Feb. 13, 1923.

1,445,409.

D. T. OWEN.

CUSHION OR MATTRESS.

FILED APR. 27, 1922.

2 SHEETS—SHEET 1.

Fig. 1

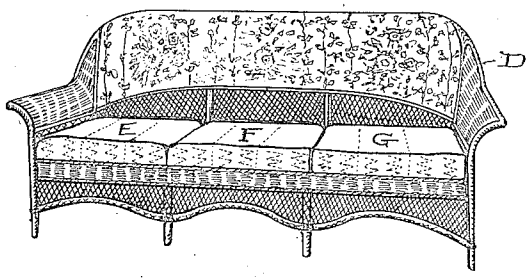


Fig. 2

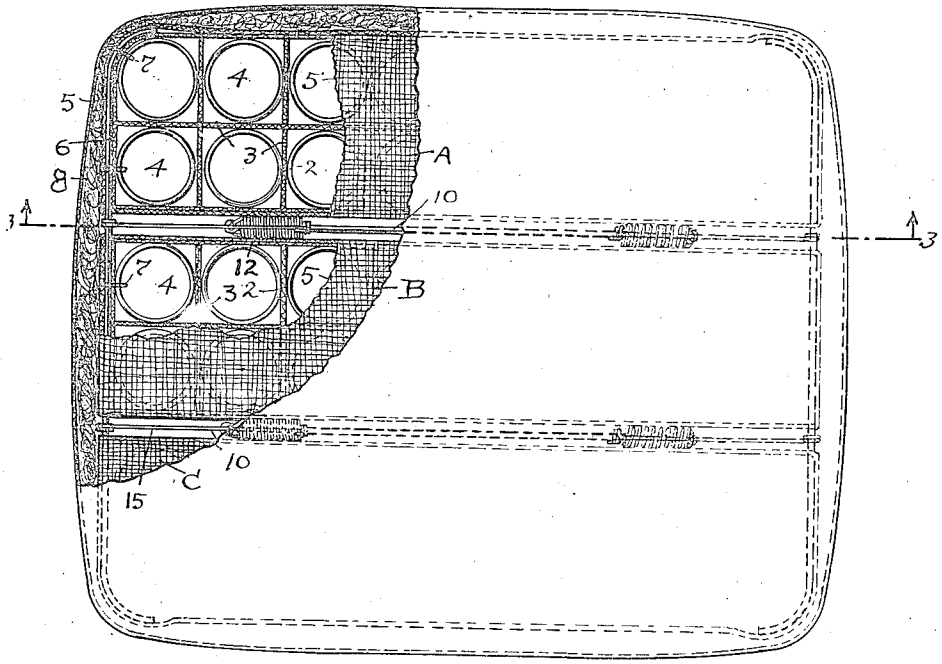
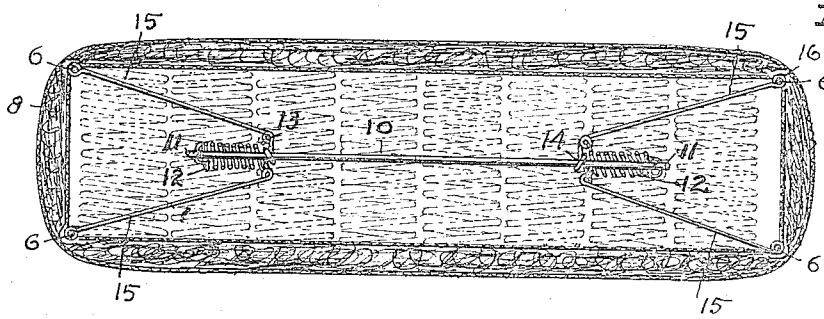


