March 5, 1935. R. W. SAMPSON 1,993,228

YIELDABLE SEAT AND THE LIKE

Original Filed Nov. 28, 1932

Fig. 1

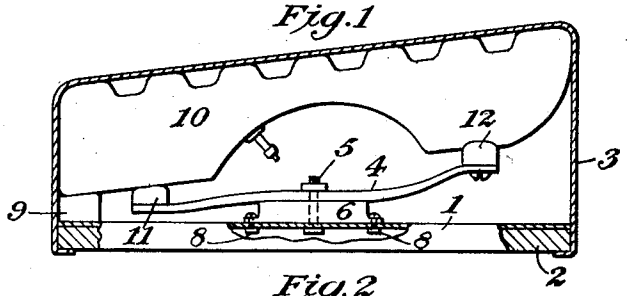


Fig. 2

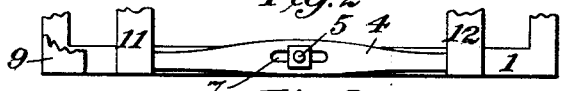


Fig. 3

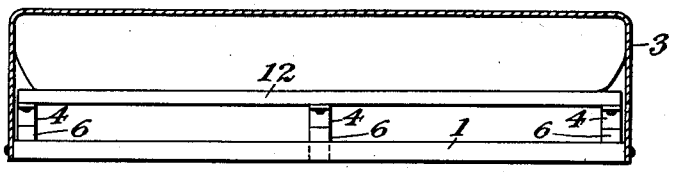


Fig. 4

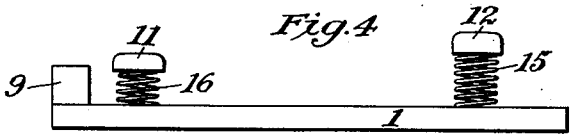


Fig. 5

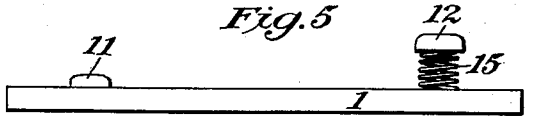


Fig. 6

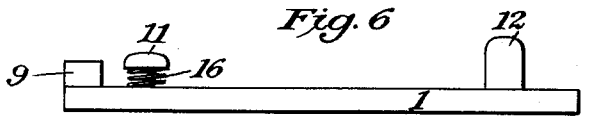


Fig. 7

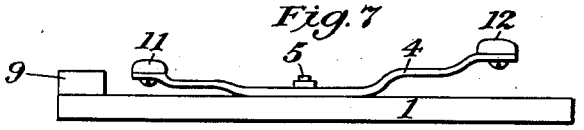
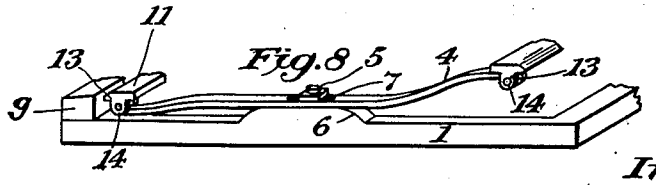


Fig. 8



Inventor:
Robert W. Sampson.
by Munn & Wilson,
Attorney.

Patented Mar. 5, 1935 1,993,228

UNITED STATES PATENT OFFICE

1,993,223

YIELDABLE SEAT AND THE LIKE

Robert W. Sampson, New York, N. Y., assignor to Charles J. Hardy, New York, N. Y.

Application November 28, 1932, Serial No. 644,573
Renewed November 15, 1934

3 Claims. (Cl. 155—179)

My invention relates to a yieldable seat or the like embodying a flexible, closed, air containing element which forms the principal yielding part of the assembly, and which is supported upon a suitable frame or base adapted to facilitate the air container in functioning advantageously as a resilient part of a seat or cushion.

Objects of my invention are to combine with the air containing or pneumatic element an improved form of support which shall facilitate the proper functioning of that element; to accomplish this by the use of resilient elements or springs below the pneumatic element; to so form and dispose those springs that they may be readily adjusted in relation to the seat frame and the bearing points of the pneumatic elements; to produce a seat which shall combine the advantages of a main, pneumatic body cooperating with resilient supports, so that the local resiliency of the body will be supplemented by a general, broader resiliency of the seat, and the seat will thereby be made to more readily and comfortably adjust itself to and support the person of a user; and to secure the other advantages hereinafter pointed out.

In the drawing Fig. 1 is an end view of a seat illustrating my invention, the foundation cover and portions of the frame being broken away to better show the construction; Fig. 2 is a plan view of one end of the base and spring support; Fig. 3 is a front view, on a reduced scale, taken as looking to the left on Fig. 1, the foundation cover being broken away; Figs. 4, 5, 6, 7 and 8 illustrate modifications.

