

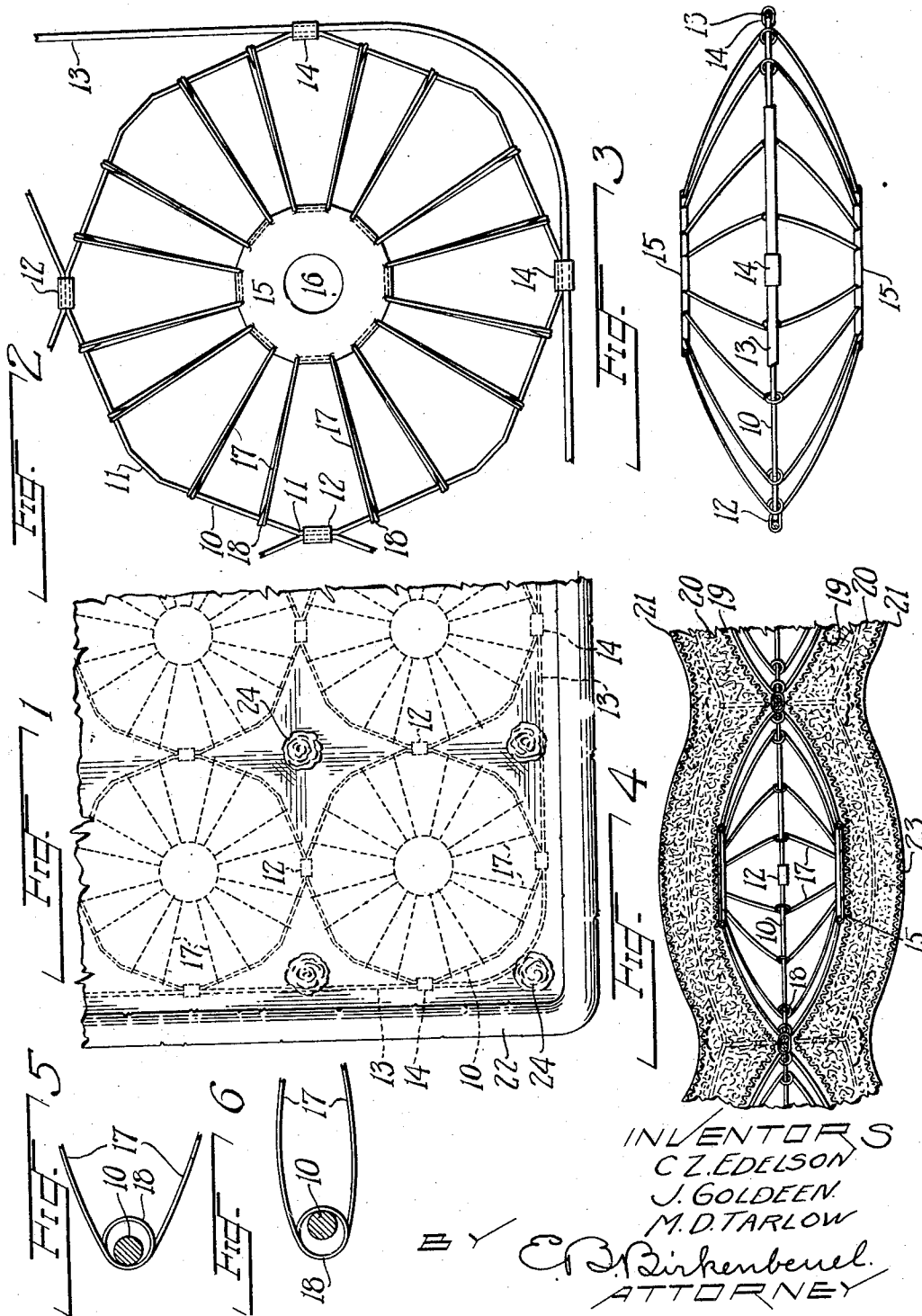
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MATTRESS

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## MATRESS

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This invention relates generally to the art of mattress making, and particularly to a special form of mattress in which air-filled spring constructions are embodied into the filling.

