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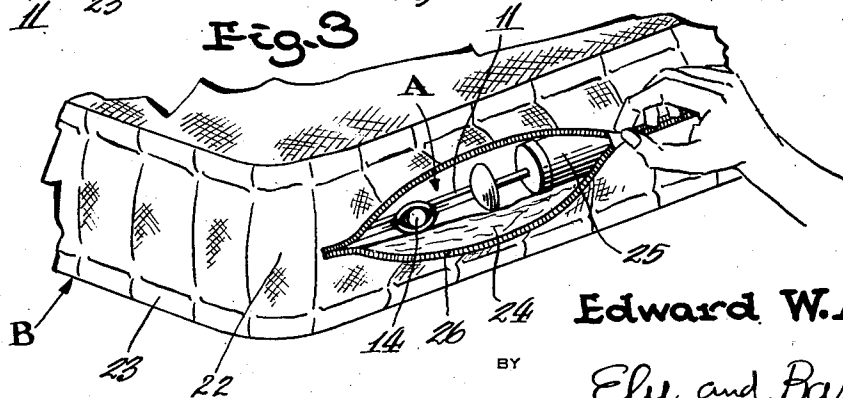
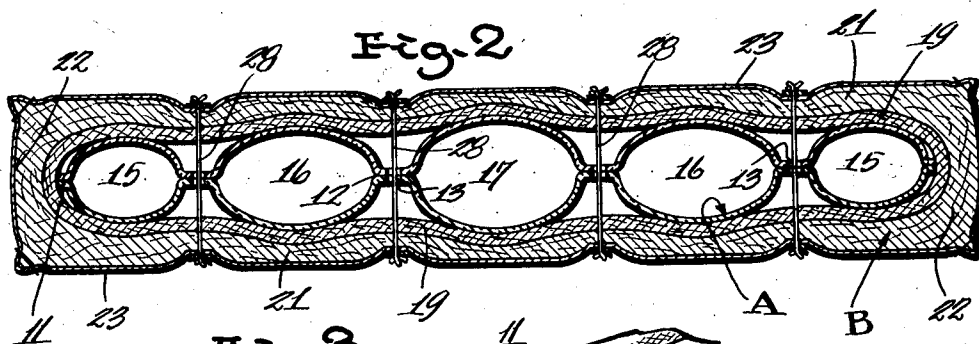
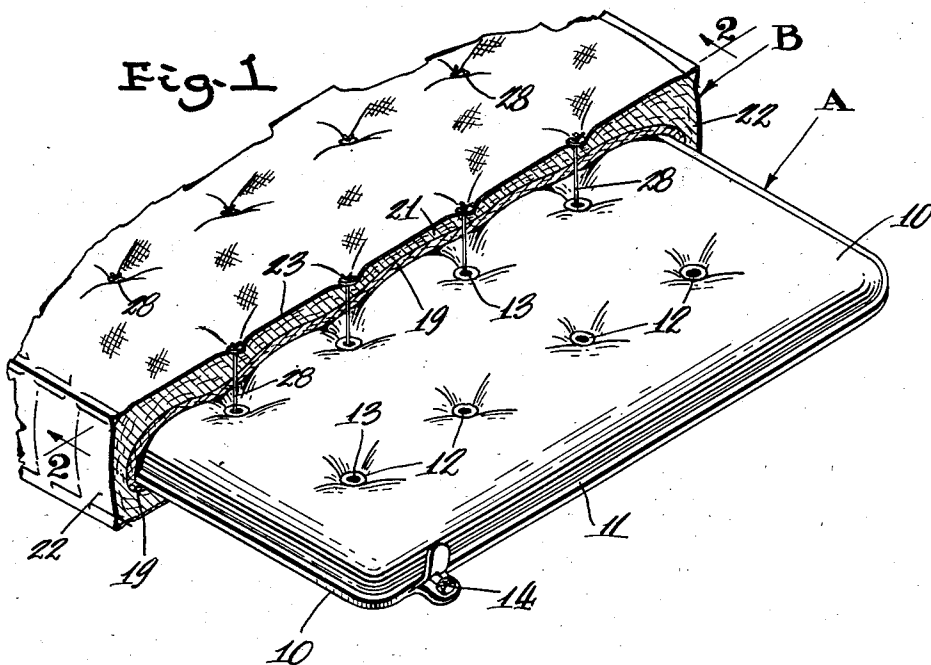
E. W. ARENS

