United States Patent

Randolph

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[54] **QUILT AND CUSHION CONSTRUCTION AND BUTTON THEREFOR**

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[73] Assignee: **Tuftamatic, Inc.,** San Diego, Calif.

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[52] **U.S. Cl.** .....**5/356,** 24/102 T

[51] **Int. Cl.** **A44b 1/18**

[58] **Field of Search**.....24/90 PR, 90 W, 90 F, 90 B, 24/102 T, 150 B; 5/356

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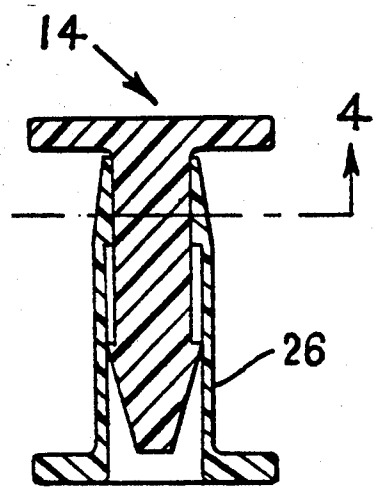
Primary Examiner—Donald A. Griffin

Attorney—Gregg, Hendricson & Caplan

[57] **ABSTRACT**

A button formed of male and female parts insertable through a quilt or cushion, the male part penetrating the female part and being locked in place when so inserted. Quilt or cushion constructed with such buttons.

