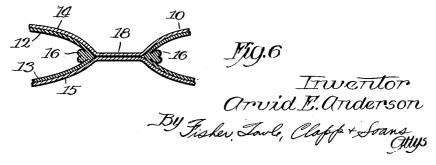


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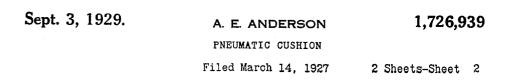
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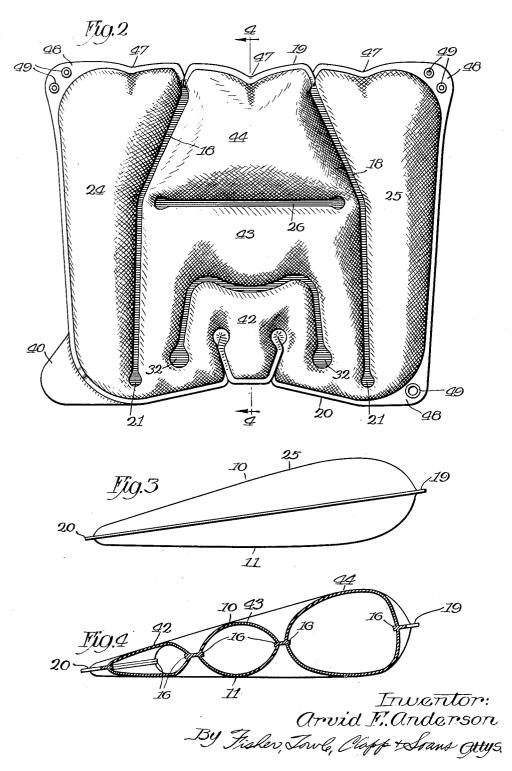


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UNITED STATES PATENT OFFICE.

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PNEUMATIC CUSHION.

Application filed March 14, 1927. Serial No. 175,077.

This invention relates to pneumatic cushions and particularly to cushions known as wedge cushions, and used particularly as back rest cushions in automoblies and other

- places. One object of the invention is to provide a pneumatic cushion of wedge shaped cross section. Another object is to provide a pneumatic cushion structure which will cause the cushion to assume the desired wedge shape
- 10 as an incident to inflation thereof. Still another object is to provide a cushion structure in which the front and back portions comprise plain sheets of material united face to face in such a way that the cushion will as-
- 15 sume said wedge shape as an incident to inflation thereof.

Other objects of the invention are to provide a pneumatic cushion of the class described which will be strong and durable so as

- to be capable of supporting a relatively heavy load; to provide such a cushion which may be used as a seat cushion; and in general, to provide an improved pneumatic cushion of the class described.
- Other objects and advantages of the inven-25 tion will be understood by reference to the following specification and accompanying drawings in which I have illustrated a selected embodiment of my improved cushion and 30 its construction and in which:

Fig. 1 is a plan showing the appearance of the cushion when deflated.

Fig. 2 is also a plan showing the appearance of the cushion when inflated.

Fig. 3 is a side elevation.

35

and

Figs. 5 and 6 are sections on the lines 5-5 and 6-6 respectively of Fig. 1.

- Referring now to the drawings, my im-proved cushion comprises front and back 40 sheets 10 and 11 respectively, of rubberized fabric united together along a marginal zone and along intermediate zones to form a sealed
- 45 envelope or chamber divided into a plurality of chamber portions of various sizes and shapes. The sheets 10 and 11 (as shown in Fig. 6) of rubberized fabric, comprise inner rubber portions 12 and 13 respectively, and outer fabric portions 14 and 15 respectively. 50
- The fabric portions are effective to protect the rubber sheets or portions from excessive wear and puncturing.

In the present embodiment of my invention 55 I prefer to unite the sheets 10 and 11 together adjacent the lower edge 20 of the cushion.

(as shown in Fig. 6) in relatively narrow zones by means of vulcanizing under pressure. By this means, a large portion of the rubber will be forced outwardly towards the edges of the united zone and reinforcing beads 60 indicated at 16-16, integral with the rubber sheets, will be formed. It will also be understood that a considerable amount of the rubber will be forced into the interstices of the fabric in the said zones. By thus joining 65 the front and back sheets, a very strong bond is formed therebetween and the chambers defined by the various united zones are very strongly reinforced by the beads 16 so as to withstand a relatively high pressure without 70 danger of separating the sheets at their joints.

