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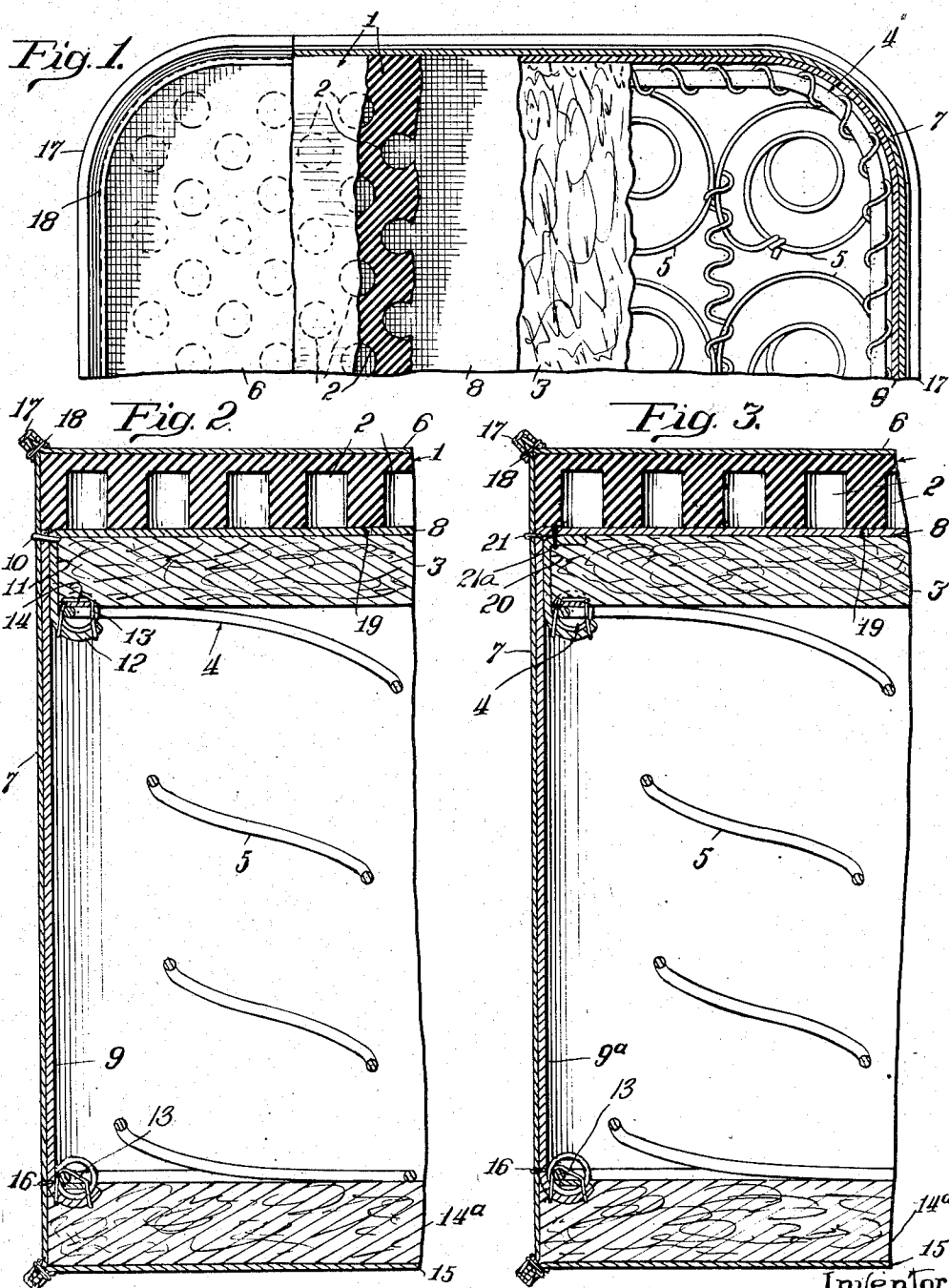
W. W. GLEASON ET AL

