

May 8, 1951

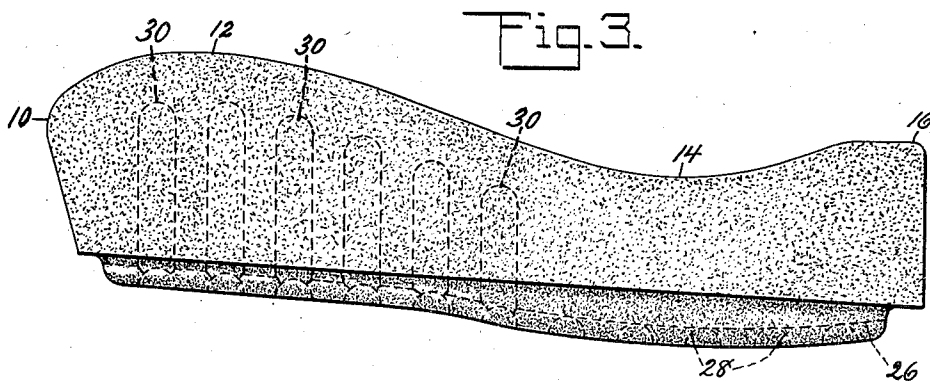
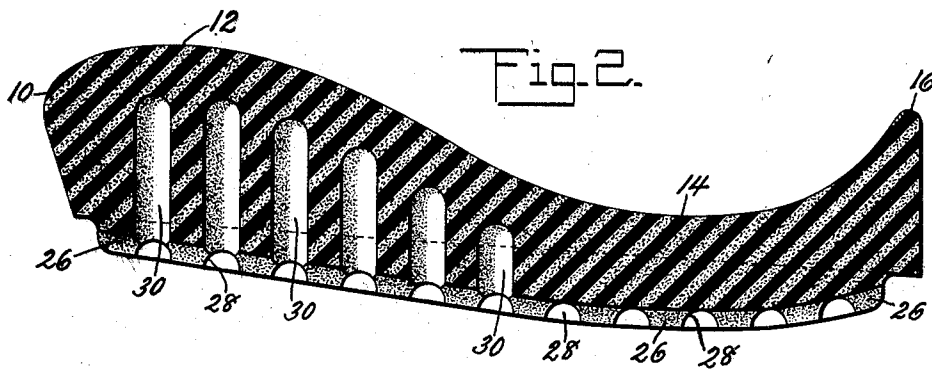
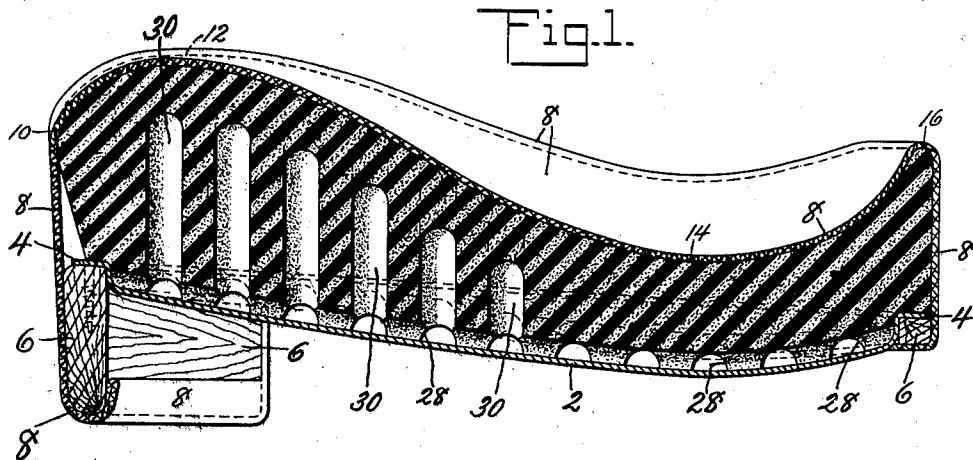
H. A. FLOGAUS