9 Claims, 13 Drawing Figures



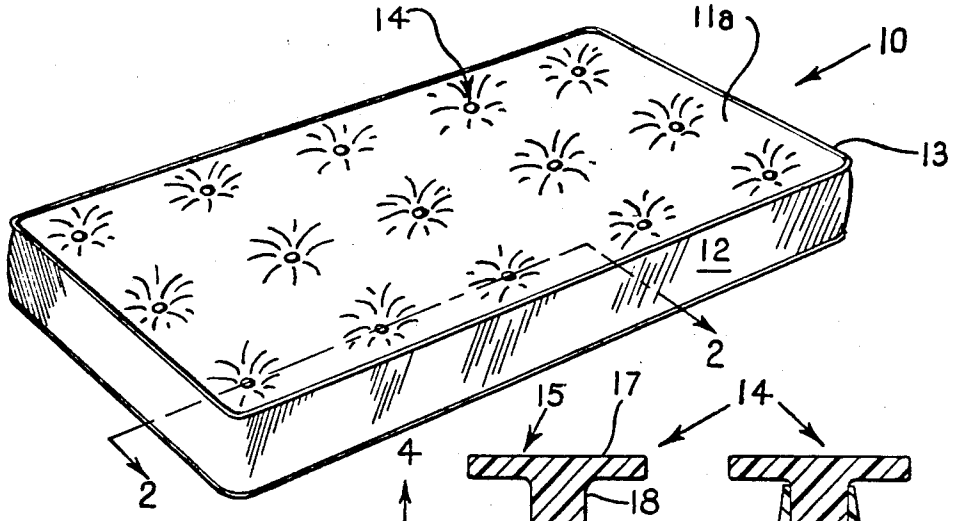


FIG. 1

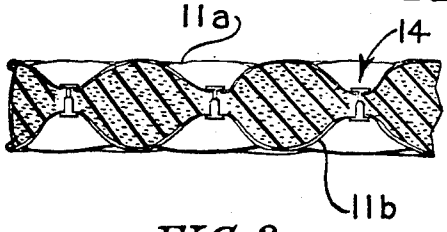


FIG. 2

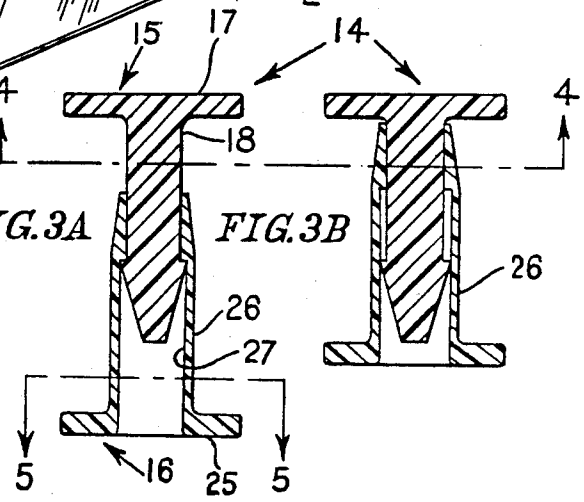


FIG. 3A FIG. 3B

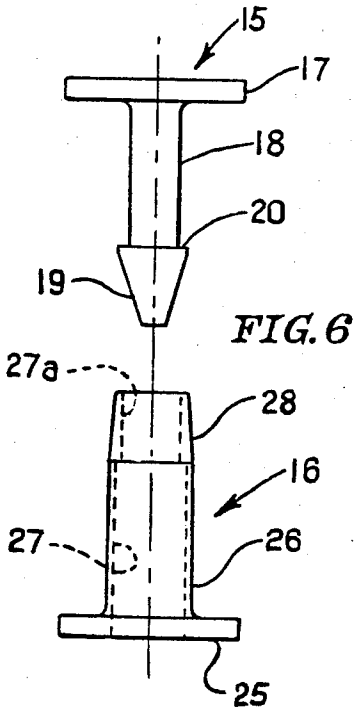


FIG. 6

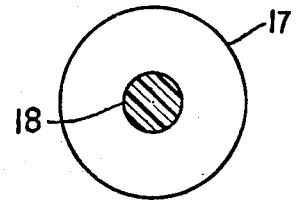


FIG. 4A

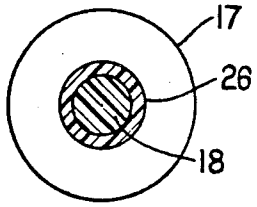


FIG. 4B

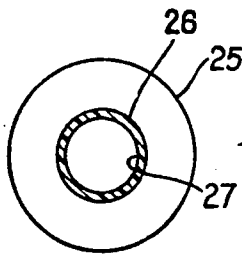
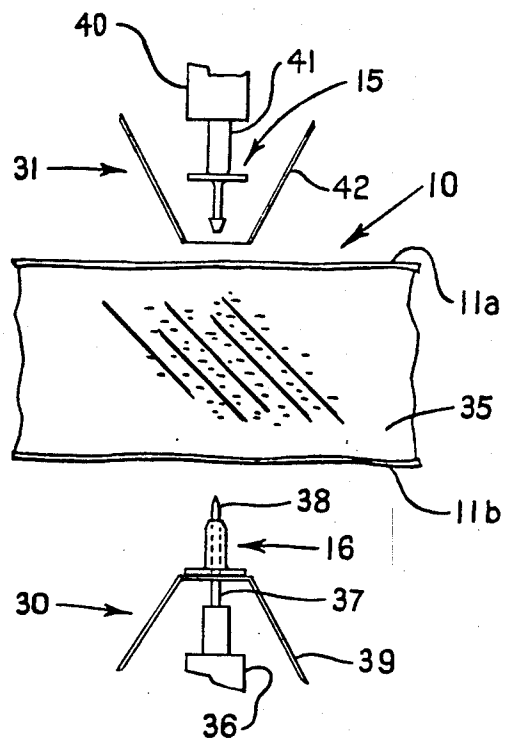


