July 17, 1928. 1,677,232

J. F. GAIL

MATTRESS OR CUSHION AND BOXING THEREFOR AND PROCESS OF MAKING SAME

Filed Oct. 3, 1927 2 Sheets-Sheet 1

Fig. 1

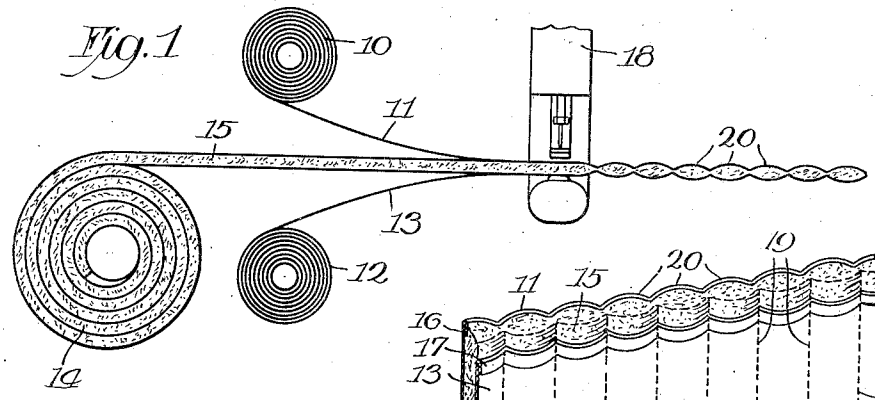


Fig. 2

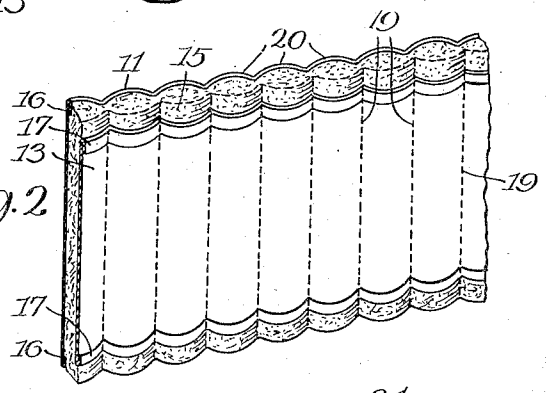
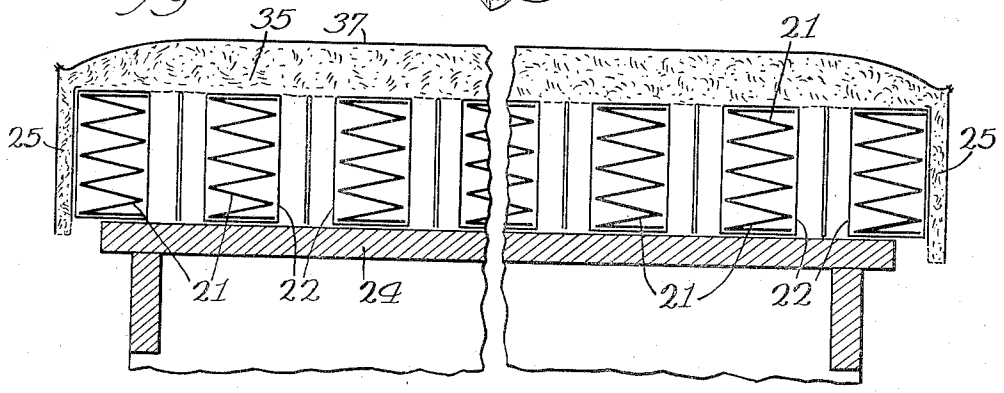


Fig. 3



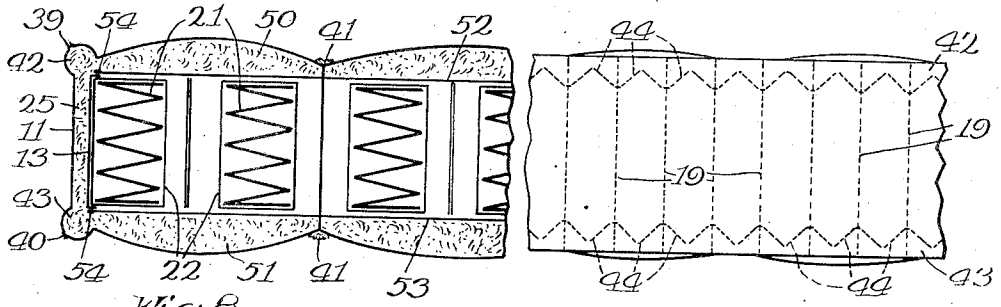


Fig. 6

Inventor:
John F. Gail
By Fisher, Towle, Clapp & Sears
Attys.