As shown in Figs. 1 and 2, I prefer to unite the sheets 10 and 11 along a relatively narrow marginal zone 17 which extends entirely around the outer edges or peripheries of the 75 sheets so as to form a pocket or chamber, adapted to be inflated. In addition to the peripheral or marginal zone of union, I join the sheets in relatively narrow intermediate zones 18-18 extending from the top edge 19 80 of the cushion downwardly towards the bottom edge 20 and terminating in a pear-shaped button-head 21 adjacent the said lower edge. The button-heads 21-21 are preferably pearshaped or rounded so as to avoid sharp cor- 85 ners in the joint between the front and back portions of the cushion whereby the joint is somewhat stronger and there is less danger of producing an imperfect joint whereby the joined sheets might possibly be easily sepa- 90 Fig. 4 is a section on the line 4-4 of Fig. 2, rated. The zones 18-18 are preferably disposed at an inclination to the adjacent side edges 22 and 23 so as to form chamber portions 24 and 25 of varying width. As shown in Figs. 1 and 2, the chambers 24 and 25 are 95 relatively wide at their top portions and narrow at their bottom portions.

I further find it desirable to sub-divide the chamber portion intermediate the chamber portions 24 and 25. For this purpose I unite 100 the front and back sheets in the manner described in a relatively narrow zone 26 terminating in button-heads 27-27 at its opposite ends adjacent the said zones 18-18. The lower portion of the said intermediate cham- 105 ber portion is further sub-divided by means of a zone of union 28 extending cross-wise as at 29 and downwardly at its sides as at 30 and 31 and terminating in button-heads 32-32 110

By uniting the front and back sheets which shape in cross section due to the fact that the form my improved cushion in the manner above described, it will be seen that I provide a large chamber sub-divided into a plurality 5 of inter-communicating chamber portions or compartments of various sizes and some of which chamber portions vary in their cross sectional dimensions from top to bottom. In the present embodiment, the chamber portions 10 adjacent the bottom edge 20 of the cushion are relatively small and as they approach the upper edge 19, their respective sizes increase progressively. It will further be noted that

all of the chamber portions are inter-connect-15 ed by passageways provided between the ends of the various intermediate zones of union and adjacent zones.

For the purpose of inflating the cushion, I prefer to provide a valve 33 which as shown 20 best in Fig. 5 preferably comprises a valve mechanism 34 having a shank 35 provided with enlarged heads 36 and 37. A rubber sleeve 38 is slipped over the shank 35 so that the heads 36 and 37 will be effective to retain 25 the sleeve thereover and in which position the sleeve may be cemented or otherwise secured by suitable means. The shank 35 with the rubber sleeve 38 disposed thereover, is positioned between the front and back sheets 10 ³⁰ and 11 of the cushion so that the portion of small diameter of the shank 35 will be disposed in the marginal zone 17 in which the sheets are united. When the zone 17 is vulcanized, the sleeve 38 will also be vulcanized ³⁵ to the inner rubber portions of the cushion and the valve mechanism thereby firmly held in place. The valve mechanism 34 may be of any suitable type having a check valve or other provision for preventing the escape of air from the chamber, and in the present instance I prefer to provide the rubber sleeve 38 with an inwardly extending portion 39 which may be conveniently squeezed between the fingers to prevent escape of air from the cushion when the valve mechanism 34 is being 45manipulated. By this construction it will be apparent that the cushion may easily be inflated by blowing thereinto, and pinching the

extension 39 between the fingers to permit the taking of a new breath preparatory to further blowing. It will of course, be understood that I may provide independent chamber portions connected together to form a unitary cushion structure, suitable means being provided for inflation of each of the cham-55 bers. For protecting the valve mechanism I extend the sheets 10 and 11 outwardly to form

flaps 40 and 41 as clearly shown in Fig. 5. In Figs. 2, 3 and 4, I have shown my improved cushion as it appears when inflated. 60 It will be observed that the cushion is substantially wedge shaped in cross section, being considerably thicker from front to back adjacent its upper edge 19, than it is adjacent its

front and back sheets are joined so as to produce chamber portions which are smaller at their lower ends or adjacent the lower edge 20, and larger at their upper ends or adjacent the $_{70}$ upper edge 19. It will further be noted that the chamber portions 42, 43 and 44, intermediate the side edge chamber portions 24 and 25 are progressively larger as they approach the upper edge 19, and this arrange-75 ment causes the portion of the cushion intermediate the chambers 24 and 25 to assume the said wedge shape. The front and back sheets are maintained in spaced relation by inflation of the cushion and the described ar- 80 rangement of joined zones is effective to control the spacing of the sheets, since the smaller portions of the sheets which form the smaller chamber or compartment portions cannot be distended by inflation as great an 85 amount as the larger portions which form the larger chamber portions.

