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RESILIENT CUSHION

Filed June 9, 1926

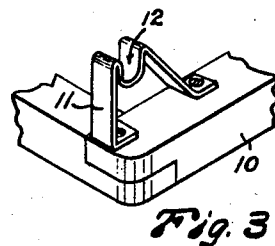
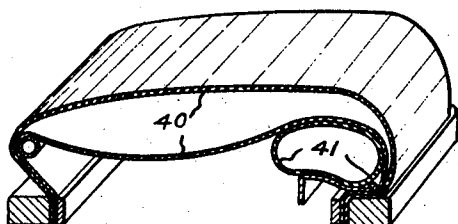
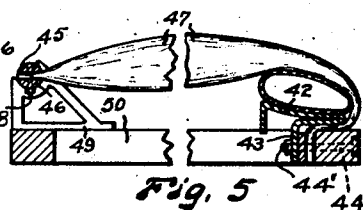
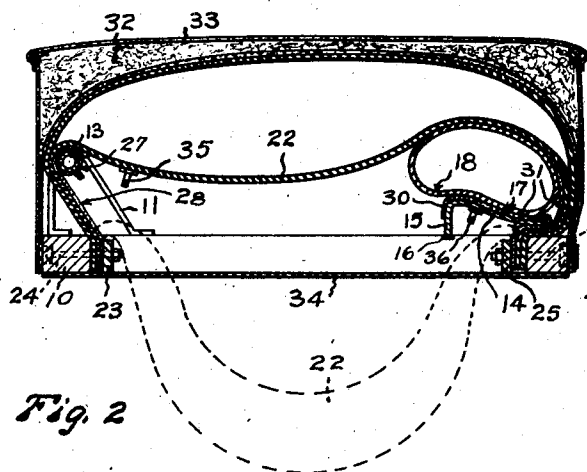
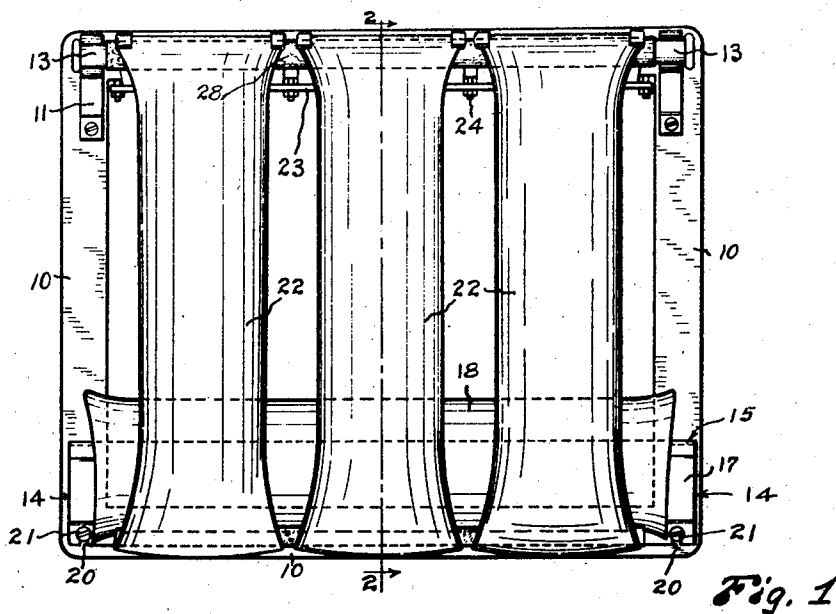


Fig. 4

Fig. 3

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UNITED STATES PATENT OFFICE.

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RESILIENT CUSHION.

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Our invention relates to improvements in resilient pneumatic cushions and the object of our improvement is to provide a simple and efficient pneumatic cushion that is especially resilient and comfortable to sit on and that is very durable in construction.

Another object is to provide a resilient pneumatic cushion which utilizes both the elasticity of rubber and the resiliency of air to give resiliency and elasticity to the cushion, said cushion comprising rubber air containers drawn tightly across a rigid frame and unsupported except at their ends.

A further object is to provide a cushion in which the air containers that are stretched across the cushion frame are drawn over an inflated air bag or tube that rests upon and extends along the front edge of the cushion thus providing means for varying the tension of the other air tubes and further providing an easy and comfortable roll at the front edge of the cushion that affords extra resiliency and elasticity.