The first object of this invention is to provide an exceedingly simple and efficient mattress which will neither sag nor stretch.

The second object is to so construct the mattress that there will be a movement of air within the mattress whenever any of its portions are compressed or released.

The third object is the utilization of air within the mattress as an insulating medium which will make this mattress warm in cool weather and cool in warm weather, owing to the fact that the air filler can absorb and retain only a small amount of heat.

The fourth object is the utilization of springs having initial tension which are confined within each "biscuit" of the mattress between pairs of convex covers, which covers also form the spacing means.

The fifth object is the centering of the springs in the various "biscuits," and making it possible to employ roll edge and tufting machines such as are now in common use in the art.

The sixth object is to so construct our spring units that every portion of same will contribute to the resiliency of the mattress.

The seventh object is to combine the spring element with the means for limiting the expansion of the springs.

The eighth object is the provision of a frame around the assembled spring units which will prevent their collapsing while being introduced into the mattress, and without which same could not be employed with modern mattress making machinery.

The ninth object is to so construct the mattress and its component parts that they will automatically adjust themselves to the contour of the body, a condition which is essential to the ultimate success of any mattress.

These, and other objects, will become more apparent from the following specification as illustrated in the accompanying drawing in which:

Figure 1 is a plan showing one corner of a completed mattress showing the relation of the units thereto. Figure 2 is a plan of one of the units showing the frame element which prevents collapsing of the units with relation to each other. Figure 3 is a side elevation of one of the units showing the outer frame members cut away in section. Figure 4 is a vertical section through an outer "biscuit" showing the position of the spring unit in the mattress. Figure 5 shows, at a somewhat exaggerated scale, the relation of the spring wires of a unit to a ring. Figure 6 is a view similar to Figure 5 showing the same relation when the spring unit is compressed.

Similar members of reference refer to similar parts throughout the several views.

Referring in detail to the drawing, the individual spring unit consists of a ring 10 which is octagonal in form and having flattened areas 11 between its straight sides for the purpose of forming hinged joints to other rings by means of the clips 12 or for attaching same to a heavier outer frame 13 by means of the clips 14.

Above and below each ring 10 is placed a disk 15, each of which is preferably provided with a central opening 16 and has hinged thereto the two pairs of bow springs 17. One pair of bow springs 17 has its loop 18 around the ring 10 at one side of the clip 12, and the other pair of springs 17, which is integral therewith, has its loop 18 around the ring 10 on the opposite side of the same clip 12, which prevents rotation of the springs 17 with relation to the ring 10.

It will be noted that the junctions between the ends of the springs 17 and the upper and lower disks 15 are in the form of a hinge, making it possible for the unit to be flexed a great many times without any injury to any portion thereof.

Of extremely great importance is the outer frame 13, without which it is not possible to secure satisfactory results in the use of these units, since it is this frame which prevents their collapsing while being introduced into the mattress or in subsequent use, and the evident impossibility of restoring such

collapsed units to their original extended position.

Earlier efforts toward the use of these devices were almost abandoned as a failure until the frame 13 was evolved which held the units out to their respective positions at all times, besides assisting in the introduction of the assembled units into a mattress being fabricated.

In Figures 5 and 6 it will be observed that while the bow springs 17 are not compressed the ring 10 touches the outer side of the loop 18, and that when the bow springs 17 are compressed (as shown in Figure 6) that the ring 10 touches the inner side of the loop 18. The former places the material in the bow springs 17 in tension and the latter places the same material in compression.

In Figure 4 it will be observed that the units themselves are covered with a suitable fabric 19 outside of which is placed the usual mattress filler 20 which is confined within the usual ticking 21. Roll edges 22 can be employed as in ordinary mattresses and the ordinary "biscuits" 23 appear just as they do in the usual mattress construction, as do the tufting buttons 24.