2,000,873

PNEUMATIC CORE MATTRESS

Filed Aug. 25, 1934

2 Sheets-Sheet 1



INVENTOR

Edward W. Arens

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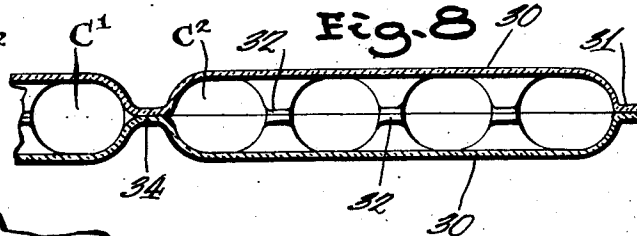
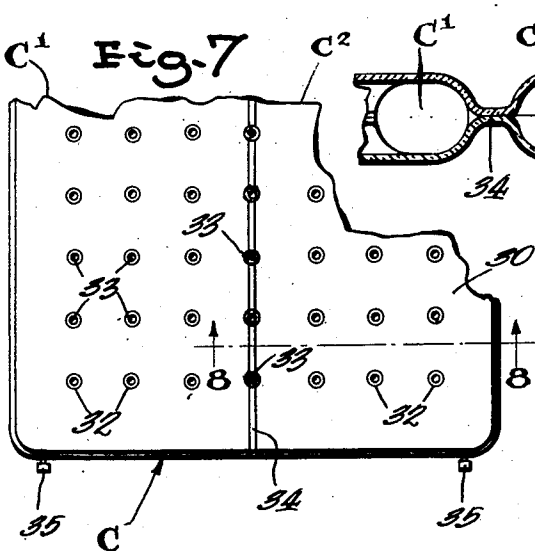
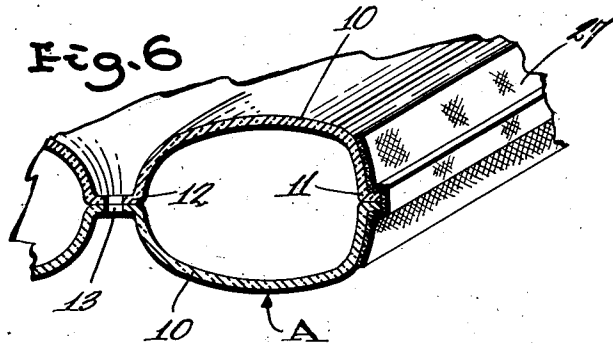
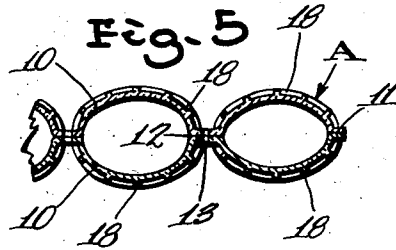
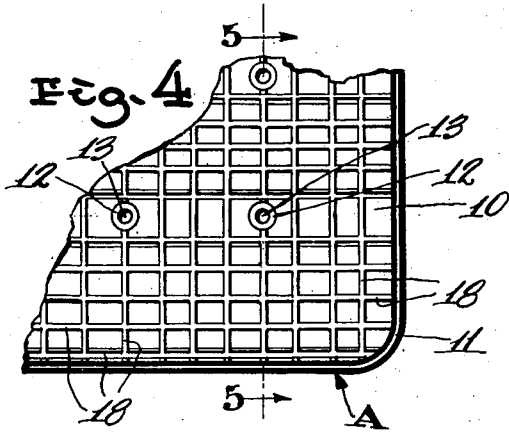
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PNEUMATIC CORE MATTRESS

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,000,873

PNEUMATIC CORE MATTRESS

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Application August 25, 1934, Serial No. 741,391

2 Claims. (Cl. 5-348)

The present invention relates to improvements in mattresses, and more particularly to a pneumatic core mattress, which has the appearance and style of a conventional stuffed mattress, and incorporates an inflatable, flexible core in the interior thereof, for providing a superior, soft, yielding and comfortable mattress.

Small pneumatic inflatable rubber pads have been manufactured for the use of invalids in sick rooms, hospitals, and the like. Such pads are usually placed over a conventional mattress and do not constitute a complete mattress in themselves. The desirability of constructing a pneumatic mattress has long been recognized, and several attempts have been made to produce a successful pneumatic mattress for domestic use. Two major problems, or difficulties, were encountered by those attempting to produce such a mattress. In the first place, it was found to be impossible to provide a pneumatic mattress of sufficient thickness to give the desired air cushioning effect, due to the difficulties encountered of properly confining the air and yet producing a substantially flat surface. In the second place, it was found that pneumatic mattresses, necessarily had to be made of rubber to provide a proper air container, and such rubber containers were objectionable for the reason that rubber would not retain the heat of the body, and therefore, provided a much colder and less comfortable mattress, than the conventional type provided with protective layers of felt, cotton or the like.

