

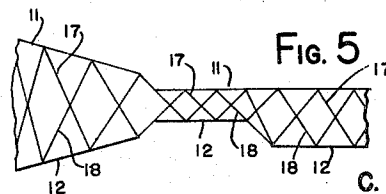
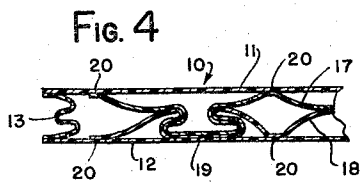
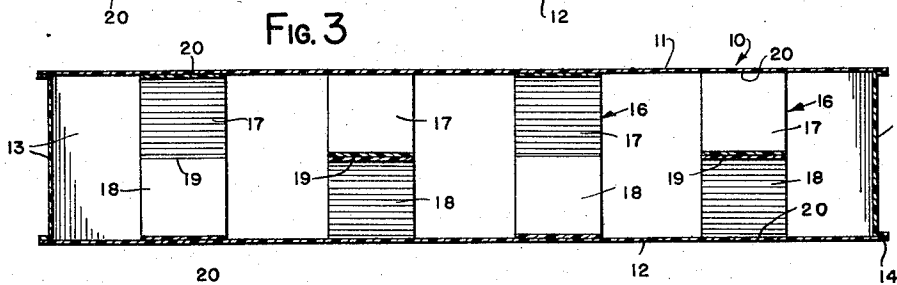
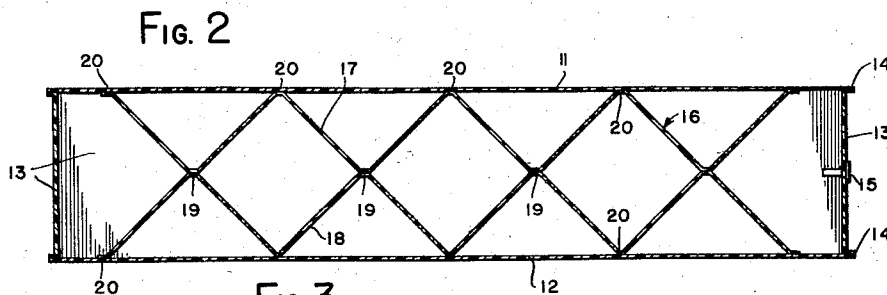
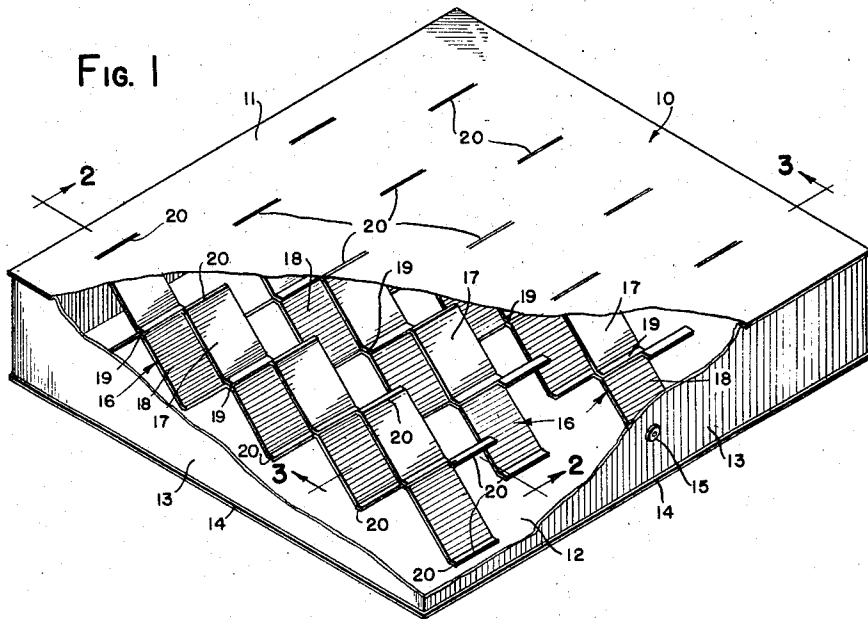
May 26, 1959

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2,887,692

INFLATABLE CUSHION OR THE LIKE

Filed May 23, 1956



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## INFLATABLE CUSHION OR THE LIKE

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Application May 23, 1956, Serial No. 586,809

3 Claims. (Cl. 5—348)

The present invention relates to inflatable articles, such as inflatable mattresses, seat cushions and the like.

Prior art devices of this general character have had certain disadvantages or defects. Among these defects is the fact that inflatable cushions or mattresses having interconnecting means between their opposite main faces are not flat or smooth when inflated. This is usually due to the fact that the interconnecting means between the sides of the article are connected to the sides at points, and when placed under tension due to the inflation of the article, the interconnecting means cause the main sides to become puckered and uneven, rather than smooth or flat, which is desirable.