FIG. 5

FIG. 7



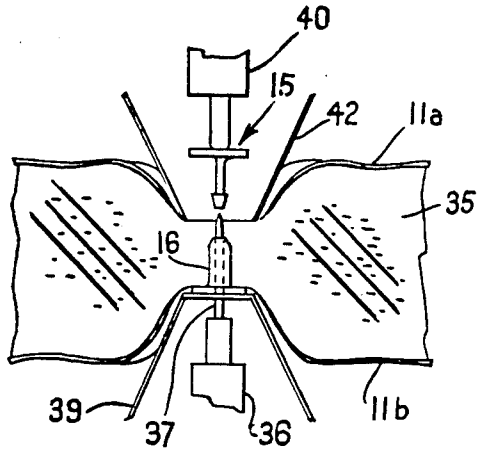


FIG. 8

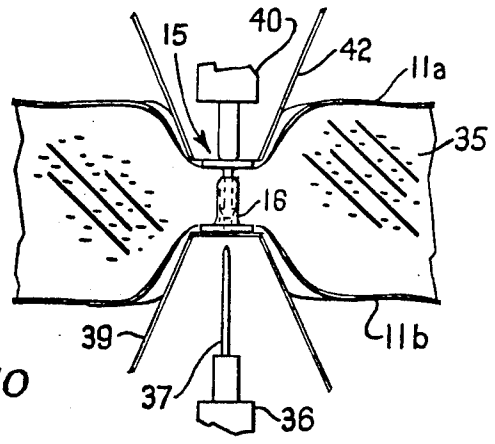


FIG. 9

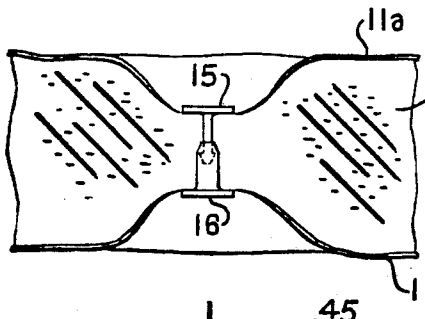


FIG. 10

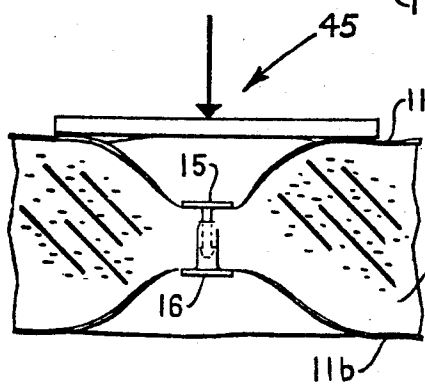


FIG. 11

QUILT AND CUSHION CONSTRUCTION AND BUTTON THEREFOR

This invention relates to a quilt or cushion construction. More particularly it relates to a button adapted to tie together the top and bottom covers of a quilt, mattress, cushion, pad or the like and to compress the filler.

Heretofore in quilt and other like construction laborious time consuming methods have been required to apply buttons which extend from the top to the bottom faces of the quilt and which serve to compress the filling. One method requires buttons with wire loops, the threading of string or cord through the loops and quilt by means of a needle, etc. Another method requires metal buttons or rivets which are forced through the quilt and are deformed. Both methods are costly and cumbersome.

It is an object of the present invention to provide improvements in the construction of quilts, pads, cushions, mattresses and the like.

It is a further and particular object of the invention to provide a button which can be mass produced and which can be applied to a quilt, pad, cushion or mattress by automatic means.

The above and other objects of the invention will be apparent from the ensuing description and the appended claims.

For simplicity's sake only quilts are referred to in the following description but it will be understood that the invention is applicable to cushions, pads, thin mattresses, etc.

One embodiment of the invention is shown in the accompanying drawings in which:

FIG. 1 is a perspective view of a quilt to which the buttons of the present invention are applied;

FIG. 2 is a section taken along the line 2—2 of FIG. 1;

FIG. 3A is a view in vertical longitudinal section through the quilting button of the present invention, the two parts of the same being shown in extended position;

FIG. 3B is a similar view of the same quilting button but with the two members thereof in contracted or fully telescoped position;

FIG. 4A is a section taken along the line 4A—4A of FIG. 3A;

FIG. 4B is a section taken along the line 4B—4B of FIG. 3B;

FIG. 5 is a section taken along the line 5—5 of FIG. 3A;

FIG. 6 is a view in elevation of the two parts of the quilting button of the present invention;

FIG. 7 is a somewhat diagrammatic view showing the manner in which the parts of the quilting button of the present invention are applied to a quilt;

FIG. 8 is a view similar to that shown in FIG. 7 but showing the applicator mechanism in the process of inserting the female part of the quilting button;

FIG. 9 shows the same mechanism in the process of inserting the male part of the quilting button;

FIG. 10 is a view in vertical cross section through a quilt showing the quilting button of the present invention installed and in its normal, extended position; and

FIG. 11 is a view similar to that shown in FIG. 10 but showing how a weight acting to compress the filler material of the quilt moves the guilting button to its retracted or fully telescoped position.