The arrangement of chamber divisions or portions illustrated in the present embodiment which includes chamber portions ex- 90 tending lengthwise and crosswise of the cushion and transversely to each other, is particularly desirable, since it tends to prevent folding or buckling of the cushion except along desirable lines. It will be understood 95 by an inspection of Fig. 2, that the cushion will not readily bend along a horizontal line such as defined by the zone 26, since the side chamber portions 24 and 25 would oppose such bending. The cushion may however, be bent 100 a certain amount along vertically extending lines defined by the zones 18-18 and thereby be caused to more closely fit the back of a person using the cushion for back rest purposes.

I prefer to notch the upper edge 19 of the cushion as indicated at 45-45 and the lower edge of the cushion as indicated at 46-46 so as to permit the cushion to assume such shape as is incidental to inflation thereof. By an 110 inspection of Fig. 2 it will be noted that the cushion more or less squares itself, as the notches 45 and 46 are closed up. The upper edge portion of the cushion also buckles slightly, as indicated at 47, but such buckling 115 is not of such a great extent as to be objectionable and to require the provision of additional notches or other means for the purpose of eliminating the same.

I prefer to provide somewhat enlarged 120 corner marginal portions as indicated at 48 and to provide suitable eyelets in these corner portions as indicated at 49 to facilitate fastening the cushion in any desired position on the back of an automobile seat or other 125 place.

I am aware that many modifications in the arrangement of joined zones or chambers or chamber portions may be made, as well as in 65 lower edge 20. The cushion assumes this the form and construction of the cushion, 130

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without departing from the spirit of the invention, the scope of which should be determined by reference to the following claims, the portions of said members intermediate which should be construed as broadly as said lengthwise zones being also united so as 5 possible, consistent with the state of the art. to form compartments extending crosswise

I claim as my invention:

In a pneumatic cushion of the class described, the combination of front and back members united together around their outer
 edges so as to form a sealed envelope adapted to be inflated, whereby intermediate portions of said members will be spaced apart and will enclose a chamber, said members also being united along relatively narrow inter-

15 mediate zones so as to divide said chamber into a plurality of compartments respectively disposed crosswise and lengthwise of the cushion, said compartments being of relatively small size along one edge of the cush-

20 ion and of relatively large size along the opposite edge, whereby the cushion will be caused to assume a wedge-like shape in cross section when inflated, and the crosswise and lengthwise arrangement of said compartment
25 being effective to prevent undesirable bend-

ing of the cushion.

In a pneumatic cushion of the class described, the combination of normally flat front and back members united around their
 outer edges so as to form a sealed envelope, said envelope being adapted to be inflated so as to form a chamber therein, said members also being intermediately united in relatively narrow zones extending lengthwise thereof
 adjacent opposite side edges of the cushion

and so as to form lengthwise extending com-

partments of greater width at the top edge of the cushion than at the bottom edge thereof, the portions of said members intermediate said lengthwise zones being also united so as 40 to form compartments extending crosswise of the cushion and of greater capacity along said top edge than at said bottom edge, said compartment arrangement being effective to cause the cushion to assume a wedge-like 45 shape in cross section, and also to prevent undesirable bending of the cushion.

3. In a pneumatic cushion of the class described, the combination of normally flat front and back members united around their 50 outer edges so as to form a sealed envelope, said envelope being adapted to be inflated so as to form a chamber therein, said members also being intermediately united in relatively narrow zones extending lengthwise thereof 55 adjacent opposite side edges of the cushion and so as to form lengthwise extending compartments of greater width at the top edge of the cushion than at the bottom edge thereof, the portions of said members inter- 60 mediate said lengthwise zones being also united so as to form compartments extending crosswise of the cushion and of greater capacity along said top edge than at said bottom edge, said compartment arrangement be- 65 ing effective to cause the cushion to assume a wedge-like shape in cross section, and also to prevent undesirable bending of the cushion, and valve means for facilitating inflation of said envelope.

ARVID E. ANDERSON.