2,287,734

MATTRESS

Filed June 5, 1939

3 Sheets-Sheet 1



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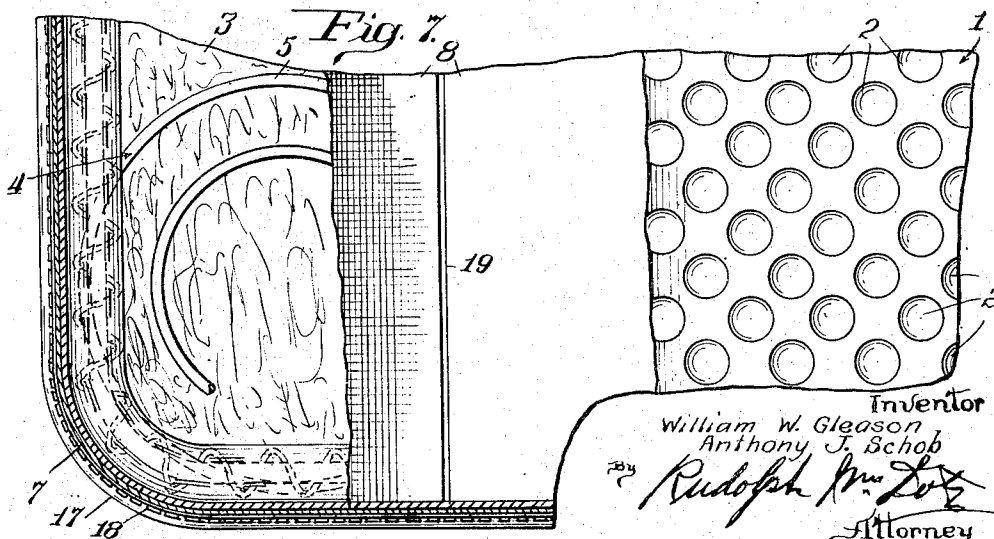
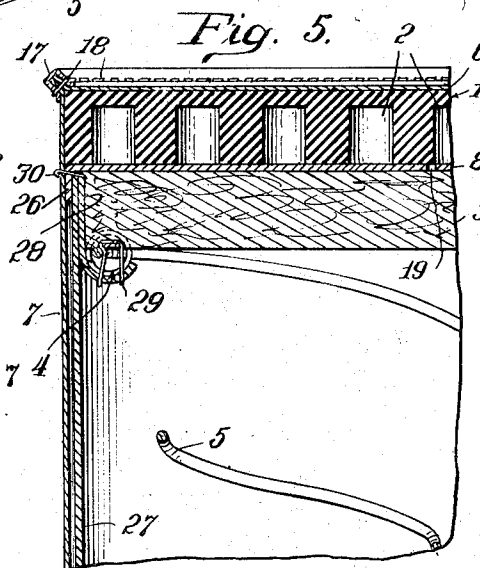
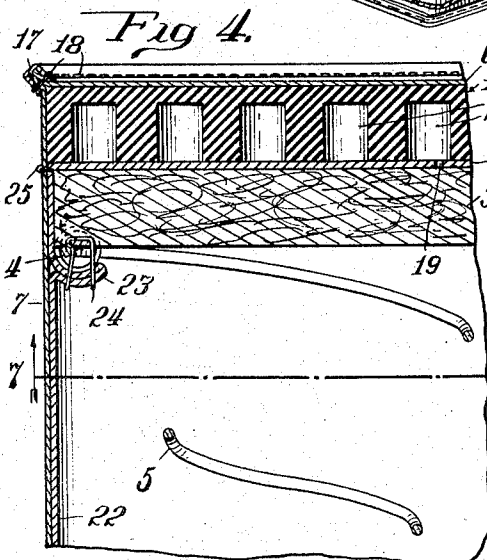
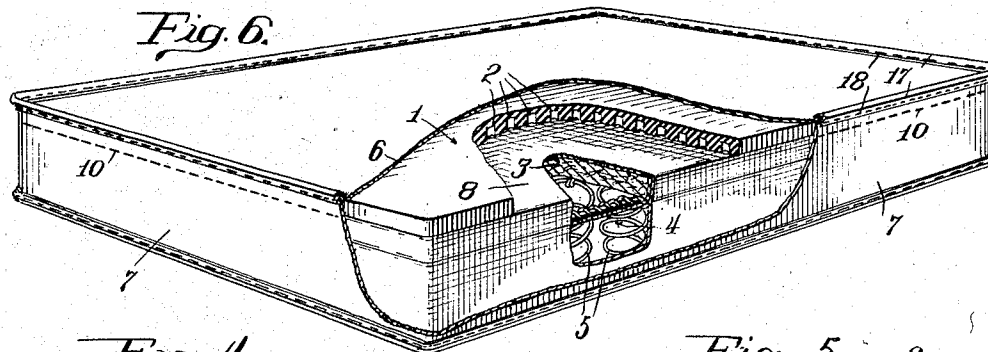
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MATTRESS