July 17, 1928. 1,677,232

J. F. GAIL

MATTRESS OR CUSHION AND BOXING THEREFOR AND PROCESS OF MAKING SAME

Filed Oct. 3, 1927 2 Sheets-Sheet 2

Fig. 4

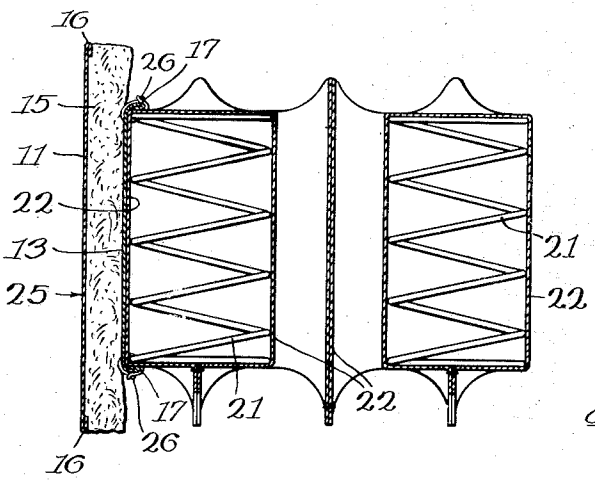


Fig. 6

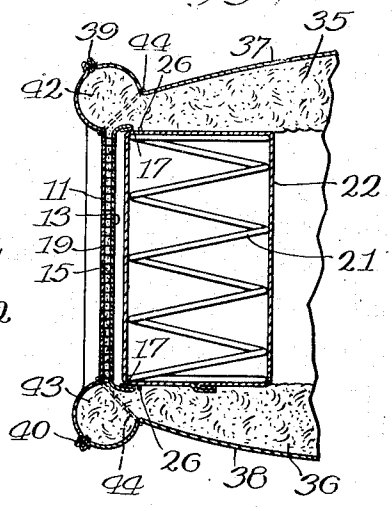


Fig. 5

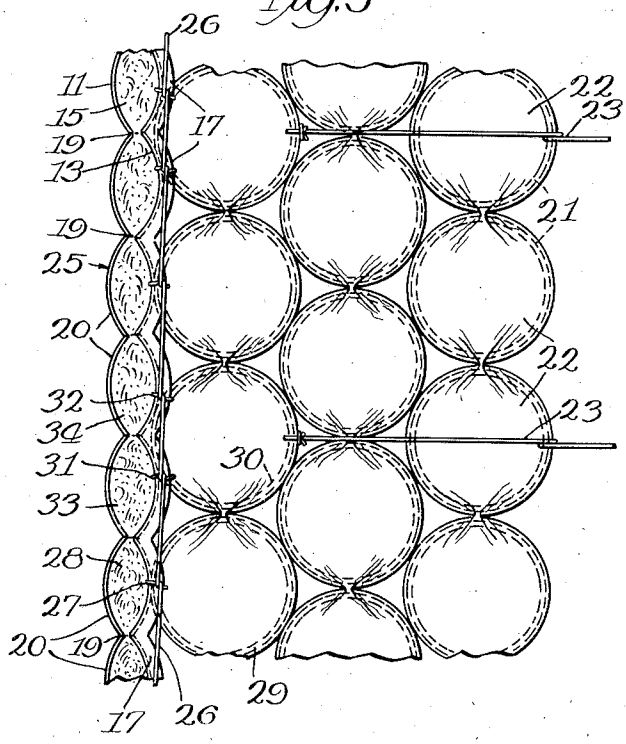
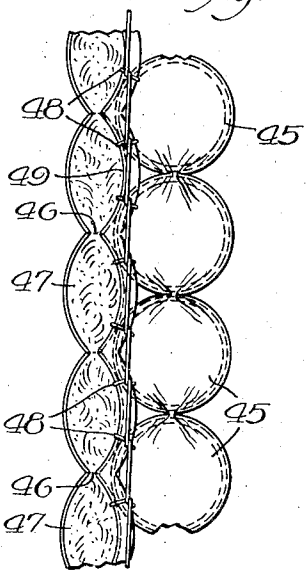


Fig. 7



Inventor:
John F. Gail
By Fisher, Towle, Clapp & Sooys
Attys.

