

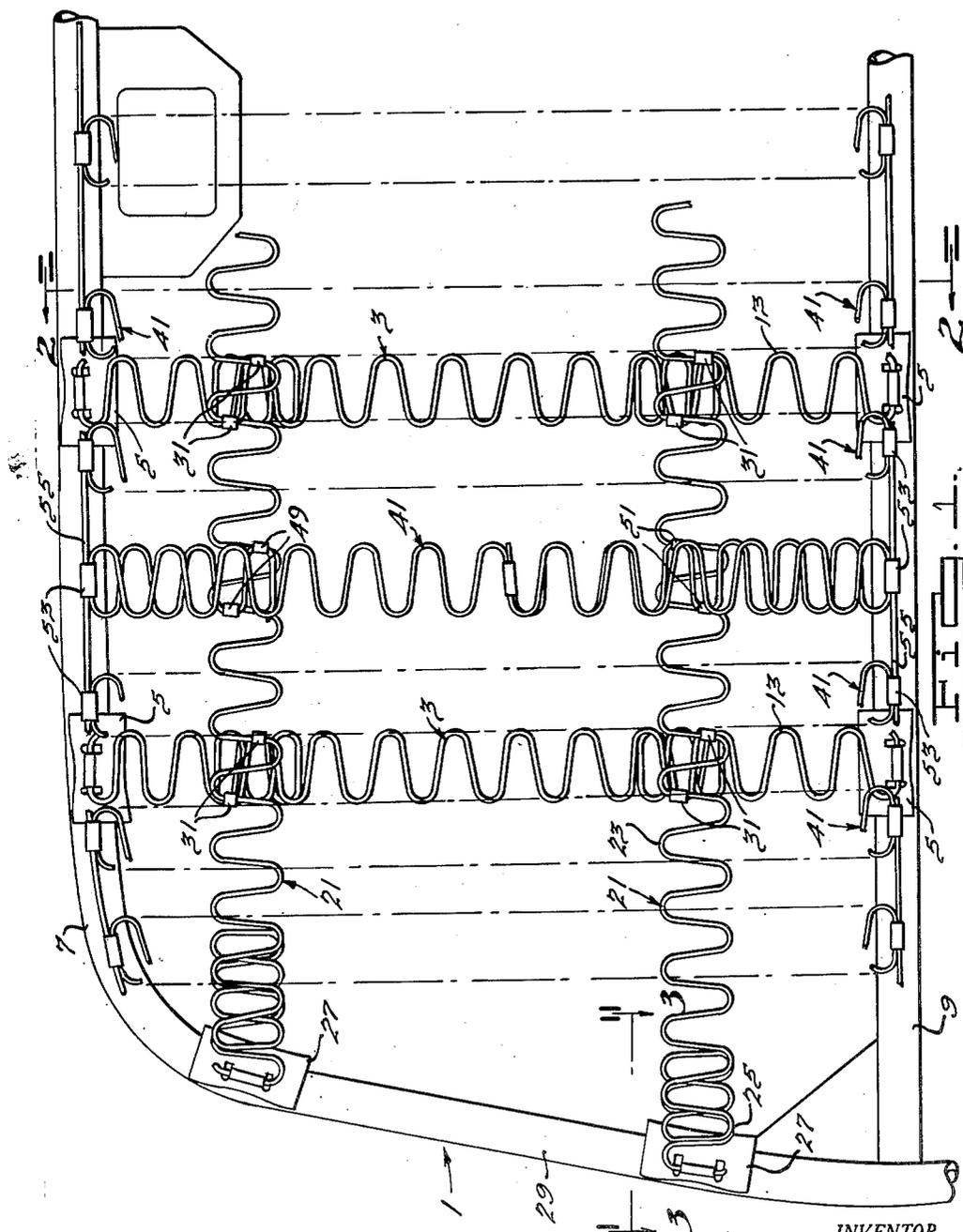
Feb. 24, 1953

H. C. FLINT
ZIGZAG SPRING CUSHION CONSTRUCTION HAVING
A BASE AND TOP LAYER OF SPRINGS

2,629,430

Filed Sept. 1, 1949

2 SHEETS—SHEET 1



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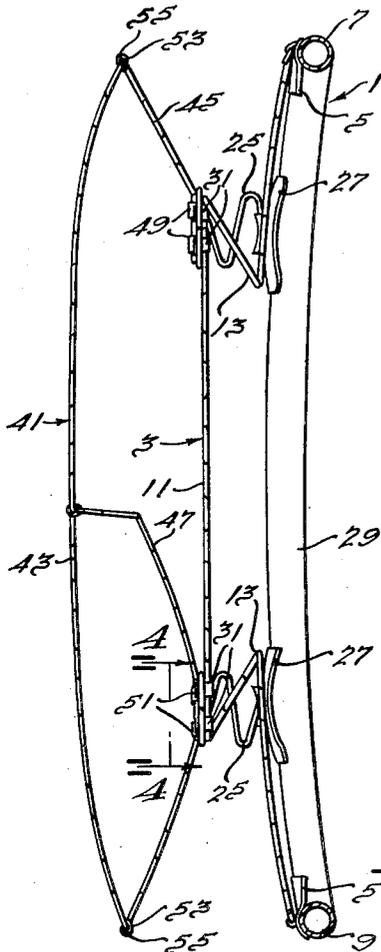


FIG. 2.

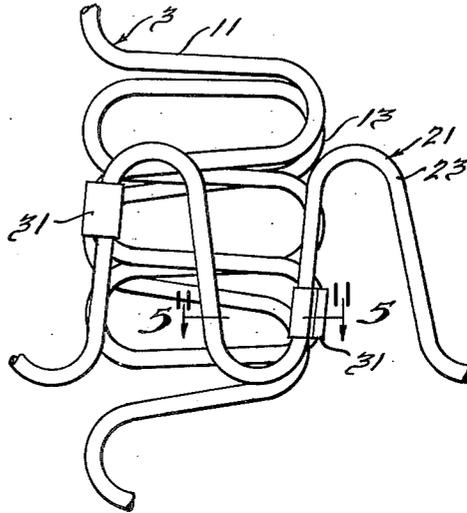


FIG. 4.

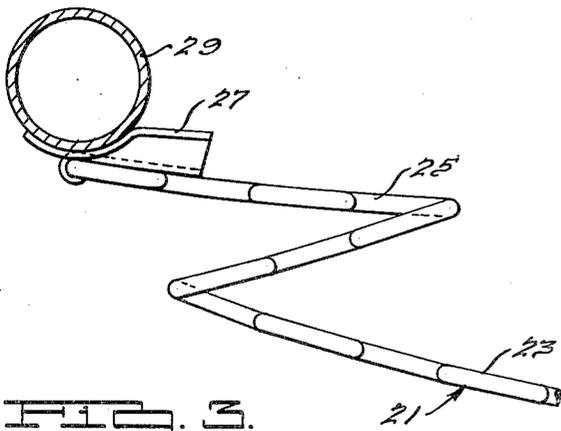


FIG. 3.

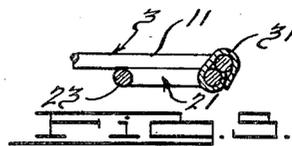


FIG. 5.

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ZIGZAG SPRING CUSHION CONSTRUCTION HAVING A BASE AND TOP LAYER OF SPRINGS

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15 Claims. (Cl. 155-179)

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This invention relates to spring cushion constructions which embody sinuous or zigzag spring strips of the type disclosed and claimed in Kaden Reissue Patent No. 21,263.

It is an object of the invention to provide a spring construction of improved cushioning characteristics and increased depth. Another object is to provide a spring construction having the attributes just mentioned, which is durable and capable of withstanding hard usage.

The invention accomplishes these and other objects by means of a construction in which a plurality of sets of sinuous spring strips, each set providing a resilient surface, are arranged in series so as to space the resilient surfaces at different distances from the plane of the frame. The strips comprising at least the set adjacent the frame are preferably interconnected by transverse, sinuous strips which serve to increase durability by preventing sidewise movement and which also may be used as a medium by which the next set of strips is connected to the set adjacent the frame.