To all outward appearance the mattress appears very much as do other mattresses now in common use, but if one were to place his fist directly upon one of the "biscuits" 23 and press downwardly thereon, while observing the surrounding portions of the mattress, he would find that only the portion of the mattress under his fist would move and that there would be no lateral movement of the surrounding fabric, as is ordinarily the case.

It will be understood that various means can be employed for fastening the various units together or for fastening same to the outer frame 13. The particular construction best suiting the facilities of the manufacturer and other factors will, of course, be employed.

It will be noted that the opening 16 in the disk 15 has an important function to perform in the manufacture of mattresses employing our construction. After inserting the springs into the mattress the mattress must be tufted and it is highly important that each of the various spring units is in its correct position with relation to the tufts. The one doing the tufting begins at a middle row of units and passes the tufting needle downwardly through the ticking and through the opening 16 of the nearest unit, and determines thereby the central location of the entire group of spring constructions, since they are all tied together, and additional rows of units must lie a fixed distance on one side or the other of the central row whose position is determined by the needle. In other words, all subsequent tuftings are made at fixed distances on each side of the base line, or first

row, thereby insuring that each and every tuft lies mid-way between four units, or, in the case of the outer rows of tufts, it lies between the outermost points of a pair of springs.

We claim:

1. In a mattress spring, a hollow rectangular wire frame, a plurality of rings secured to each other and to the frame so as to fill the frame, all of the rings lying in the plane of the frame, and a supporting member resiliently held out of the plane of the frame centrally of each ring, one of the supporting means near the middle of the frame having a central hole whereby when the spring assembly is inserted in a mattress the hole in the central supporting member can be located and used as a bench mark or locating point by means of which the tufting can be properly positioned.

2. In a mattress spring, a hollow rectangular wire frame, a plurality of rings secured to each other and to the frame so as to fill the frame, all of the rings lying in the plane of the frame, and supporting members resiliently held out of the plane of the frame on east side centrally of each ring.

3. In a mattress spring, a hollow rectangular wire frame, a plurality of rings secured to each other and to the frame so as to fill the frame, all of the rings lying in the plane of the frame, and pairs of supporting members resiliently held separated by spring means extending at an acute angle from each ring to each pair, so that as the assembly is pushed into a partially completed mattress it will present an acute angled wedge formation with one of the sides of the wire frame at the penetrating edge of the wedge.

4. In a spring unit to be joined to rows and files of similar units to form the central layer of a tufted mattress, a ring, a plurality of bowed spring elements loosely joined to the ring and radially disposed with respect to the axis of the ring, and a pair of annular anchors, one on each side of the plane of the ring, connecting the ends of the spring elements, the centers of the holes in the anchors lying in the axis of the ring to serve as bench marks to facilitate the location of the mattress tufts.

5. In a mattress spring, a plurality of springs, means for joining the springs to form an unobstructed air chamber having the shape of a surface generated by an ellipse revolving about its minor diameter, said means having a circular hole concentric with said minor diameter.

6. In a mattress spring, a plurality of springs, means for joining the springs to form an unobstructed air chamber having the shape of a surface generated by an ellipse revolving about its minor diameter, said means having a circular hole concentric with said minor diameter, and an octagonal wire

ring loosely associated with all of the springs to limit the movement of said means from the plane of the ring.

7. In a mattress spring unit: a hollow rectangular stout wire frame; a plurality of  
5 smaller wires; means for securing together the two ends of each smaller wire to form a closed ring, for securing adjacent closed rings together in rows and files, and for securing  
10 all of the outside rings to the frame, all of said means lying in the plane of the frame; and spring means individual to each ring, consisting of a plurality of elliptical  
15 spring elements radially disposed about the axis of each ring and hingedly secured to the ring.

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