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3 Sheets-Sheet 2



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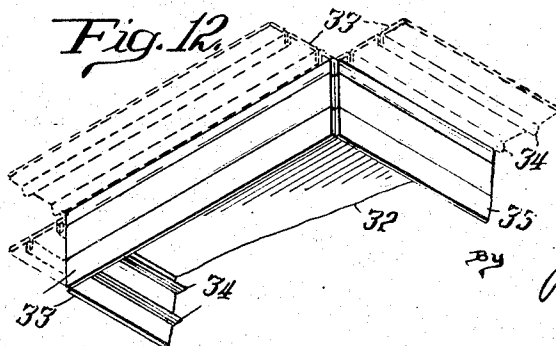
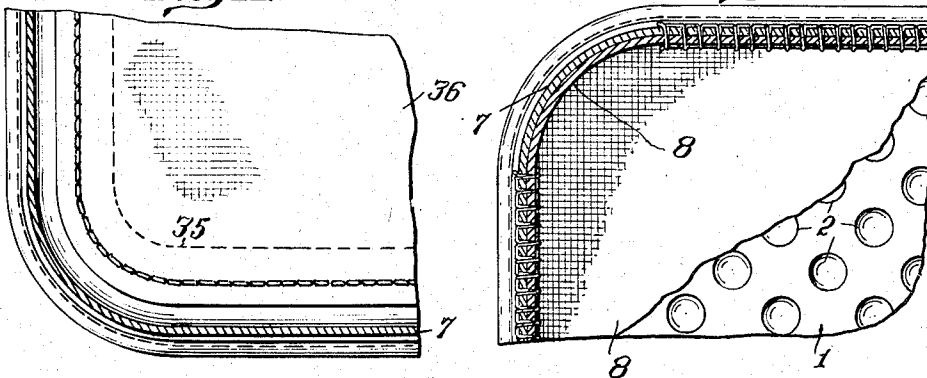
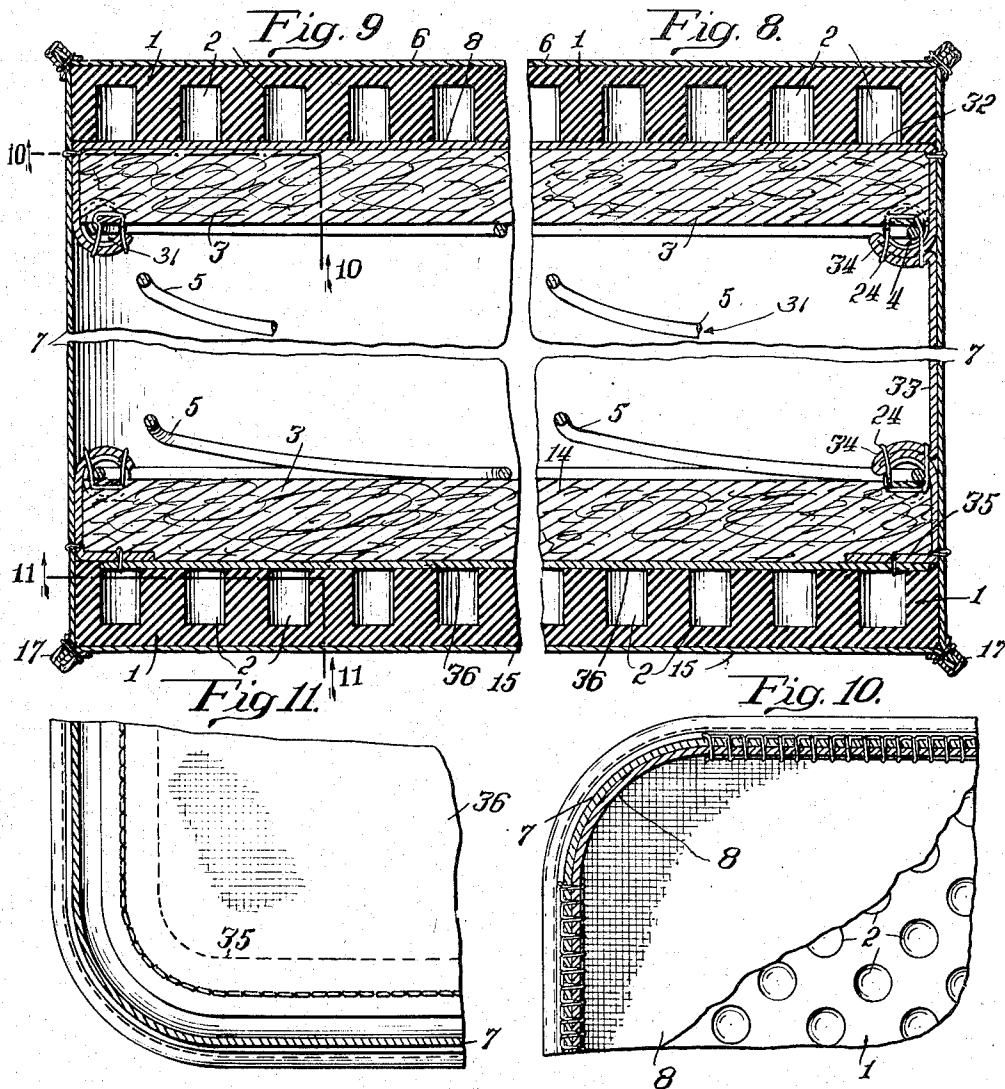
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MATTRESS