Fig. 3



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FIG. 4

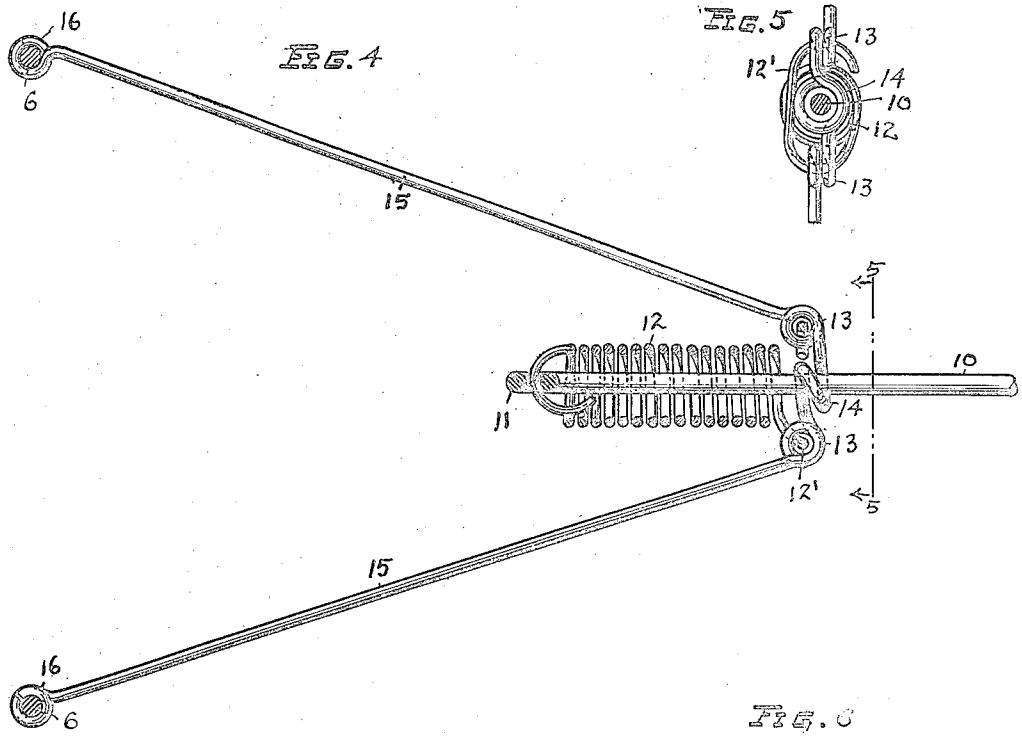


FIG. 5

FIG. 6

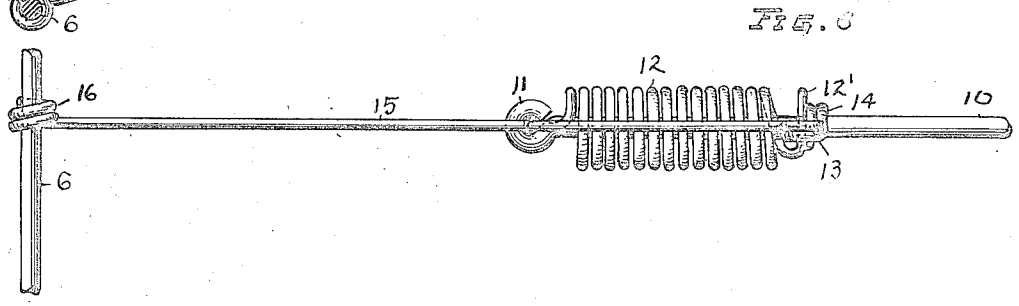
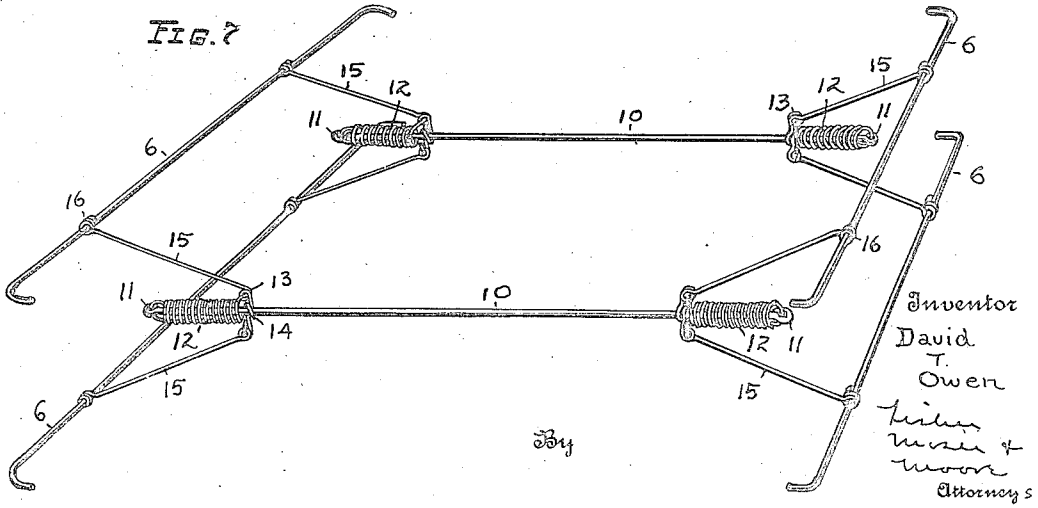


FIG. 7



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UNITED STATES PATENT OFFICE.