Referring now to the drawings and preliminarily to FIG. 1 a quilt or mattress is shown at 10 comprising top and bottom covers 11*a* and 11*b*, a circumferential side piece 12 and a circumferential bead 13. The numeral 14 indicates one of the quilting buttons of the present invention.

Referring now to FIGS. 3A, 3B and 6 the quilting button 14 comprises a male part or member 15 and a female part or member 16. The male member 15 has a head 17, a shank 18 and a tapered tip 19 which, although smaller in diameter than the shank 18 at its tip, has a greater diameter at its upper end and thereby forms an annular shoulder 20. The male member 15, likewise the female member 16 may be of plastic construction, for example polyethylene, Nylon, etc. The male member 15 is preferably of solid construction. The member 15 and/or 16 may be of metal construction, e.g., steel, aluminum or brass, but plastic is preferred.

The female member 16 comprises a head 25 and a tubular body 26 having an axial passage 27. The body 26 tapers somewhat at its upper end 28 for example, about 15° and the axial passage 27 is tapered at 27*a* and forms an annular shoulder 29 with the wide portion of the axial passage 27.

As will be seen by reference to FIGS. 3A and 3B when the male member 15 is inserted in the female manner 16 it is capable of assuming an uppermost or extended position as shown in FIG. 3A wherein the annular shoulder 20 of the male member abuts the annular shoulder 29 of the female member. The button 14 is also capable of assuming a fully retracted or telescoped position as shown in FIG. 3B. The material of which the female member 16 is formed, together with the taper of the end portion 28 of the female member and the taper 19 of the male member 15 are such that, on applying a moderate amount of axial thrust in causing the male member 15 to penetrate the female member 16 the tapered tip 28 of the female member 16 will expand to permit full entry of the tip 19. Ordinarily no slitting of the tapered head portion 28 of the female member 16 is required for this purpose but if the nature or thickness of the tip 28 is such as to require slitting such may be done so that the tip 28 is more resilient. The taper 28 on the female member 16 also facilitates insertion.

Referring now to FIG. 7 a quilt is shown at 10 having top and bottom covers 11*a* and 11*b* as described above and having a filler 35 such as kapok or other material which is compressible but which ordinarily, unless a pressure is applied, assumes a volume as shown in FIG. 7. Apparatus is shown at 30 for applying the female member (one of which is shown at 16) and apparatus is shown at 31 for applying the male member (one of which is shown at 15). Suitable machinery may be provided for operating the apparatus 30,31 automatically and in proper

The apparatus 30 comprises an extensible-retractable rod 36 having at its upper end a needle 37 formed with a point 38. The apparatus also comprises a cone 39. The needle 38 passes through the axial passage of the female member 16. The apparatus 31 comprises an extensible-retractable rod 40 having a chuck 41 to which the male member 15 is attached by suitable means (not shown). There is also provided a cone 42.

Referring now to FIG. 8 the first step in the series of operations involved in applying the button 14 (after

mounting the male and female members **15** and **16**) is there illustrated. The apparatus **30** ascends to the position shown, the needle **37** penetrates the quilt **10** including the bottom cover **11***b*, the filler **35** and the top cover **11***a*. The cone **31** serves to compress the quilt and form a cup shaped cavity. At the same time the cone **42** of the apparatus **31** is caused to descend to compress the quilt from the top and to form a similar cup like cavity. At this stage of operation the male member does not contact the quilt. It will be noted that the needle **37** is in registry with the male member **15**. During the entry of the female member into and its passage through the cover **11**b and the filler **35** it cuts its way assisted by the taper **28**.