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,287,734

MATTRESS

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6 Claims. (Cl. 5—351)

This invention relates to improvements in mattresses and cushions and has for its main object to provide a structure of this type wherein a spring assembly is utilized in conjunction with a spongy pad of latex foam rubber and other padding material to provide a composite low-cost structure possessing all of the advantages of a high-priced structure with respect to comfort, appearance, durability and minimum weight.

A particular object of the invention is to so assemble the component parts of the same as to reduce the labor cost involved to the lowest possible level consistently with the preservation of every essential feature required to render the completed structure very durable, hold the component parts thereof against relative displacement and render the structure equally as attractive in appearance as the highest priced mattress.

A further essential object of the invention resides in the provision of means whereby the resilient pad of spongy material and the sisal, or other suitable fibre pad underlying the resilient pad and overlying the spring assembly, are relieved of the pressure resulting from forcing or otherwise incorporating the latter into mattress or cushion covers as is common practice in the art for the purposes of maintaining the padding material compact and the walls of the cover taut and free of wrinkles.

In harmony with the foregoing object of the invention another essential object of the same is to provide means which, without affecting the attainment of the next preceding or other objects of the invention, enables the marginal springs of the spring assembly of the structure to be maintained slightly compressed without subjecting the marginal portions of the padding elements to any stresses, such as compacting or displacement stresses due to tension on the boxing strip or strips from the uppermost edges thereof to the point of attachment to a peripheral edge of the spring assembly of the structure, the original shape of the mattress or cushion being thus preserved throughout its life and molded resilient pad thereof being preserved against becoming set along portions which, in the ordinary practice followed in this art would be maintained under some degree of compression.

The more specific objects of the invention will be particularly pointed out in or readily understood from the following specification.

In the accompanying drawings illustrating exemplary embodiments of the invention;

Fig. 1 is a fragmentary, plan view partly in elevation, partly in section with part broken away, illustrating a mattress or cushion constructed in accordance with the invention.

Figs. 2, 3, 4 and 5 are fragmentary, detail, vertical sectional views of an end or side portion of the structure shown in Fig. 1, illustrating different embodiments of the invention in certain specific details of construction.

Fig. 6 is a perspective view of a mattress constructed in accordance with the invention, having parts broken away and shown in section.

Fig. 7 is a plan sectional view of the structure of Fig. 4 taken on the line 7—7 of the latter with certain parts shown in elevation and others broken away.

Figs. 8 and 9 are fragmentary vertical sectional views of a mattress or cushion illustrating other embodiments of the invention.