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CUSHION OR MATTRESS.

Application filed April 27, 1922. Serial No. 556,908.

To all whom it may concern:

Be it known that I, DAVID T. OWEN, a citizen of the United States, residing at Cleveland Heights, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Cushions or Mattresses, of which the following is a specification.

The primary purpose of this invention is to provide a comfortable spring seat, couch cushion or bed mattress, in which the border portions and seating edge may be held taut and under constant tension and in which the covering will be stretched and kept free from folds and wrinkles and be restored to a smooth neat appearance after use. A further object is to build up a soft resilient structure using relatively light springs and only a small amount of padding supplemented by expanding devices interposed transversely or longitudinally between parallel rows of springs. These supplemental expanding devices are fabricated entirely of spring wire elements particularly related and connected to impart vertical and horizontal spreading movements and a folding action when confined and placed under tension within a flexible casing or envelope composed of woven fabric, leather or other suitable covering material.

In the annexed drawing, Fig. 1 is a perspective view of a couch or davenport, embodying a seat of three cushions constructed according to my invention, Fig. 2 is a top view of a cushion, partly broken away and in section, and Fig. 3 being a section taken on line 3—3 of Fig. 2. Fig. 4 is an enlarged side elevation and section of one end of one of the expanding devices, and Fig. 5 is a cross section on line 5—5 of Fig. 4. Fig. 6 is an edge elevation or bottom view of the parts shown in Fig. 4. Fig. 7 is a perspective view of a pair of expanding devices connected with separate border wires, the whole constituting a compressible frame of spring wire, adapted to be incorporated and placed under tension within a cushion or mattress for use as a seat, couch or bed.

As delineated, the cushion or mattress comprises a plural number of compartmented sections or units A, B, and C, each containing relatively small and light springs 2 arranged in parallel rows and placed closely adjacent each other but separated and held upright by vertical strips 3 of fabric forming the division walls of the pockets or compartments 4 of such units. The outer covering of each unit is made of coarsely woven fabric 5 to completely enclose the springs and hold them partially compressed, and the several units are placed side by side and united together in straight alignment at their front and rear border edges through the medium of relatively stiff straight border wires 6 inserted at the corners underneath the woven fabric 5. The end portions of these border wires 6 may be curved or rounded and extend a greater or lesser distance along the outer sides of the end units, and the adjacent springs 2 may be sewed or fastened by clips 7 to the border wires. An outer pad or covering 8 envelopes or encloses the joined units, but only a relatively thin layer of cotton, hair or equivalent padding material is interposed between the outer covering 8 of the fabric and the coarse fabric 5 of the units. The number of units and the number of springs in each unit may vary and is more or less dependent upon the size and area to be covered and the place of use of the completed product. For example, in Fig. 1, I show a couch D having three separate cushions E, F and G, each constructed according to Figs. 2 and 3. Obviously, a single relatively long cushion may be made in the same manner and used in lieu of the three cushions shown.

However, the springs 2 are not in themselves strong enough to keep the cushion permanently in shape, being relatively light to make a soft yielding body and the padding being also thin for the same reason. Therefore, I employ supplemental expanding devices within the cushion adapted to impart a spring tension and spreading effect to the border wires or frame 6 and therethrough to the individual coverings for the several units and to the outer covering 8 common to all of them. These expanding devices are preferably placed in the longitudinal spaces between parallel units where each may act freely without interference with the compression springs 2, and each expansion device consists of a straight rod 10 of spring wire having round eyes 11 at opposite ends thereof to permit a hook connection to be made with the outer ends of separate expansion springs 12 sleeved over the rod. Each spring 12 has its inner end formed