A further object is to provide a cushion embodying a plurality of elastic tubes stretched from front to rear of the cushion across a rigid frame and arranged so that a person on one portion, as at one end, of a relatively long cushion, will not cause the other end of the cushion to bulge or raise up.

A further object is to provide a cushion in which the rubber tubes that form the seat portion are supported at both ends by releasable means so that said tubes may be easily released and drawn outwardly through the bottom of the cushion frame for the purpose of repair or replacement without removing the padding and upholstery on the top of the cushion.

Further objects are to provide a frame structure of efficient construction having novel means for supporting the tubes at both the front and rear edge of the cushion.

Other and more specific objects will be apparent from the following description and accompanying drawings.

In the drawings Fig. 1, is a plan view, with all coverings removed, of a cushion constructed in accordance with our invention.

Fig. 2, is a view in cross section of the same on line 2—2 of Fig. 1, the padding being shown on the cushion and a position that certain air tubes may assume when withdrawn for repair being shown by dotted lines.

Fig. 3, is a fragmentary view in perspec-

tive of one corner of the cushion frame and support for the tubes.

Fig. 4, is a fragmentary sectional perspective view of a modified form of cushion member using an air sack for a seat portion instead of a plurality of tubes.

Fig. 5, is a fragmentary sectional view of a modification of the invention.

Like reference numerals designate like parts throughout the several views.

The drawings show a single cushion of short length, it being understood that the longer cushions are similarly made.

Figs. 1 to 3 show a cushion embodying a rigid rectangular frame 10 provided at its rear edge at the two ends, with upwardly extending brackets 11 having arcuate recesses 12 in their upper ends for the reception of a tubular support or rod 13 that extends longitudinally of the rear edge of the cushion frame and is spaced above the rear member of the frame 10.

A support 14 of the cross sectional shape shown in Fig. 2 is provided at the front edge of the frame, said support having a vertical rear wall 15, the ends of which rest in notches 16 in the side bars of the frame 10, and said support having an inclined top wall 17 on which a pneumatic tube 18 that extends along the front edge of the cushion may rest. The support 14 is provided at each end on its front edge with a rearwardly extending notch 20 arranged to slip over a stud screw or bolt 21 that extends upwardly from the frame, the diameter of the head of the stud screw 21 being greater than the width of the notch 20 and the stud screw serving to hold the support in place.

A plurality of pneumatic tubes 22 extend crosswise of the cushion from front to rear in side by side relation. The rear ends of these tubes are securely clamped between the rear member of the frame 10 and a metal clamp bar 23 that is secured to the rear frame member by bolts 24. The tubes 22 extend upwardly over the rear of the support 13, thence forwardly across the cushion frame, thence downwardly over the tube 18 thence under the front support 14 and are securely clamped between the front member of the frame 10 by a metal clamp member 25 that is secured to said front frame member by bolts 26.

The tubes may be protected by coverings or chafing strips as follows. A covering 27 on the rear support 13, a chafing strip or

reinforcement 28, preferably cemented to the rear ends of the tubes 22 and interposed between said rear ends of said tubes 22 and the clamp bar 23 and extending upwardly over the rear support 13, a covering 30 on the front support 14 and a chafing strip or covering 31 interposed between the tubes 22 and the clamp bar 25 and extending between the tubes 22 and the bottom and front edge of the front support 14.

The reinforcement 28 that is secured to the rear ends of the tubes is substantially non-elastic thereby preventing those portions of the tubes between the supporting rod 13 and clamp bar 23 from stretching and consequently preventing chafing on the rod 13.

Suitable padding 32 and upholstering 33 may be drawn over the top of the tubes 22 and secured to the sides of the frame 10 and a removable bottom member 34 may be secured to the frame.

Each tube 22 is provided with an air valve 35 by which it may be inflated and the front tube 18 has an air valve 36 that extends through the front support 14.

The front tube 18 is an important feature, in that it forms a satisfactory front edge for the cushion and serves as a means of regulating or adjusting the tension of the other tubes 22, it being obvious that the tension of the tubes 22 may be increased or decreased by increasing or decreasing the pressure in the front tube 18.