Fig. 10 is a fragmentary detail plan sectional view, taken on the line 10—10 of Fig. 9.

Fig. 11 is a fragmentary detail view, taken on the line 11—11 of Fig. 9.

Fig. 12 is a fragmentary diagrammatic perspective view of one end portion of the casing showing a cover fabric and flanges equipped with flutes, said flanges being shown in dotted lines, in primary position.

The pad 1, composed of a spongy material, preferably of the type known as "latex foam rubber," is molded and preferably is provided in its underside with recesses or cells 2 for purposes of lessening the weight and cost of the pad and rendering the same more resilient than would be true of a pad of continuous density throughout. The great difficulty experienced in assembling said pad with a spring assembly has been to maintain the pad firmly in its predetermined position upon the padding 3 overlying the spring assembly 4, of any suitable all-metal or other type, which includes the marginal springs 5 shown in Figs. 2, 3, 4 and 5. The difficulty of maintaining the pad 1 in its predetermined position is due to the fact that the material of which the pad is composed is of such nature that stitching through the same will not hold, but will tear out very easily, and the use of cement to secure the same in place is objectionable from the standpoint of odor, on the one hand, and a large degree of inefficiency, on the other.

Accordingly, one of the essentially novel features of the present invention resides in the means employed for maintaining the said pad 1 in its predetermined position without the use of stitching through the same or the application

of cementitious material to secure it to other parts of the structure.

In the instance illustrated, the spring assembly is of the type shown and disclosed in Letters Patent of the United States No. 2,124,695, but spring assemblies of many other types may be substituted for the pad type herein shown, such other spring assemblies are exemplified in Patents Nos. Reissue 19,347 and 1,951,850.

In the structure of the instant invention, the pad 1 is confined in a fabric compartment of dimensions laterally, longitudinally and vertically slightly less than the similar dimensions of said pad 1, so that the latter is maintained very slightly contracted within the said compartment. The latter comprises the cover tick or fabric 6, the boxing strip 7 secured along its upper edge to the marginal edge of the fabric 6 and a lower wall 8 of fabric which is suitably connected with the boxing strip 7 by means of stitch chains in any of the various ways illustrated in the respective Figs. 2, 3, 4 and 5.

The bottom fabric sheet 8 rests upon the layer 3 of padding which, preferably, is of a long fibre type, such as sisal, said pad being preferably of a conventional type wherein the fibres of the pad or batt 3 are held against relative displacement by stitch chains passed through said batt transversely of its marginal edges in a very well known manner.

It is common practice in the manufacture of spring assemblies of the various types exemplified in and by the aforesaid Letters Patents, to make the marginal springs of either greater length than the group of springs bordered thereby, or to make such marginal springs of a heavier gauge of wire, so as to stiffen the marginal edge portion of the mattress or cushion to render it capable of carrying somewhat greater load than the group of springs bordered by the marginal springs.

It is obviously very desirable that the boxing strip 7 be maintained relatively taut, but that the same be also relieved of undue stress and it is further desirable to confine the edge portions of the batt 3 against bulging the boxing outwardly from its normal peripheral contour.

Accordingly, there is secured to the marginal portion of the fabric sheet 8 an inner boxing strip 9 which, as shown in Figs. 1 and 2, is secured by a stitch chain 10 to the peripheral flange 11 of said sheet 8, said stitch chain 10 being passed through the said flange 11 adjacent its junction with the sheet 8 through the upper edge of the strip 9 and through the outer boxing strip 7.

The lower end portion of the flange 11 is turned inwardly to underlie the peripheral edge of the spring assembly 4, as shown at 12 in Fig. 2, and is secured by stitch chains or whip stitching 13 to the periphery of the upper face of the spring assembly 4, which includes, preferably, the flat border frame wire 14.

The lower edge of the inner boxing strip 9 is turned inwardly to underlie the lower peripheral edge of the spring assembly 4 and is secured to the latter by means of stitch chains or whip stitching 13, thereby to contract the outer portions of the springs 5 and thus maintain the inner boxing strip normally taut.

The spring assembly rests upon a lower batt 14a of the same type as the batt 3. The lower cover fabric 15 which covers said batt 14a, is secured along its marginal edge to the outer

boxing strip 7, which is, of course, of greater width than the inner boxing strip 9.