Corresponding parts are designated by like reference numerals in all the figures.

The base 1 may advantageously be formed of metal channel bar within which is placed a tacking strip 2 for convenience in attaching the upholstering, including the foundation cover 3. On the ends of this base, and optionally at an intermediate point or points as indicated in Fig. 3, are mounted springs 4, secured to the base as by bolts 5, and preferably with bolsters 6, 6, interposed between them and the base. Provision for adjusting these springs forward or back may be made, as by forming slots 7 in them, through which the bolts 5 pass. The bolsters are optionally attached to the base by additional fastenings as 8, 8.

The rear of the frame may be raised, as by a slat or bar 9, if that is required, so that the back of the frame will support the rear edge of a pneumatic bag or cushion, 10, which lies upon stretchers or supports 11, 12. In the form shown in Figs. 1, 2 and 3, those stretchers are carried by the ends of the springs 4, 4, and are disposed at such points above the base that the pneumatic cushion will be supported on two lines by the stretchers and, preferably, at its rear by the frame, thus giving it two yielding supports and an unyielding one.

The curvature lines of the springs 4 may be modified, in practice, to support the pneumatic cushion at such an angle and at such a height above the base as may best suit the particular circumstances of its use. Thus, where it is desirable to provide a low seat, the form, stiffness and disposition of the springs will be accommodated to the conditions so as to leave as little play below the cushion as is consistent with avoiding the springs striking the supports when loaded; while, if greater height is allowable, the springs may be made to hold the stretchers higher and to have more flexibility and play, thus increasing the softness of the seat.

The arrangement whereby the extreme back of the cushion rests upon the frame avoids knocking of the rear ends of the springs against the frame when the cushion is loaded, as, toward the back of the seat, the main load will be carried directly by the frame, and the burden upon the stretchers will not be sufficient to depress the springs to a point where they will hit the frame. Hence, the cushion is provided with supports which are first rigid and then progressively yielding, so that the depression of the cushion under load will be of a swinging character, from the rear forward, and its softness and yieldability will increase progressively from the rear to the front, which is desirable; for while the load is normally carried by the central portions of the cushion, the legs of the user rest upon and over the forward portion and edge, and the comfort of the user is increased by making the cushion yield more under the legs than under the body of the user.

In Figs. 4, 5 and 6 I have shown modifications wherein coiled springs, 15, 16, are substituted for flat springs, and wherein the springs may be limited to either the front or rear supports as may be desirable. And in Figs. 7 and 8 I have shown modified forms of the flat springs, Fig. 8 illustrating a pivotal connection, as by arms 13, 13, and pivots 14, 14, between the stretchers and the springs, thus allowing the stretchers to rock somewhat and so adjust themselves more readily to the cushion upon them.

By my improvements I secure a seat which combines the advantages of pneumatic support supplemented by spring support, the support being progressively yielding from rear to front, the

two features of yieldability cooperating to vary the degrees of resistance and extents of movement so as to best accommodate the seat to the comfort of the user.

It will be appreciated that the same construction may be applied to the backs of seats, for instance in automobiles, in which case the base will be set in an approximately vertical position, preferably with its rear edge down, and the user will lean back against the pneumatic cushion.

Details of construction may be modified, as by the use of mechanical equivalents or the like, without departing from the spirit of my invention or the scope of the claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:—

1. In a seat structure or the like, the combination of a pneumatic cushion, a base, a flat spring medially mounted on the base substantially at each of its ends and extending fore and aft thereof, a pair of stretchers, independent of each other, extending lengthwise of the seat one supported by the forward ends of said springs and the other supported by the rearward ends of said springs, the cushion being supported by the stretchers on two longitudinal lines set in from its front and rear edges, and means for holding the cushion in position upon the supports.

2. In a seat structure or the like, the combination of a pneumatic cushion, a base, a flat spring medially mounted on the base substantially at each of its ends and extending fore and aft thereof, a pair of stretchers, independent of each other, extending lengthwise of the seat one supported by the forward ends of said springs and the other supported by the rearward ends of said springs, the forward stretcher having a greater range of yieldability than the rearward one, the cushion being supported by the stretchers on two longitudinal lines set in from its front and rear edges, and means for holding the cushion in position upon the supports.

3. In a seat structure or the like, the combination of a pneumatic cushion, a base, a flat spring medially mounted on the base substantially at each of its ends and extending fore and aft thereof, a pair of stretchers, independent of each other, extending lengthwise of the seat one supported by the forward ends of said springs and the other supported by the rearward ends of said springs, the forward ends of said springs having a greater range of movement than the rear ends, an immovably fixed bearing at the rear of the frame to carry the back edge of the cushion, the cushion being supported by the stretchers on two longitudinal lines set in from the front and rear edges, and means for holding the cushion in position upon the supports.

ROBERT W. SAMPSON.