Accordingly, it is a primary object of the invention to overcome this difficulty by providing novel interconnecting means between the main sides of the inflatable article, so that when inflated, the main sides will be substantially flat and smooth.

Another object of the invention is to provide an inflatable article of the above-mentioned character which is highly economical to manufacture, strong and durable in construction and adaptable to a wide variety of uses.

A further object is to provide an inflatable article which may be conveniently formed from flexible sheet plastics material of a type which may be welded or heat sealed, by the use of high frequency die means of the type shown, for example, in United States Patent 2,631,646.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are employed to designate like parts throughout same:

Figure 1 is a perspective view of an inflatable article in accordance with the invention, with parts broken away to show the internal construction of the article,

Figure 2 is a vertical section taken on line 2—2 of Figure 1,

Figure 3 is a vertical section at right angles to Figure 2, taken on line 3—3 of Figure 1,

Figure 4 is a fragmentary vertical section through the article in a semi-collapsed or deflated condition,

Figure 5 is a fragmentary diagrammatic sectional view on a reduced scale showing possible variations in the cross sectional shape of the inflatable article.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 10 designates, as a whole, an inflatable article such as, for example, an inflatable seat cushion for overstuffed furniture or the like. While the device is designated as a seat cushion, or the like, it should be obvious that merely by changing its overall size and proportions, the device may be formed to serve as a mattress for a bed, sleeping pad, or various other analogous devices.

As shown in the drawings, the cushion 10 may be rectangular and comprises a pair of opposed parallel main sides or sheets 11 and 12, which are spaced apart in the manner shown when the cushion is inflated. It might be mentioned here that the main sides 11 and 12, as well

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as all other parts of the cushion 10, to be described, are preferably formed of relatively thin flexible sheet plastics material, of a type which may be welded or heat sealed in assembly, by well known high frequency die means, similar to that shown in Patent 2,631,646.

The cushion 10 further comprises relatively narrow marginal sides or webs 13, which extend continuously about the four sides of the cushion and have their opposite longitudinal edge portions heat sealed or welded to the marginal edge portions of the sides 11 and 12, as indicated at 14. The webs 13 thus form with the main sides 11 and 12 an air tight flexible hollow body portion or envelope, adapted to be inflated for forming the cushion 10. One marginal web 13 is preferably equipped with a conventional self-closing rubber air valve 15, or the like.

Flexible interconnecting means for the main sides 11 and 12 are provided, and this means comprises a plurality of laterally spaced parallel continuous flexible tape units 16. Each tape unit 16 comprises a pair of elongated continuous flexible strips or tapes 17 and 18, preferably formed of the same plastics material as the remainder of the cushion. The tapes 17 and 18 of each unit 16 are welded or heat sealed together at equidistantly spaced points longitudinally thereof and for the full widths of the tapes 17 and 18, as shown at 19. The tapes 17 and 18 are additionally welded or heat sealed at equidistantly spaced points along the same and throughout their full widths to the main sides 11 and 12, as indicated at 20. The tapes 17 and 18 are thus welded together transversely to each other and to the main sides 11 and 12 by equidistantly spaced lines or strips of welding, as best shown in Figures 1 and 3, and the tapes are not joined to the sides 11 and 12, or to each other by mere spots or points of welding.

The spacing of the several lines of welding 20 of each tape unit 16 is preferably the same as the spacing of the lines or areas of welding 19, Figure 2, but the lines 19 and 20 are in alternating or staggered relation, as shown, so that one line of welding 19 occurs between each upper and lower pair of welding lines 20, Figure 2.

The interconnecting tape units 16 are spaced apart in the cushion 10 a desired distance, and preferably a distance equal to the width of each tape unit 16, or a slightly greater distance, and the spacing of the units 16 is not critical and may vary somewhat as found desirable. As best illustrated by Figure 1, alternate tape units 16 are offset or staggered longitudinally of the adjacent pair of tape units, so that the lines of welding 19 and 20 of a particular tape unit occur midway between the corresponding lines of welding of the pair of tape units 16 upon opposite sides of the same. This increases the strength of the product and provides for a maximum number of connection lines or areas between the flexible tape units 16 and the main sides 11 and 12.