Preferably, the boxing strips 7 and 9 are secured together by stitch chain 16 which is aligned with the plane of the lower face of the spring assembly 4 and which extends peripherally of the mattress or cushion.

In constructing the mattress or cushion, the first step is to secure the marginal edge of the fabric sheet 8 and the inner boxing strip 9 to the boxing strip 7 before the upper and lower edges of the latter are secured to the cover fabrics 6 and 15. After securing the sheet 8 to the boxing strips 7 and 9, the cover sheet 6 is secured marginally to the upper edge of the boxing strip 7 by means of the bracing tape 17 and stitch chains 18. The cover sheet 8 is provided with one or more slits 19 extending either longitudinally or transversely over the entire width or length of the same, as the case may be, and which are spaced appreciably from the marginal edges of said sheet 8 parallel with said edges. After the boxing strip 7, fabric sheet 8 and cover sheet 6 have been secured together to form the compartment to receive the pad 1, the latter is inserted into said compartment through said slit or slits and by reason of the fact that the fabric casing thus formed is still free of the spring assembly, the pad is easily worked into its ultimate position within said compartment in its very slightly compressed relation, so that it is of uniform density over its entire area within said compartment.

The batts 3 and 14a are usually secured to the spring assembly 4 before the latter is inserted into the fabric housing and after the pad 1 has been inserted into its fabric housing, the latter is disposed over the spring assembly in any suitable manner, as either by inverting the fabric structure which has been completed to the extent last-above indicated, and inserting the spring assembly 4 into the same, or by drawing the boxing strips 7 and 9 over the spring assembly. The portion of the casing thus far completed is then turned back stocking-wise so that the lower end portion of the flange 12 of the sheet 8 is exposed for ready access and the whip stitching 13 is then passed through said flange 12 to secure the latter to the spring assembly.

Following the last-mentioned stitching, the inner boxing strip 9 is then drawn downwardly to the position shown in Fig. 2 and the whip stitching 13 is then passed through the lower end portion of said inner boxing strip to secure the same in place while the marginal springs 5 are maintained sufficiently compressed to maintain said inner boxing strip normally taut after the whip stitching 13 has been passed through the lower edge portion of the strip 9 and over a suitable part of the marginal edge of the lower face of the spring assembly 4. This last-mentioned step is then followed by drawing the lower edge of the outer boxing strip 7 over the marginal edge of the batt 14a and then securing the lower fabric sheet 15 to the lower edge of the boxing strip 7 to complete the entire structure.

The resulting mattress or cushion is of excellent appearance and is most efficient and comfortable, besides being advantageous from the standpoint that the structure does not require turning over at intervals, as is the common practice with mattresses and cushions of other types. Another advantage of the structure lies in the

fact that the occupant of the mattress or cushion obtains the combined cushioning effect of the spring assembly, the batts 3 and 14a and the pad 1 without appreciably increasing the weight of the structure as ordinarily made, wherein batts of cotton or the like overlie batts 3 and 14a.

The pad 1 maintains the cover sheet 8 and the sheet 8 taut and thus forces them to move in unison with each other if there is any movement of the same relatively to the batt 3, but such movement is obviously prevented by securing the flange 12 to the marginal edge of the spring assembly 4 and by the tendency of the load on batt 3 to expand the same horizontally and thus maintain it compressed against the flange 11 of the sheet 8 of Fig. 2. The sheet 8 also serves to prevent any of the fibres of the batt 3 from being sucked up into the cells 2 of the pad 1 and affords a smooth upper surface along which the walls of the cells 2 may slip slightly under the influence of the load without any permanent displacement thereof, as they will move back to normal position following compression of said pad 1.

The slit 19 of the cover fabric 8 may be closed by stitching after insertion of the pad 1, although this has not been found to be necessary.

It will be noted that in Fig. 2 the flange 11 constitutes a skirt portion of sheet 8, the inner boxing strip being a separate element, whereas in Fig. 3 the inner boxing strip 9a constitutes the skirt portion of sheet 8. In this structure a strip 20 of fabric constitutes the equivalent of the skirt portion or flange 11 of said sheet 8 and is secured to the latter and the boxing strip 9a by means of stitch chains 21 and 21a, one of which also secures the elements 8, 9a and 20 to the outer boxing strip 7.