I have discovered that a mattress can be constructed having an inflatable pneumatic rubber core, which is surrounded with padding of felt, cotton or the like, and, therefore, will have the appearance, style and dress of a conventional mattress and, at the same time, will possess those marked characteristics of air cushioning and soft resiliency imparted by a confined body of air.

It, therefore, is an object of my invention, to provide a mattress of the upholstered pneumatic type, which may be manufactured at a relatively low cost and will be efficient and durable, and which is provided with means for readily altering or changing the cushioning properties, to suit the requirements of the individuals using it.

Another object is to provide a mattress, of the type described, having a pneumatic core, which may be quickly and easily removed for inspection and repairs.

Another object is to provide means for preventing the padding or filling from shifting outwardly along on the pneumatic core.

Still another object is to provide means for keeping the outer surface of the mattress substantially flat, even though there is some shifting of the padding towards the sides.

Another object is to provide means for reinforcing the sides of the pneumatic core, the same means serving to flatten the sides thereof.

Another object is to provide an arrangement of the tuftings in the pneumatic core, which will give the maximum support to the body, and will permit it to accommodate itself to the contours of the body.

Another object is to provide means for carrying and concealing an air pump in the mattress.

Still another object is to provide a double pneumatic upholstered mattress for the use of two persons, which has two separate pneumatic cores, each of which may be individually inflated, to suit the requirements of each person.

These and other objects will be apparent from the following description.

In the drawings, forming a part of this application:

Fig. 1 is a perspective view of a part of a mattress, made in accordance with my invention, having a portion of the outer padding broken away;

Fig. 2 is an enlarged sectional view taken on the line 2-2 of Fig. 1;

Fig. 3 is a broken perspective view of a corner of a mattress showing the pocket and air pump therein;

Fig. 4 is a partial top plan view of a core showing the ribs used to prevent the shifting of the padding;

Fig. 5 is a sectional view taken on the line 5-5 of Fig. 4;

Fig. 6 is a broken perspective view taken through a part of the core, showing the reinforcing strip used along the side.

Fig. 7 is a top plan view of a core used in a modified form of my invention showing a double mattress; and

Fig. 8 is an enlarged section taken on the line 8-8 of Fig. 7.

In the drawings the letter A indicates a pneumatic rubber core, while the letter B represents the padding. The core A is composed of two sheets of rubber 10, placed together and vulcanized around their outer edges forming an edge 11. The rubber sheets 10 are also vulcanized together at a plurality of spaced areas 12, which are perforated centrally at 13 to receive tufting threads as hereinafter described. The vulcanizing of the sheets 10 together, as described, forms

a permanent seal around the perforations 13, and subdivides the interior of the core A into a plurality of inter-communicating air chambers, a single valve member 14 serving to control the

5 flow of air into and from the core A.
As shown in Fig. 2, the distance between the two outer tufting perforations 13, on each longitudinal side of the mattress, indicated by the numerals 15, is somewhat smaller than the distance between the next inner two tufting perforations, and is indicated by the numeral 16, while the distance between the two inner tufting perforations is slightly greater than the latter, and is indicated by the numeral 17. When the core is inflated, as shown in Fig. 2, this causes the center of the core to be higher than the sides, and produces the crowning of the core towards the center, for the purpose of producing a substantially flat outer surface of the mattress, even after some of the padding at the center works away towards the sides of the mattress as a result of wear, as is frequently the case.

In some instances, it may be desirable to provide a series of longitudinal and transverse ribs 18 on the outer surface of the rubber sheets 10, as illustrated in Fig. 4, to minimize the shifting of the padding on the core A away from the center thereof in response to wear.

30 A blanket, indicated at 19 and shown in Figs. 1 and 2, is then wrapped around the cores A, as shown in these figures. The blanket 19 is preferably made up in sisal and various other materials, and prevents the chewing up or breaking down of the cotton into the tufting perforations 13. On top of the blanket 19 loose layers of compressed cotton, indicated at 21, are packed to fill out the mattress and give it an attractive appearance. Any suitable felted material, either in layer or loose form, may be used in place of layers of cotton.

Cotton is also stuffed along the sides of the core A to fill out and give the finished mattress substantially square edges. Then a pre-built mattress edge 22, is placed around the sides and a mattress cover 23, of suitable cloth material, is sewed to the pre-built edge 22 and cotton padding.