An important feature of the invention resides in the fact that the individual tape units 16 have their tapes or strips 17 and 18 provided with slack or folds between their lines of attachment 20 with the main sides 11 and 12. This slack or folding in the tapes 17 and 18 between their lines 20 of attachment with the main sides is illustrated somewhat diagrammatically in Figure 4, wherein a portion of the inflatable cushion 10 is shown in a partly collapsed or uninflated condition. By means of this arrangement, when the cushion 10 is inflated through the air valve 15, and the main sides 11 and 12 are forced apart by the air, all of the slack or folds in the tape units 16 will be taken up, and the individual tapes 17 and 18 will be taut and will assume the condition shown in Figure 2. The tapes are provided with just the right amount of slack so that when they are taut as in Figure 2, they will not cause a pulling in or puckering or wrin-

klings of the main sides 11 and 12, but on the contrary, will allow these main sides to be flat and smooth even under a relatively high internal air pressure. As best shown in Figure 2, when the cushion is inflated, the individual flexible tapes or strips 17 and 18 of each unit 16 extend in a continuous zig-zag manner throughout substantially the entire width of the cushion in one direction, and each tape 17 or 18 forms alternate V-shaped and inverted V-shaped portions when the tapes are taut, Figure 2. The V-shaped portions of the tape 17, Figure 2, are opposite the inverted V-shaped portions of the tape 18, and vice versa so that the extended or taut tapes of each unit 16 form between the sides 11 and 12 the repeating rectangular and interfitting triangular tape configuration shown in Figure 2.

The tape units 16 thus allow substantially the complete collapsing of the cushion for compact storage or packaging when the same is uninflated, and the tape units effectively control the degree of expansion or the inflated size of the cushion when the same is inflated with air. As previously stated, the lines of attachment or welding 20 and 19 control or define the shape of the inflated article and because of the proper degree of slack which is formed in the tape units 16 when they are welded at 20 to the main sides 11 and 12, these main sides are held by the tape units substantially flat and smooth in the inflated article.

The shape and thickness of the inflated article may be controlled and regulated by changing or varying the degree of slack in the individual tapes 17 and 18 between their lines of attachment 19 and between the lines of attachment 20 of the tapes to the sides 11 and 12. It should be obvious that by thus varying or changing the amount of slack in the tapes that the main sides of the article or cushion 11 and 12 may be caused to assume other than parallel and equidistantly spaced positions over their entire areas or portions of their areas, as desired. By increasing the slack in certain portions of the tape units 16 and decreasing it in other portions, the main sides 11 and 12 may be caused to diverge or converge locally in the article, or over its entire area. In this manner, the cushion 10 may have imparted to it various shapes and, for example, may be formed substantially wedge-shaped or the like. The above-mentioned possible shape variations in the inflated article or cushion are shown partly diagrammatically in Figure 5 of the drawings.

It is to be understood that the form of this invention, herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention or the scope of the subjoined claims.

The invention having been described, what is claimed is:

1. An inflatable cushion or the like, comprising a hollow inflatable body portion of flexible sheet material, said body portion including a pair of main sides, and a plurality of separate spaced tape units arranged between said main sides, each tape unit embodying a pair of elongated tapes arranged in opposed relation and secured together at spaced points longitudinally of the tapes and also secured to said main sides at alternate points be-

tween said points at which the tapes are secured together, there being measured slack formed within the tapes of each tape unit when the cushion is uninflated, said measured slack being formed between the points at which the tapes are secured to said main sides, whereby when the cushion is inflated and the tapes are substantially taut, said main sides will be substantially flat or smooth.

2. An inflatable article comprising a hollow inflatable body portion of flexible sheet plastics material including a pair of opposed main sides, a plurality of interconnecting tape units arranged within said body portion and between said main sides in spaced generally parallel relation, each tape unit comprising a pair of separate continuous opposed flexible tapes of plastics material, substantially equidistantly spaced transverse lines of welding securing the tapes of each unit to each other, and substantially equidistantly spaced transverse lines of welding securing the tapes of each unit to said main sides at points substantially midway between the first-named lines of welding when the tapes are taut, there being measured slack within the tapes between the second-named lines of welding when the inflatable article is collapsed, whereby the tapes of said units hold said main sides flat when the article is inflated and the tapes are taut.

3. An inflatable cushion or the like comprising a hollow body portion formed of flexible sheet material and including a pair of opposed substantially parallel main sides, and a plurality of spaced substantially parallel interconnecting tape units arranged within the body portion between said main sides, each tape unit comprising a pair of superimposed flexible tapes of substantially equal length, the tapes of each pair being secured to each other at longitudinally substantially equidistantly spaced points along the tape units, one tape of each pair of tapes being additionally secured to one of said main sides at longitudinally substantially equidistantly spaced points along the tape units, the last-mentioned points occurring substantially midway between the points where the tapes of each pair are secured to each other, the other tape of each pair being likewise secured to the other main side at longitudinally substantially equidistantly spaced points along the tape units and substantially opposite the points at which said one tape of each pair is secured to said one main side, there being a measured amount of slack provided in the tapes of each pair between the points at which the tapes are secured to said main sides when said body portion is uninflated, the tapes of each pair being substantially taut and diagonally arranged with respect to said main sides and defining interfitting rectangular and triangular spaces between said main sides when the body portion is inflated and the main sides are substantially parallel, the points at which the tapes of each pair are secured to each other then being disposed substantially midway between said main sides.

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