In the structure of Fig. 4, the fabric sheet 8 is equipped with a skirt portion 22 which is in turn equipped between its ends with an inwardly projecting hem 23 which is secured by means of whip stitching 24 to the upper peripheral edge of the spring assembly 4, said skirt portion which constitutes the inner boxing strip 22 being secured by means of stitch chain 25 to the outer boxing strip 7.

In Fig. 5 the skirt portion of the sheet 8 constitutes a short flange 26 which lies between the boxing strip 7 and the inner boxing strip 27, the latter having a folded-over upper edge portion to provide an inner flange 28, the lower edge portion of which is secured by the whip stitching 29 to the upper peripheral edge of the spring assembly 4, the fold of said inner boxing strip 27 being secured to the sheet 8 by means of stitch chains 30.

In the event that it is desired to provide pads 1 at both top and bottom of the structure, as shown in Fig. 8, the foregoing method is carried out substantially as in the case of Figs. 1-8 inclusive. The spring assembly 31 for the structure of Fig. 8 will be of less height than the assembly 4 of Fig. 2, to the extent of the thickness of the bottom pad 1 so that the ultimate mattress will be of standard height.

In the mattress of Fig. 8 the elements 1, 2, 3, 4, 6 and 7 are coincident with those of Fig. 2. As shown in Fig. 12, the fabric sheet 32 is equipped with edge flanges 33 and the latter are equipped with the parallel inwardly projecting hems 34, the upper one of which is spaced from the sheet 32 a distance such as is illustrated at 34 in Fig. 8. The lower hem 34 is spaced from the upper hem 34 a distance substantially equal to the height

of the periphery of the spring assembly when incorporated into a mattress or cushion.

The flanges 33 may be joined along their meeting edges though this is not necessary.

Thus, in the structure of Fig. 8, the flanges 33 constitute inner boxing strips which are connected along the hems 34 which the upper and lower peripheral edges of the spring assembly by stitch chains 24 as shown in Fig. 8.

The lower or free end portions of the flanges 34 are lapped under the lower sisal pad 14 of the structure as at 35 in Fig. 8 and a fabric sheet 36 is stitched marginally to said portions 35. The lower pad 1 is inserted into the pocket formed by the outer boxing strip 7 and the fabric-covered lower fibrous pad 14, the lower cover sheet 15 being secured marginally to the lower edge of the boxing strip 7 in the customary manner as shown at 17 in Fig. 8.

The method of assembling the structure of Fig. 8 is identical with that followed in assembling the structure of Fig. 4 to the step of attaching the hem 23 to the upper peripheral edge of the spring assembly 5. Thereafter, the outer boxing strip 7 is drawn up stocking-wise, together with the inner boxing (flanges 33) to the level of the lower hem 34, to give access to the latter, which is then secured to the lower peripheral edge of the assembly 31.

The outer boxing strip 7 is then restored to its normal position, the portions 35 disposed to overlap the pad 14, the sheet 36 disposed in place, and the lower cover fabric 15 is then secured to the lower edge of the boxing strip, although obviously after completing the initial assembly operations, as first above-described, with reference to Figs. 1-7, the structure thus far completed, will be inverted for greater convenience.

In the structure of Fig. 9, the inner boxing strip is omitted between the planes of the faces of the spring assembly 31, the skirt portion of the upper sheet 8 being short and having its lower edge turned under and secured to the spring assembly 31 in the manner followed with respect to the hem 23 of Fig. 4 and upper hem 34 of Fig. 8 and the lower edge of the strip 11 and strip 20 of Figs. 2 and 3, respectively. As to the lower portion of the structure of Fig. 9, it is identical with the upper portion except that the body portion of the sheet 8 is replaced by the sheet 36 of Fig. 8, the assembly operations for the structure of Fig. 9 being identical with those of the structure of Fig. 8.

As shown in Fig. 10, the stitching of the fabric sheets, such as 8, to the outer boxing strip, may be omitted from the corner portions of the latter to save some operating cost. The corner portions of the sheets, such as 8, may remain unattached to the outer boxing 7, thus leaving openings 38 through which fingers may be passed to engage the pad 1 and crowd its corner portions into desired position.