Referring now to FIG. **9** the needle **37** is retracted by its mechanism **36** after having made contact with the tip of the male member **15** and during this retracting movement the apparatus **40,41** causes the male member **15** to descend. During its descent it is guided by the needle **37**. The tip **19** of the male member **15** enters the upper constricted passage **27***a* of the female member **16** which, as described above, expands sufficiently to permit complete entry to the position shown in FIG. **9** and also shown in FIGS. **3**A and **3**B. Then the apparatus **40,41** is retracted and the same process is repeated to apply other buttons. In the case of a machine such as that described in my copending application, a plurality of buttons are applied simultaneously.

In FIG. **11** a load is shown at **45** simulating a weight, such as the weight of a person sitting or lying on the quilt **10**, and it illustrates the manner in which the button **14** moves to its retracted or telescoped position. It will also be apparent that the mating shoulders **20** and **29** prevent separation of the members **15** and **16** when a compressing weight is released, the filler **35** expands and the members **15** and **16** move to their extended positions.

It will therefore be apparent that a quilting button and quilt construction have been provided which offer several advantages among which are the fact that the button can be fabricated by mass production techniques from inexpensive plastic material which, however, is very durable and which lends itself excellently to machine application to a quilt, mattress or the like.

I claim:

1. A button of the character described comprising a male member and a female member, the male member having a shank terminating in a tapered tip which forms an annular shoulder with the shank, said shoulder having a greater diameter than the adjacent part of the shank; the female member having an outside taper at its tip and having an axial passage formed therethrough from end to end with an inside shoulder spaced from one end of said member, such shoulder being complementary to the aforesaid shoulder on the male member whereby, when the two elements are brought together with the male member inserted within the female member the two shoulders will engage one another upon attempted separation of the elements to prevent such separation; the construction of the female member being such that it will expand under radial pressure to permit entry of the male member.

2. The button of claim **1** wherein each element is formed at the end opposite its respective shoulder with a head of enlarged diameter.

3. The button of claim **2** wherein the portion of the female member forming said passage is made of resilient plastic materials.

4. The button of claim **3** wherein the angle of the taper is about 15°.

5. A construction of the character described comprising top and bottom covers, compressible-expansible filling material confined between said covers and a plurality of buttons holding the filler in compressed condition, each said button comprising a male member inserted through one of the covers and a female member inserted through the other of said covers, the male member being located within the female member, said male and female members having complementary outside and inside shoulders which engage one another due to the expansive force of the filler and thereby limit expansion of the filler and prevent separation of said members, each said female member having an outside taper at its tip and having an axial passage formed therethrough from end to end.

6. The construction of claim **5** wherein each of the button elements has an enlarged head at the end opposite its shoulder.

7. The construction of claim **6** wherein that portion of the female member which receives the male member is resilient.

8. A method of applying buttons to a structure of the character described comprising top and bottom covers and a compressible-expansible filler confined between said covers, each button comprising a male member having a head, a shank attached at one end to the head, and a tapered tip at its other end forming an outside shoulder spaced from such other end; each button also comprising a female member having a head, a shank attached at one end to the head, and a tapered tip at the other end, said shank having a passage extending therethrough from end to end and also through said head, said passage being formed with an inside shoulder spaced from the tip end of the shank and cooperable with the outside shoulder on the male member to prevent withdrawal of the male member when it is inserted in the female member; the tip end of said female member being resilient to permit insertion of the male member; said method comprising: providing a first holder for the male member and a second holder for the female member, said second holder including a needle; seating a female member on said second holder and impaling it on said needle with the tip of the needle projecting through the tapered tip of the female member; seating a male member on the first holder; moving the second holder toward one cover of said structure and forcing the female member through such cover and the filler and causing the needle to project through the other cover; then advancing the first holder toward the projecting tip of the needle and in axial alignment therewith, meanwhile withdrawing the needle from the female member; and continuing such advance and withdrawal until the male member is seated in the female member, the needle is withdrawn from the female member and the shoulders on the male and female members are free to engage.

9. The method of claim **8** wherein the female member is impaled on a needle which is thrust through both covers and the filler of the quilt, is then withdrawn and, during withdrawal, acts as a guide for the male member.

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