2,552,039

SEAT CUSHION

Filed Dec. 6, 1945

3 Sheets-Sheet 1



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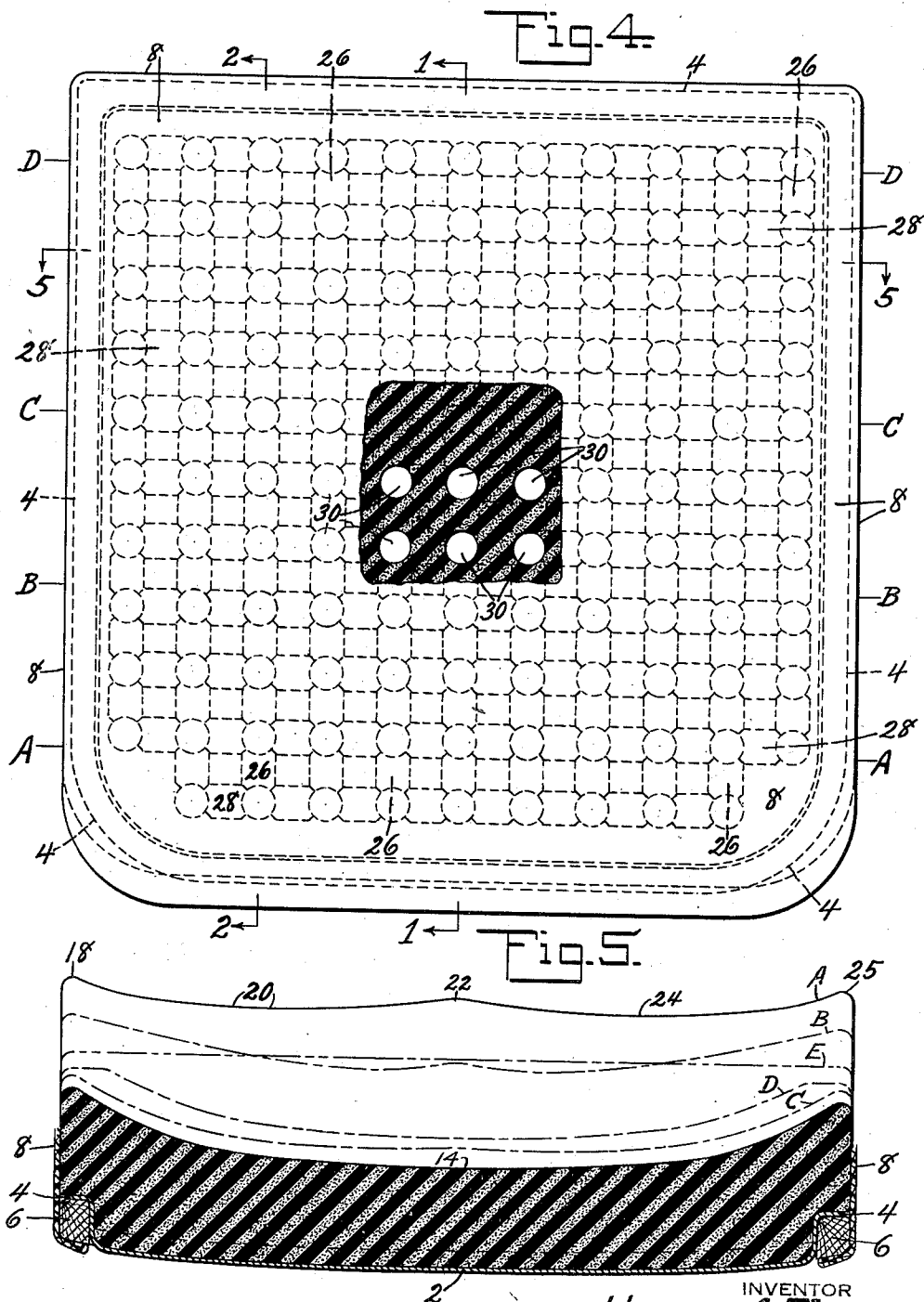
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Fig. 6.