A pocket 24, as shown in Fig. 3, is provided in the side of the material of the mattress, and an air pump 25, for inflating the core A, is placed therein. A so-called "zipper" or "lightening" fastening means 26, is provided in the side of the mattress cover, for affording ready access to the pocket 24.

In certain instances, it may be desired to omit the blanket 19 in constructing the mattress. In such instances, where the cotton or felt padding is packed directly against the core A, the ribs 18, formed on the outside of the core A, as shown in Figs. 4 and 5, serve to minimize the shifting of the cotton padding along on the core A towards the sides. This shifting of the padding frequently causes the forming of depressed or uneven portions where the greatest wear has taken place, and the ribs 18 have been found to be effective in minimizing this shifting.

For certain uses, particularly for hospital or surgical uses, where pins are commonly inserted into the mattress to hold the bed sheets in position, a canvas strip 27, shown in Fig. 6, may be vulcanized to the sides of the core A, or may be adhesively secured thereto.

After the mattress cover 23 is sewn on, conventional tufting threads 28 are passed through the

perforations 13 in the core A, and serve to bind the core A and all the padding material placed around it, into one integral mattress structure, having the form and appearance of a conventional mattress.

In Figs. 7 and 8 a slightly modified form of my invention is shown. In this form a pneumatic rubber core C is formed of two sheets of rubber 30, which are vulcanized around their outer edges forming an edge 31. The sheets 30 are also vulcanized together at a plurality of spaced areas 32, perforated at 33. In addition to the construction shown above, the sheets 30 are vulcanized together along a central longitudinal seam 34, dividing the core C into two separate air chambers C1 and C2, each having a separate valve member 35 for inflating it. The core C is built up into a conventional mattress form in the same manner shown in the preferred form of the invention.

This construction provides a so-called double mattress, to be used by two persons. Thus, each user can regulate the amount of air in the core of their half of the mattress through one of the valves 35, to suit their individual taste, and the mattress itself retains the form of a single mattress.

It will be noticed that the perforations 13 and 33 in the pneumatic cores A and C, respectively, through which tufting threads are passed, are of a considerably greater size than is actually necessary to accommodate the tufting threads. This construction is provided in order to facilitate the placing of the tufting threads during assembly without danger of injury to the core. The area of vulcanization around the tufting perforations is in the form of a broad, annular sealing ring which is about one-half of an inch wide, to effectively offset the weakening effect of the enlarged tufting thread opening. This feature was arrived at after considerable experimentation, and successfully solves one of the major problems, presented in assembling mattresses of this type.

The invention, herein illustrated, is not limited to mattress constructions, as it may be used in various cushion and upholstery constructions. Applicant, it is believed, is the first to provide a successful, full-size, complete mattress for domestic use having a pneumatic core and an outer covering, giving it the appearance and dress of the conventional padded mattress, and respectfully requests that he be given patent protection commensurate with the scope of his invention.

The disposition of the tufting perforations 13 and 33 in aligned rows, extending longitudinally and transversely of the core, and at right angles to each other, forming substantially square tufted areas, instead of diamond-shaped tufted areas, permits the maximum conforming of the core to the contours of the body, and therefore provides an exceptionally restful and comfortable mattress.

It will be apparent to those skilled in the art that my invention may be variously changed, used or modified without departing from the spirit of the invention or sacrificing the advantages thereof; furthermore, that the embodiment of the invention disclosed herein is illustrative and that my invention is not limited thereto.

What is claimed is:

1. A combined pneumatic and padded mattress, comprising a central pneumatic core formed of two sheets permanently vulcanized together, in flat form, along their outer edges and at spaced areas throughout, the vulcanized areas being perforated centrally for receiving tufting threads, the

distances between the spaced vulcanized areas being graduated and increasing from the longitudinal edges towards the center, in order to produce a core which is thicker along its longitudinal central portion than along its longitudinal edges when inflated, layers of padding built around the core, and tufting threads extending through the perforations and the layers of padding, for uniting the core and the layers of padding into one structure.

2. A combined pneumatic and padded mattress, comprising a central pneumatic core formed of two sheets permanently vulcanized together, in flat form, along their outer edges and at spaced areas throughout, the vulcanized areas being per-

forated centrally for receiving tufting threads, the distances between the spaced vulcanized areas being graduated and increasing from the longitudinal edges towards the center, in order to produce a core which is thicker along its longitudinal central portion than along its longitudinal edges when inflated, a blanket of confined material extending around the core for preventing the padding from working into the depressed portions of the core, layers of padding built around the blanket, and tufting threads extending through the perforations, the blanket and the padding, for uniting the core, the blanket and the layers of padding into one structure.

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