Patented July 17, 1928. 1,677,232

UNITED STATES PATENT OFFICE.

JOHN F. GAIL, OF EVANSTON, ILLINOIS, ASSIGNOR TO SIMMONS COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

MATTRESS OR CUSHION AND BOXING THEREFOR AND PROCESS OF MAKING SAME.

Application filed October 3, 1927. Serial No. 223,606.

The invention relates to articles of manufacture such as mattresses or cushions, in which the side edge of the mattress or like article is equipped with a strip of ticking disposed more or less in a vertical plane so as to give what is generally described as a box effect. The said side strip of ticking is therefore frequently called a boxing. The invention herein described is of particular value in connection with mattresses or cushions of substantial thickness, for example, more than four inches, although it will be readily understood that the scope of the invention need not necessarily be limited to a mattress of any special thickness.

Particularly in the case of mattresses or like articles having a deep or high "box", great difficulty has been experienced in maintaining the edge of the mattress substantially vertical and preventing the box from bulging into a more or less convex or semi-circular outline, and thus destroying the desired trim, vertical effect of the boxing.

The tendency of the boxing to bulge is to a certain extent reduced by providing the mattress with what is termed a roll edge. This supports the boxing for a short distance below the corner, which thus serves to reduce the free, unsupported area of the boxing, but it will be readily understood that with a high box there still remains a very considerable depth or height of boxing unsupported or uncontrolled between the upper and lower roll edges.

Furthermore, because of lack of uniformity in the roll edge stitches and filling and variations in the length or fullness of the boxing strip or its elasticity, there is usually present a more or less haphazard wrinkled effect which is quite unsightly.

Attempts have also been made to still further support this intermediate area of the boxing by applying additional stitches connecting the body of the mattress with points on the boxing located intermediate the roll edges. A mattress of this last mentioned type is usually said to have an "imperial" edge, and, so far as I am aware, prior to my invention, this "imperial" edge represents the best efforts of others in the direction of preventing the boxing from bulging outwardly, and of minimizing this sloppy haphazard wrinkled appearance heretofore referred to.

The principal objects of the present invention are to provide a boxing which is itself constructed so as to resist outward bulging and to maintain itself in a vertical plane; to provide a mattress having a boxing with means for resiliently maintaining said boxing in a stretched, vertical condition, and to prevent bulging thereof outwardly; to provide a boxing with an external contour or appearance such that an ornamental effect and also an effect of increased height is thereby produced; to provide a mattress and boxing therefore which will be exceedingly durable and will maintain its desired shape and position indefinitely during the life of the mattress or like article; to provide a mattress or like article and boxing therefor which shall be relatively simple in construction, economical to manufacture, neat and ornamental in appearance, comfortable for the user, inexpensive and rugged; and in general to provide an improved construction of the class referred to and an improved process for making the same.

In the drawings accompanying this application, which illustrate my improved boxing as applied to a mattress of the Marshall type.

Fig. 1 represents somewhat diagrammatically the manner in which my improved boxing is manufactured prior to its application to the mattress structure,

Fig. 2 is a perspective view of a portion of a strip of such boxing,

Fig. 3 is a vertical section showing the manner in which the boxing and other parts of the mattress are assembled,

Fig. 4 is an enlargement of a portion of Fig. 3 prior to the application of the top, felt layer.

Fig. 5 is a plan view of the part shown in Fig. 4,

Fig. 6 is a fragmentary, vertical cross section through the mattress at one side or end thereof,

Fig. 7 is a plan view similar to Fig. 5, but showing a somewhat modified type of construction, and

Fig. 8 is a fragmentary part-sectional view of a mattress still further modified in construction.

Referring to the drawings, in Fig. 1, I have illustrated rather diagrammatically a roll 10 of ticking material 11 and a roll 12 of lining material 13. The ticking strip 11 is made either of the same material as the

top and bottom ticks of the mattress or of a material such as will properly match with the said top and bottom ticks. The liner strips 13 may be of ordinary cotton sheeting.

The numeral 14 represents a roll or coil of fibrous filling material 15, which ordinarily will be felted cotton such as is conveniently produced on the usual Garnett machine. As shown in Fig. 2, the strips 11 and 13 may be hemmed, as indicated at 16 and 17, on both edges of each strip.