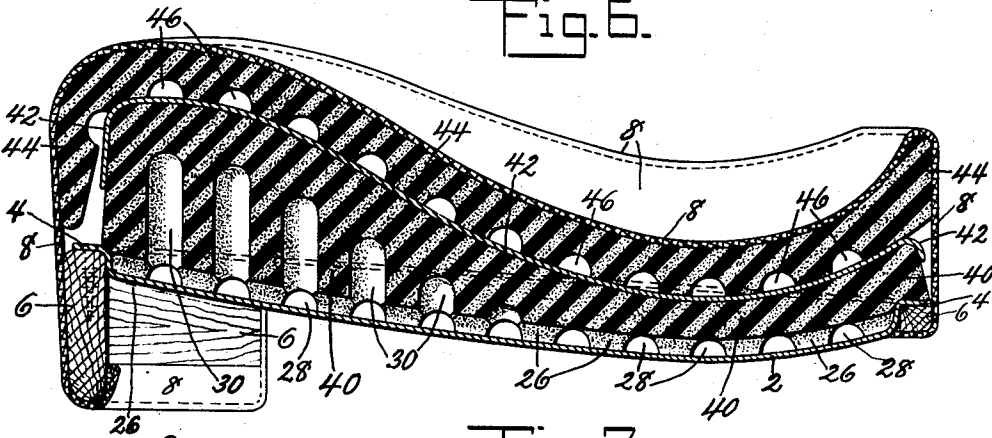


Fig. 7.

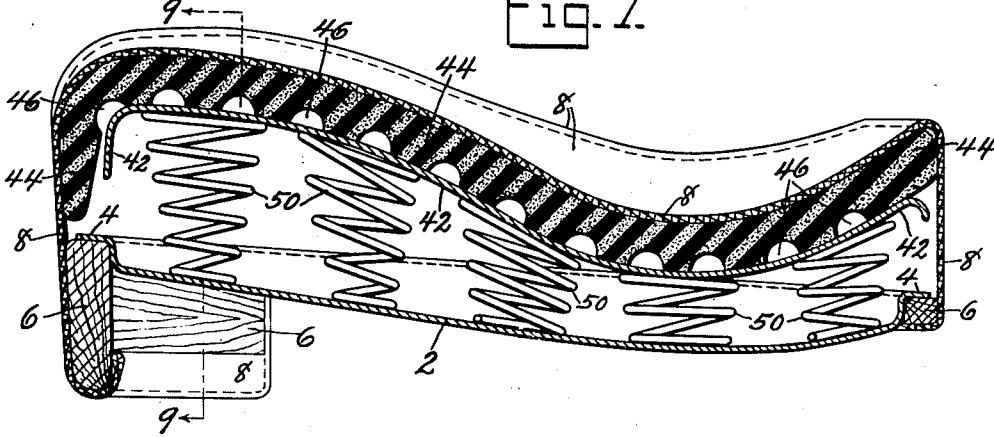


Fig. 8.

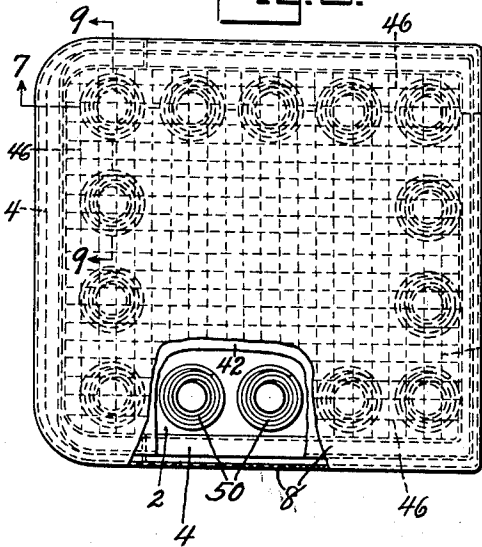
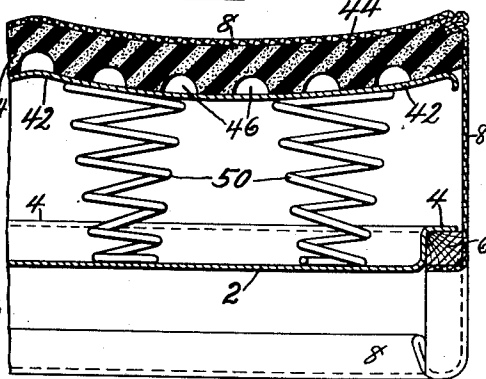


Fig. 9.