into an elongated loop 12′ adapted to be threaded through separate coiled portions 13 in a spreading element made of a single piece of spring wire bent and formed at its middle into a round loop or eye 14 to receive and slide upon rod 10, the coiled portions 13 being formed in the same piece of wire at uniform distances from the eye 14 and the major length of the wire forming straight legs 15—15 which spread apart on diverging lines and terminate in end eyes or coils 16 to connect with the stiffer border wire 6. The inherent spring in the wire legs is augmented by the convolutions or coils 13 at the base of each leg where hooked to expansion spring 12 so that the diverging legs tend constantly to spread the upper and lower border wires 6 apart. This spreading effect is further enhanced by the expansion springs 12 which place a much stronger tension on these border wires. Thus these border wires are held within bounds by the enveloping folds of fabric which connect the parallel rear and front border wires 6 together, while the expansion springs on the opposite ends of the same rod exert a pull outwardly in opposite directions and are normally distended to spread the legs apart and to stretch and keep the fabric taut at all times, thereby maintaining the top of the cushion in a smooth and shapely condition and keeping the border edges always straight and parallel with the upper edge raised and the front of the cushion vertically distended on pleasing symmetrical lines. On the other hand when the cushion is occupied the expansion devices assist the light springs 2 in supporting the load without in any way becoming objectionable to the occupant because of their presence in the structure. Thus, as pressure or weight is applied from above the horizontal rod and the expansion springs carried thereon move downwardly toward the bottom, the legs folding together in this action and stretching the expansion springs on the rod in increasing degree and with increasing resistance, either when the rear and front border wires are drawn toward each other by the load or when the upper border wires are depressed and approach the lower border wires as occurs when a person is seated upon the front edge of the cushion.

The term "cushion" as used herein should be construed broadly meaning any pad, cushion or mattress adapted to be used as a seat or bed.

What I claim, is:

1. A cushion having a spring expansion device therein extending horizontally midway between its top and bottom and connected with its opposite top and bottom border portions.

2. A cushion having expansion means extending horizontally midway between its top and bottom and connected at its top and bottom with the opposite sides thereof and normally under tension to distend the cushion laterally at both its top and bottom.

3. A cushion having spring expansion devices extending horizontally therein midway between its top and bottom comprising diverging spreader members connected with the upper and lower corner border portions of the cushion.

4. A padded cushion having a fabric covering and border wires at its top and bottom, and expansion means within said cushion extending between the sides thereof having spring connection with both the top and bottom border wires.

5. A cushion embodying compression springs and padded on opposite sides thereof, including supplemental expansion devices extending horizontally midway between the opposite sides of the cushion adapting the cushion to be used on either side.

6. A cushion comprising separate sets of compression springs and padded top and bottom, and expansion devices arranged midway between said sets of springs and connected with the top and bottom border portions of said cushion.

7. A cushion, comprising compartmented sections enclosing separate compression springs, and expansion devices extending horizontally between said sections in spreading connection with the opposite border portions of the cushion.

8. A cushion, comprising juxtaposed sections embodying parallel rows of compression springs, border wires for said sections, a common covering for all said sections and border wires, and horizontally arranged expansion devices interposed between said sections midway the top and bottom thereof, and connected with said border wires.

9. A cushion, comprising separate sets of compression springs, fabric cover for each set of springs, a padded cover common to all said sets covered springs, border wires within said covers, and horizontally arranged expansion means connected with said border wires intermediate said sections.

10. A cushion, comprising a horizontal expanding member having diverging folding extensions at opposite ends thereof and expansion springs connecting said member and extensions to effect a spreading movement in opposite directions horizontally and vertically at the opposite sides of the cushion.

11. A cushion, comprising a rod having coiled expansion springs sleeved thereon and diverging extensions slidably engaged with said rod and connected to said springs, said parts being confined under tension within said cushion.

12. A cushion, comprising compartmented sections made of fabric containing upright compression springs, a padded covering for said sections, border wires within said padded covering, and a plural number of expansion devices interposed between said sections comprising expansion springs and spring wire connections extending in diverging lines to said border wires.

13. An expansion device for padded cushions, comprising a rod having coiled expansion springs sleeved upon and connected with its opposite ends, and spring spreader members slidably engaged with said rod and connected with said springs.

14. An expansion device for padded cushions, comprising a rod having a coiled expansion spring sleeved upon and connected at its outer end with the end of said rod, and a spring wire spreader member slidably mounted upon said rod having diverging spring portions and spring coils at the base of said portions connected with the inner end of the adjacent spring.

In testimony whereof I affix my signature.

DAVID T. OWEN.