Another important feature of the invention resides in the means for supporting the pneumatic tubes in such a manner that said tubes may be drawn outwardly through the bottom of the frame 10 as shown by dotted lines in Fig. 2 for repair or replacement. To thus expose the tubes it is first necessary to deflate the front tube 18, after which, the rear supporting rod 13 may be removed and the front support 14 may be first raised up clear of notches 16, then drawn rearwardly to disengage the same from stud screws 21 and then removed entirely from the cushion leaving the tubes 22 free to hang down out of the cushion as shown by dotted lines in Fig. 2, where they may be conveniently patched or repaired. The front tube 18 is entirely removed with the front support 14. The nuts of the clamp bolts are all on the inside so that the ends of the tubes 22 may be easily unclamped for replacement of tubes. The tubes and parts of the frame are easily put back, the front tube 18 being inflated after it is replaced and serving to put the other tubes 22 under tension.

Another important feature of the invention is that the tubes 22 are under tension and also inflated and are unsupported except at the ends, thus giving the resiliency due to both the elasticity of the rubber and the elasticity or resiliency of the air.

In a long cushion for supporting more than one person the use of a plurality of separate tubes 22 extending from front to rear has a substantial advantage over the use of a single air sack due to the fact that it materially reduces the tendency of the weight of a person on one part of the cushion to bulge other parts of the cushion whereon other persons may sit, it being apparent that the weight of each occupant of the cushion is supported entirely on those tubes on which he sits and does not affect the other tubes, whereas in the case of a single air bag or sack as shown in Fig. 4, pressure in one place forces the air to another place and may bulge the cushion.

Fig. 4, shows an alternative form of cushion which is the same as the previously described cushion except that the tubes 22 are replaced by a pneumatic bag 40 that is stretched from front to rear of the cushion frame over a front tube 41 that corresponds to the front tube 18.

Fig. 5, shows an alternative construction of both the front and rear brackets or supports. The front bracket 42 being of substantially the shape shown, and having downwardly extending clips or portions 43 that fit over the ends of clamp bolts 44 and are secured by nuts 44'. The rear cross member is made up of two parts 45 and 46 and the ends of tubes 47 that correspond to the tubes 22 are clamped by bolts 48 between said two parts. Said rear cross member formed of parts 45 and 46 is removably supported at the ends by brackets 49 that are rigid with a frame 50.

The foregoing description and accompanying drawings clearly disclose a preferred embodiment of our invention but it will be understood that this disclosure is merely illustrative and that many changes in the cushion may be made within the scope and spirit of the following claims.

We claim:

1. In a pneumatic cushion a frame affording an edge support of substantial width and having a center which is unobstructed in the area of movement of the cushion seat, a plurality of elastic seat tubes secured at opposite ends to the frame so as to extend across said frame loosely either when inflated or non-inflated and unsupported from below except adjacent their ends and a pneumatic tube extending longitudinally along said edge support beneath said seat tubes and resting throughout the greater portion of its width on said edge support and capable when inflated of drawing said seat tubes tautly across said unobstructed central portion of said frame.

2. In a cushion, a rectangular frame, a rod supported in spaced relation above, and substantially parallel with the rear portion of said frame, a support resting on, and extending

ing lengthwise along the front edge of said frame, an air tight elastic tube, capable of inflation, resting on said front support, clamp bars bolted to the inner sides of the
5 front and rear frame members respectively and a plurality of air tight elastic tubes capable of inflation having their ends securely clamped by said clamp bars, said tubes being drawn tightly across said frame over
10 said rear rod and over said front elastic tube.

3. In a cushion of the class described, a rectangular frame, upright brackets secured to the rear corners of said frame, a rod removably supported in said brackets, a removable supporting member resting on, and
15 extending along the front edge of said frame, said supporting member having a

vertical rear wall and having a rearwardly extending notch in its front edge near each
20 end, a stud screw in the frame near each front corner over which the corresponding notch in the front support may fit, said frame being notched at the sides for the reception of those portions of said vertical
25 rear wall near the ends, an inflated elastic tube resting on said front support and a plurality of inflated elastic tubes drawn across said frame under tension over said rear rod and over said first named inflated tube.
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The foregoing specification signed at Seattle, Washington, this 13th day of May, 1926.

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