The rolls 10, 12 and 14 are so supported that the strips 11, 13 and 15 may be paid out therefrom simultaneously through the field of a stitching machine indicated diagrammatically at 18. Said stitching machine 18 is arranged to feed across the fabric, either by bodily movement of the stitching machine itself, or by movement of the three-ply strip relative to a stationary sewing machine. In any case, the sewing machine 18 is operated so that there will be inserted in or across the composite boxing strip a series of parallel seams or rows of stitching 19 which are uniformly spaced longitudinally of or along the strip. These stitches extend through all three plies of the strip and serve to compress the fibrous filling material at said seam lines, thereby resulting in the formation of flutes 20. Preferably, the spacing of the seam lines 19 along the strip and the thickness of the filling layer 15 are so adjusted that the maximum thickness of each flute of the boxing is quite considerable compared with the spacing of the seams. I have found that a very good multi-columnar or colonnade effect is produced when the flute is made of such thickness that its radius of curvature on its outer convex side is not materially greater than the spacing of the seams.

My improved quilted boxing, as above described, may be made up in large quantities in advance, preferably in roll form, to be used as needed in the construction or assembly of the complete mattresses or cushions. I will now describe the manner in which the assembly may be effected in case of a mattress of the Marshall type, and incidentally the manner in which other desirable features of my invention may be incorporated in a mattress of the Marshall or any other desired type, for example, a felt mattress.

Referring to Fig. 5, it will be seen that the main body of the mattress, which is of the Marshall type, is composed of a series of nested rows of axially vertical, helical springs 21, which are contained in individual pockets 22 connected together in the form of a continuous strip of the well-known Marshall type, as shown. Extending across the width of the mattress I prefer to apply a series of cords 23 at the top and bottom of the mattress, which serve to hold the rows of spring filled pockets in intimate, nested contact with each other, as shown. In view of the fact that the strips of pockets extend from head to foot or from end to end of the mattress, it is not ordinarily necessary to provide such connection cords in that direction.

To assemble the mattress, the core or body, comprising the strips of spring filled pockets assembled and connected together, is placed on a suitable table or support 24, and a length of the boxing strip, designated as a whole 25, is applied around the outside of the core or body, as shown. The inner, liner strip 13 is then connected to the outer row of springs of the Marshall core by means of ties, which may be of any type, but I prefer in this instance to employ a long length of suitable cord 26, which by means of a needle is hitched or knotted around the top, hemmed edge of the inner strip 13 and the top coil of the spring in the outer row.

The tying of the springs to the boxing, among other advantages, serves to maintain the boxing in a flat vertical plane, and also prevents the upper filling layer from working down between the springs and the boxing and thus producing unsightly bulges in the boxing.

Preferably, the spacing of the seams 19, that is to say, the width of the flutes 20, is made a definite, fixed ratio of the diameter or spacing of the springs 21 of the outer row of the mattress body, so that the fluting will be uniform as to its external appearance regardless of pull imposed thereon by the cord tie connections 27. In view of the fact that, in my opinion, to get the best effect, the fluting should be considerably less in width than the diameter of the Marshall springs as customarily employed, I prefer to use a fluting width which is two-thirds of the spring spacing, that is to say, three flutes will span a distance equal to twice the spring spacing. In such case, as shown in Fig. 5, I am enabled to employ a single tie 27 to connect the flute 28 to the spring 29, whereas in the case of the spring 30 I employ two ties 31 and 32 for connecting said spring 30, respectively, to the flutes 33 and 34. In this way each of the flutes has its own connection to the outer row of springs of the mattress body, and the spacing of said tie connections is sufficiently uniform so that no adverse effect upon the evenness of the outer surface of the fluting is observed.

After the outer row or rows of springs have been connected to the upper end lower edges of the boxing around the entire outer edge of the mattress, the usual upper and lower layers of padding 35 and 36 are applied, after which the edges of the tick strip 11 of the boxing are sewed to the adjacent edges of the upper and lower tick parts 37

and 38, as indicated at 39 and 40. After the seams 39 and 40 have been sewed, the main body of the mattress is tufted in the usual manner, as indicated at 41 in Fig. 8, and the roll edges 42 and 43 are formed by stitches as at 44, as shown in Figs. 6 and 8.

As shown best in Fig. 8, the roll edge ties 44, which in the present case are of the usual continuous cord hand-inserted type, intersect the relatively inextensible seams or stitch-chains 19, so that the resiliency of the mattress transmitted to the stitch chains mainly through the roll edge ties, serves to localize the tension in the boxing to the seam lines. Thus independent of any other features of the construction, the registering of the roll edge ties with the stitch chains confines the bulging of the boxing to the areas located between the seam lines and thus greatly improves the appearance of the boxing.