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UNITED STATES PATENT OFFICE

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SEAT CUSHION

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2 Claims. (Cl. 155—179)

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This invention relates to seat cushions, particularly cushions adapted for use in vehicles. During recent years several attempts have been made to make seats more comfortable, particularly where these seats are used in vehicles traveling over roadbeds which may not be particularly smooth. As first constructed the seats were merely flat surfaces without any padding. Later these surfaces were padded to relieve some of the road shock and partially distribute the weight of the passenger. A person's weight when seated in an upright position rests almost entirely on projections of the ischium which are more or less covered by muscles. These projections may be considered as high pressure areas since the entire weight of the body is supported at these two points. Ordinary flat cushions will help in distributing the weight and partially relieve the muscles of their necessity of acting as shock absorbers. However, in order to properly relieve these muscles and more evenly distribute the body's weight it is necessary to shape the cushion to the average human anatomy. It is an object, therefore, of the present invention to provide a cushion shaped to fit the average human anatomy and evenly distribute the body's weight.

A further object of the invention is the provision of a body conforming cushion supported upon a body conforming member which in turn is resiliently mounted to relieve road shocks.

A still further object of the invention is the provision of a body conforming seat cushion containing air chambers which will assist in transferring and equalizing the unit pressures on the cushion.

A yet further object of the invention is the provision of a body conforming cushion having weight equalizing properties yet without excessive springiness.

These and other objects of the invention will be apparent to persons skilled in the art from a study of the following description and accompanying drawings, in which

Fig. 1 is a section taken substantially through the longitudinal center of the cushion and on line 1—1 of Fig. 4;

Fig. 2 is a sectional view taken substantially on line 2—2 of Fig. 4 showing the cushion unit only;

Fig. 3 is a side view of the improved cushion;

Fig. 4 is a plan view of the improved cushion with part broken away to disclose the air cell arrangement;

Fig. 5 is a sectional view taken substantially on line 5—5 of Fig. 4 but showing in addition contours at various other sections;

Fig. 6 is a sectional view similar to Fig. 1 but showing a modification thereof;

Fig. 7 is a sectional view similar to Fig. 6 but

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showing a still further modification and being taken on line 7—7 of Fig. 8;

Fig. 8 is a plan view of the cushion of Fig. 7, and

Fig. 9 is a sectional view taken substantially on lines 9—9 of Figs. 7 and 8.

Referring now to the drawings in detail, it will be seen that the cushion is supported upon a pan member 2 adapted to fit within and have its side flanges 4 fastened to wood or other framing members 6. These wood or other framing members permit ready attachment of the upholstery portion 8 and this may be of fabric, leather or any other desired material. Referring now particularly to Figs. 1 to 5 inclusive, it will be seen that the cushion is formed of rubber or other resilient material molded so that the upper surface will conform to the average human anatomy. As clearly shown in Figs. 1 and 2 the longitudinal sections through the cushion disclose that the top surface rises from the leading edge 10 of the cushion to a high point 12, from which point it inclines downwardly to a low point 14, from which it again inclines upwardly rather sharply to the rear edge 16. This curvature is not constant throughout the width of the cushion; however, since as clearly disclosed in Fig. 5 the cushion is built with a compound transverse curvature, that is, from one side edge 18 the top surface curves downwardly and inwardly to a low point 20 thence upwardly to an intermediate point 22, thence downwardly to a second low point 24 and again upwardly to the opposite side edge 26. The degree of transverse curvature is not constant, varying between the leading and rear edge of the cushion as shown by outlines labeled A, B, C, D and E. In other words, the high point 12 of the cushion will be curved as shown by line A Fig. 5 in order to accommodate and distribute the weight to the upper leg muscles. At the plane B the top surface will still be curved transversely to again accommodate the leg muscles, but the curvature to accommodate the leg muscles gradually disappears until at the low point 14, as shown in section Fig. 5, there is no longer need for accommodation of the leg muscles. From the section outline of Fig. 5 the curve rises to the contour at line D and thence to the straight line E which discloses the contour at the back or high point 16, thus permitting the cushion to readily fit into the seat back upholstery. It will thus be seen the seat cushion top surface has a compound transverse curvature and also a longitudinal curvature in order that it may more readily conform to the average human anatomy and permit more even distribution of weight between the body muscles in contact with the cushion.

