then be secured to the fingers or to the finger group or sheet.

As shown in Figure 6, a finger 34 is shown as cast integrally with an upper sheet 35. This sheet 35 serves the purpose of the sheet 1 in other forms shown as covered by the fabric covering 26, although as in the case of the other forms, this may be omitted. While the finger of this type might be made separately or in any way mentioned in connection with the earlier forms, it is here made integrally so that the entire cushion is cast as a unit, the fingers, the surface sheet member, and any downwardly or upwardly depending flanges which might be used at the edge or edges of the cushion as a whole.

The fingers 34 differ from the other fingers shown mainly by the provision of an opening 37 at the top and the provision of a closed bottom 36. Where this finger is used, it will ordinarily not be fastened to the plate 6, but the cushion will be fastened to the frame or assembly of which it forms a part by some other manner, such, for example, as the edge fastening shown in Figures 1, 2 and 3, or otherwise. The size of the perforation 37 may be varied and it need not be as wide as the maximum width of the opening or hollow 36 in the interior of the finger.

In general, the cushion is made of sponge rubber. Experience has shown that it is preferable to use this material for the sheet-like portions and for the fingers, but the construction has uses in which it is made of other yielding and elastic materials. The invention is not limited, therefore, to the use of sponge rubber. For some purposes it is desirable to have parts of the cushion made of sponge rubber and other parts of other rubber, and such a construction is within the contemplation of the present invention. The cushion parts may be made in any desired manner and assembled in any desired manner and the invention is not limited to making them separately or as a unit. It is within the scope of this invention to make the cushion parts in any manner which is convenient and economical, and where the cushion is not made as a unit, it is within the contemplation of the invention to assemble the parts together or to fasten them together in any desired convenient and economical manner.

I claim:

1. In combination in a cushion, a main surface member, perforations in said member, a plurality of downwardly disposed hollow fingers supporting said surface member, perforations in the lower ends of said fingers, a frame and a perforate bottom, the said fingers being secured to said bottom, said fingers being of tapered shape from the surface member downwardly and pro-

vided with a reinforcing and thickening flange adjacent their upper ends.

2. In combination in a cushion, a main rubber surface member, a plurality of downwardly disposed hollow fingers supporting said surface member, perforations in the lower ends of said fingers, a frame and a perforate bottom, the said fingers being secured to said bottom, said fingers being of tapered shape from the surface member downwardly and provided with a reinforcing and thickening flange adjacent their upper ends.

3. In combination in a cushion, a main flexible surface member, a plurality of downwardly disposed hollow fingers supporting said surface member and secured to each other, perforations in the lower ends of said fingers, a frame and a perforate bottom, the said fingers being secured to said bottom, said fingers being of tapered shape from the surface member downwardly and provided with a reinforcing and thickening flange adjacent their upper ends.

4. In combination in a cushion, a main surface member, a plurality of downwardly disposed hollow fingers supporting said surface member, perforations in the lower ends of said fingers, a frame and a perforate bottom attaching means securing said fingers to said bottom, the said fingers being secured to said bottom by said attaching means which engage the bottom and the finger, penetrate into it and serve as a valve to control the passage of air through the perforation in said finger, said fingers being of tapered shape from the surface member downwardly and provided with a reinforcing and thickening flange adjacent their upper ends.

5. In combination in a cushion, a main surface member, perforations in said member, a plurality of downwardly disposed hollow fingers integrally secured to and supporting said surface member and secured to each other, perforations in the lower ends of said fingers, a fabric covering for said surface member, a frame and a perforate bottom, the said fingers being secured to said bottom by attaching means which engage the bottom and the finger, penetrate into it and serve as a valve to control the passage of air through the perforation in said finger, said fingers being of tapered shape from the surface member downwardly and provided with a reinforcing and thickening flange adjacent their upper ends and at the point of contact with said surface.

6. In combination in a cushion, a main surface member, a plurality of hollow fingers joined thereto and projecting away from said member, a support including frame and bottom parts, and being adapted to support said surface member and said fingers, said cushion being secured to said support, the outer ends of said fingers in contact with a part of said support, perforations in said surface member, a fabric cover therefor, said fingers being provided adjacent said surface member with enlargements in contact with said surface member.

7. In combination in a cushion, a main surface member, a plurality of hollow fingers joined thereto and projecting away from said member, a support including frame and bottom parts, and being adapted to support said surface member and said fingers, said cushion being secured to said support, the outer ends of said fingers in contact with a part of said support, perforations in said surface member, a fabric cover therefor, said fingers being provided adjacent said surface member with enlargements in contact with said surface member, and normally closed air connections for said fingers extending from the interiors thereof, toward said support.

8. In combination in a sponge rubber cushion, a support therefor a surface member and a plurality of sponge rubber fingers secured thereto, perforations in the surface member, hollows in the sponge rubber fingers, the fingers being tapered away from the surface member and provided with enlargements adjacent said surface member and in contact therewith, the fingers extending to said support and being provided with mechanically controlled means cooperating with said support, for the passage of air into and from said fingers.

9. In combination in a cushion, a main surface member of rubber and a finger assembly formed of a plurality of hollow fingers each providing a hollow within itself and being secured to each other integrally adjacent said surface member only and provided adjacent one end with lateral enlargements, said finger assembly and said enlargements being secured to said surface member, and normally closed air passages extending from the interior of said fingers to the outer ends of said hollow fingers.

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