It will be observed that by the use of the outer row of springs in co-operation with the box of the mattress, said boxing is always stretched vertically and its desired verticality, free from bulging, is effectively maintained. This is particularly true in the case of the two-ply boxing herein disclosed, since the use of the inner strip of sheeting enables the springs of the outer row to be conveniently and effectively connected to the boxing without any objectionable external indication of such connection. Also because of the pronounced flute effect, due to the presence of the relatively thick bodies of filling interposed between the outer and inner strips of the boxing, the boxing itself has inherently a certain amount of form and rigidity, which form is also maintained or preserved by the action of the springs in the outer row, which is connected to said boxing. Preferably, the outer row of springs may be placed under a slight compression so as to insure a positive stretching effect at all times.

Not only does the employment of comparatively narrow spacing of the vertical seams in the boxing result in the obtaining of the desired handsome, fluted effect without the necessity of employing an inordinate thickness of filling layer 15, but, as is well known to decorators and dress designers, the vertical striping or fluting has an important effect in accentuating the height of the boxing. To this end also, the roll edge of a mattress equipped with my improved fluted boxing and border spring combination may be made less bulky than in the case of the ordinary mattress without any corresponding danger of bulging. Obviously, the use of a comparatively narrow roll edge still further serves to increase the apparent height of the boxing as compared with an ordinary mattress of the same actual thickness.

In Fig. 7 I have illustrated a construction in which the springs 45 are of the same diameter of spacing as the distance between the seams 46 which separate the flutes 47. This simplifies somewhat the connections 48 between the top coils of the springs 45 and the inner strip 49, but, for reasons previously stated, the construction shown in Fig. 5 has other advantages.

In Fig. 8 I have shown a further modification, in which the felt layers 50 and 51 are not in direct contact with the tops of the spring filled pockets. In this modified form there is applied an inner, top sheet 52 and a similar, inner, bottom sheet 53, which extends over the entire area of the Marshall body. In this case the outer edges of the sheets 52 and 53 are preferably hemmed, as indicated at 54, and said hemmed edges are directly connected to the hemmed edges 17 of the inner strip 13.

The described details of construction and assembly being illustrative of preferred applications only of the invention, the scope of the same should be determined by reference to the appended claims, said claims being construed as broadly as possible consistent with the state of the art.

I claim as my invention:

1. The improvement in the art of manufacturing a mattress having springs incorporated in the filling adjacent the edge of the mattress for maintaining the verticality of the boxing, which consists in making the boxing, connecting the springs to the inner face of said boxing, completing the formation of the body or filler of the mattress, applying the horizontally extending portion of the mattress casing and then sewing the edge of the boxing thereto.

2. In a mattress, the combination of a boxing having an inner ply, an outer ply, resilient filling material interposed between the plies, vertically compressible springs arranged adjacent to the inner ply, concealed means lying wholly within the outer ply connecting said inner ply to the springs, and regularly spaced connections between the outer and inner plies serving to connect the outer ply to the springs through the medium of said first mentioned connections while at the same time compressing the interposed filling material and producing a quilted effect in the boxing.

3. In a roll-edge mattress or cushion, the combination of a top tick portion, a quilted boxing having an outer ply of textile fabric, an inner ply of textile fabric, resilient fibrous filling material interposed between the plies and parallel vertical stitch chains uniting the plies and serving to compress the interposed filling, the spacing of said chains being relatively narrow compared with the height of the boxing so as to produce an exterior fluted effect, a layer of fibrous filling material disposed under the top tick, and edge ties extending through

said layer and between the top and the outer boxing ply so as to produce a roll-edge effect, the outer ends of said ties registering with the stitch chains.

4. In a mattress, the combination of the filling, a casing for said filling having a generally vertically disposed side portion comprising the boxing, a series of parallel stitch chains extending vertically across the side portion, and ties for connecting the upper ends of the stitch chains to the upper portion of the filling whereby the tension on said ties due to the resiliency of the filling will be applied to the boxing at said stitch chains so as to impart a fluted or multi-columnar shape to said boxing.

5. A mattress or cushion having a boxing comprising an outer and an inner strip of fabric united together by spaced parallel vertical lines of stitching and resilient filling material contained in and distending the vertical interspaces defined by said lines to substantially the same extent throughout their height, the spacing of said lines being relatively narrow compared with the vertical height of the boxing whereby the horizontal cross section of said interspaces is substantially uniform throughout their height.

Date, October 1, 1927.

JOHN F. GAIL.