In order to assist in the distribution and equalization of weight the bottom surface of the

cushion is molded with a plurality of intersecting longitudinal and transverse semi-circular passages 26 and 28 respectively. Certain of these passages at their points of intersection merge into the ends of tubular cavities 30 which are located toward the forward edge of the cushion where the normal pressure from the body muscles would be relatively light. As constructed the cushion of molded resilient material will be cemented or otherwise secured to the pan 2 thus trapping air in the cavities 30 and passages 26 and 28, yet allowing free transfer of air to all parts of the cushion. The body weight imposed upon the top surface of the cushion will cause the air in the passages and tubular cavities or cells to be compressed, thus urging all parts of the cushion toward the body with equal pressure. In order to be comfortable, however, the portion of the seat supporting the projections of the ischium should actually support more weight than at other portions of the cushion and to this end it will be noted that the cells are omitted in the area between the back of the cushion and approximately plane C of Fig. 4. It will be understood, of course, that the top surface of the cushion will be covered by the upholstery material 8 which is preferably cemented or otherwise secured to the body conforming top surface thereof.

In the modification shown in Fig. 6 the seat bottom pan and frame, as well as the general outline of the supporting cushion 40, are identical to that just described. In this form, however, the top surface of the intermediate or supporting cushion 40 is cemented or otherwise secured to the bottom surface of a body conforming member 42 made of either aluminum, magnesium or some light plastic material. On top of this rigid body conforming member is mounted a flat sheet of cushion rubber or other material 44. This top cushion is molded with a plurality of semi-circular passages 46 which assist in giving springiness to the top member, which is cemented or otherwise secured to the top surface of the body conforming member 42.

In the form shown in Figs. 7, 8 and 9 the body conforming rigid member instead of being supported upon a rubber or other element, such as 40 in Fig. 6, is supported on pan 2 by a plurality of helical springs 50 fastened at their lower end to pan 2 and at their upper end to body conforming rigid member 42. This body conforming rigid member is covered by resilient member 44 as in Fig. 6, which is cemented or otherwise secured to the rigid element.

It will thus be seen that in Figs. 6 to 9 inclusive the upholstered cushion element is supported and attached to a rigid body conforming member having a shape similar to that described in connection with Fig. 1, but this rigid member is free to move or float on either a rubber type supporting cushion 40 or helical springs 50, whichever type may be desired. Regardless of whether the type is as shown in Fig. 1 or 6 or 7 to 9, the person's weight will be distributed more or less evenly over the entire top surface but without permitting excessive springiness which is so objectionable in vehicles subjected to vibratory shock caused by road inequalities.

What is claimed is:

1. A cushion structure comprising a frame, a pan member having a substantially flat base portion and having side flanges secured to said frame, a resilient rubber cushion secured to said base portion, said cushion having intersecting air channels formed in the lower surface thereof

and vertically extending cavities communicating therewith, said channels and cavities being sealed against said pan by said securing means to trap air therewithin, the top surface of said cushion being curved longitudinally from the zone of the front edge downwardly and then upwardly to the rear edge, and transversely from the side edges downwardly and then upwardly to a high point intermediate the side edges and then downwardly and upwardly to the opposite side edge, said cavities being confined to said areas of said cushion near said front zone adjacent the leg muscles of the occupant, the areas of minimum depth and at the back of the cushion containing no cavities, and upholstery material secured to the top portion of said cushion and to said frame.

2. A cushion structure comprising a frame, a pan member having a substantially flat base portion and having side flanges secured to said frame, a resilient rubber cushion secured to said base portion, said cushion having intersecting air channels formed in the lower surface thereof and vertically extending cavities communicating therewith, said channels and cavities being sealed against said pan by said securing means to trap air therewithin, the top surface of said cushion being curved longitudinally from the zone of the front edge downwardly and then upwardly to the rear edge, and transversely from the side edges downwardly and then upwardly to a high point intermediate the side edges and then downwardly and upwardly to the opposite side edge, said cavities being confined to said areas of said cushion near said front zone adjacent the leg muscles of the occupant, the areas of minimum depth and at the back of the cushion containing no cavities whereby the cushion supports more weight at these points which are substantially adjacent the projections of a normally seated ischium of the occupant, a body conforming member secured and conformed to said top cushion, said body conforming member having the springy characteristic of a thin sheet of aluminum, magnesium or plastic, a flat sheet of additional resilient rubber secured to and cemented upon said body conforming member and likewise conforming to the top surface thereof, said additional sheet having passages semi-circular in cross-section disposed in the bottom surface thereof whereby additional springiness is effected, and upholstery material secured to said additional sheet and to said frame.

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