We claim as our invention:

1. A structure of the type specified including a spring assembly, fibre batts mounted upon faces of the latter, a fabric housing for said assembly and batts including a boxing strip, top and bottom cover sheets secured marginally to the upper and lower edges of the boxing strip with one of said cover sheets in contact with one of said batts and the other thereof spaced from the other of said batts, a fabric sheet disposed immediately over said last-named batt and secured marginally to said boxing strip in spaced relation to the top cover sheet for cooperation with the latter and

said boxing strip to provide a compartment to receive a resilient pad of a molded material, and a pad of the last-named type completely filling said compartment, the inner horizontal wall of said last-named compartment equipped with a slit between parallel edges thereof substantially equal in length with the latter through which said pad may be inserted into and removed from said compartment.

2. A structure of the type specified including a spring assembly, a fibre batt overlying one face thereof, a boxing strip disposed peripherally of said assembly and batt and having its upper edge spaced from the upper face of said batt, a fabric sheet disposed immediately over said batt and having its peripheral edge secured to said strip in substantially the plane of the top surface of said batt, a cover sheet parallel with and spaced from said fabric sheet and secured marginally to the upper edge of said strip and cooperating with the latter and said fabric sheet to form a shallow compartment, and a molded resilient pad completely filling said compartment and maintaining the walls thereof normally taut, the inner horizontal wall of said last-named compartment equipped with a slit between parallel edges thereof substantially equal in length with the latter through which said pad may be inserted into and removed from said compartment.

3. A structure of the type specified including a spring assembly, a fibre batt overlying one face thereof, a boxing strip disposed peripherally of said assembly and batt and having its upper edge spaced from the upper face of said batt, a fabric sheet disposed immediately over said batt and having its peripheral edge secured to said strip in substantially the plane of the top surface of said batt, means connecting said sheet to the peripheral edge of the assembly immediately below said batt, a cover sheet parallel with and spaced from said fabric sheet and secured marginally to the upper edge of said strip and cooperating with the latter and said fabric sheet to form a shallow compartment, and a molded resilient pad completely filling said compartment and maintaining the walls thereof normally taut, the inner horizontal wall of said last-named compartment equipped with a slit between parallel edges thereof substantially equal in length with the latter through which said pad may be inserted into and removed from said compartment.

4. A mattress including a spring assembly, a flexible cover element disposed over one face of said assembly and marginally secured to the peripheral edge of the same, a unitary resilient

pad of spongy material disposed over said flexible cover element, a fabric strip surrounding and closely embracing the periphery of said pad and secured to the peripheral edge portion of said cover element whereby said strip is held against vertical movement relatively to the pad and spring assembly, and a cover sheet overlying said pad and secured marginally to the upper edge of said fabric strip, said cover element, sheet and fabric strip constituting a housing for said pad movable coincidentally with the covered face of said assembly without imposing stress of any kind on said pad, said cover element equipped with a slit parallel with and between opposed parallel edges of said sheet through which said pad may be inserted into and removed from the space normally occupied by said pad.

5. A mattress or cushion comprising a conventional spring assembly, an inner fabric boxing element disposed peripherally thereof and secured to the top and bottom peripheral edges of the same and including a portion projecting above the level of the top face of said assembly, a batt disposed over said top face and embraced peripherally by said last-named portion of the boxing element, a fabric sheet overlying said batt and joined peripherally with the said last-named portion of said boxing element, an outer boxing strip having its upper edge portion projecting above the level of said inner boxing element, and secured to the latter substantially in the plane of said fabric sheet, a pad overlying the latter and embraced by the upper edge portion of said outer boxing element, a cover sheet overlying said pad and secured marginally to the upper edge of said outer boxing strip, and a bottom cover sheet underlying the spring assembly and secured marginally to the lower edge of said outer boxing strip.

6. A mattress or cushion comprising a spring assembly, upholstery pads disposed over the faces of the spring assembly, a fabric sheet overlying the upper pad, a boxing means joined along its upper edge with said sheet and secured to the upper and lower edges of said spring assembly, an outer boxing strip secured to the said boxing means in substantially the plane of said sheet and having upper and lower edge portions projecting beyond the upper and lower edges of said boxing means, a pad overlying said sheet and embraced peripherally by the upper edge portion of said outer strip, and cover sheets secured peripherally to the upper and lower edges of said outer strip.

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