The invention is illustrated in the accompanying drawings in which:

Figure 1 is a plan view of a section of a back spring cushion construction with the upholstery removed;

Fig. 2 is a view taken on line 2-2 of Fig. 1;

Fig. 3 is a view taken on line 3-3 of Fig. 1;

Fig. 4 is a view taken on line 4-4 of Fig. 2; and

Fig. 5 is a view taken on line 5-5 of Fig. 4.

The improved spring cushion construction includes a frame 1 of conventional design which thus may comprise the familiar tubular elements that are formed to a desired outline. A base or lower set or plurality of parallel and spaced sinuous spring strips 3 span the opening of the frame 1 and are secured at their ends by clips 5 to the upper and lower cross members 7 and 9, respectively, of the frame. The strips 3 have web portions 11 that are preferably somewhat shorter than the distance between the upper and lower frame members 7 and 9, and also have end portions 13 that are bent beneath the webs 11 and then rebent for attachment to the clips 5. The webs 11 are preferably flat, as shown, and it will be recognized that in combination they provide a first or lower resilient surface that is substantially parallel to the plane of the frame 1.

The webs 11 of the strips 3 are interconnected, preferably at their upper and lower extremities, by a pair of transverse sinuous spring strips

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21. Each of the strips 21 comprises a web portion 23 and end portions 25 that may be bent inwardly beneath the web and then outwardly and secured by clips 27 to the side members 29 of the frame 1. The webs 23 of the transverse strips overlie and are in engagement with the webs 11 of the strips 3 and are secured thereto by clips 31. As indicated in Fig. 4, preferably two of the straight portions of the strips 21 are secured by the clips 31 to the bights of adjacent U-shaped loops of the strips 3. It will be recognized that the transverse strips 21 prevent substantial sidewise movement or shifting of the strips 3.

Located above the base strips 3 in the view of Fig. 1 is another set or plurality of parallel and spaced sinuous spring strips 41. These strips are preferably formed of lighter wire than the strips 3 so as to be more readily deformable and are preferably disposed between and may overlap the strips 3 on one side, as indicated in Fig. 1. The strips 41 may be of any desired form, those indicated being of a design that is disclosed and claimed in a copending application Serial No. 89,114, filed April 22, 1949, of the present inventor, entitled Zigzag Spring Strip Unit Having Closed Supporting End. They have webs 43 and end portions 45 and 47 that serve as means whereby the strips 41 may be mounted on strips 3. The end portion 45 of each strip 41 is simply bent beneath the web 43 and then attached by clips 49 to the web 23 of a transverse strip 21. The other end portion 47, in accordance with the teachings of said copending application, is in the form of a closed loop, a central part of which is secured by clips 51 to the web 23 of the other transverse strip 21. The webs 43 of the strips 41 are long enough to properly span the space between upper and lower frame members 7 and 9 and are thus longer than the webs 11 of the strips 3. The extremities of each web 43 are connected in the usual manner by clips 53 to the border wires 55. It is apparent that the webs 43 of the strips 41 provide a second resilient surface which is substantially parallel to the first (provided by strips 3) and to the plane of the frame 1.

It will be recognized that the relatively soft body contact spring surface and the firmer base surface provide unusual and improved cushioning characteristics and that these spring surfaces in combination with the transverse strips provide a durable spring construction. Modifications in the structure shown herein by

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way of illustration may, of course, be made without departing from the spirit of the invention.

What is claimed is:

1. In a cushion construction, the combination of a frame, a plurality of parallel sinuous spring strips having end portions secured to the frame, said strips in combination providing a first resilient surface, another plurality of parallel sinuous spring strips providing a second resilient surface spaced from the first, and means connecting end portions of the second plurality of strips to the first strips whereby the second strips are resiliently mounted on the frame through the medium of the second strips.

2. In a cushion construction, the combination of a frame, a plurality of parallel sinuous spring strips having end portions secured to the frame, said strips in combination providing a first resilient surface, a sinuous spring strip extending transversely to the parallel strips, means connecting intermediate portions of the transverse strip to intermediate portions of the parallel strips to substantially prevent sidewise movement of the latter, and another plurality of parallel sinuous spring strips having end portions secured to the transverse strip whereby the strips are resiliently mounted on the frame through the medium of the transverse strip and the first plurality of strips, said second plurality of spring strips providing a second resilient surface spaced from the first.

3. In a cushion construction, the combination of a frame, a plurality of parallel sinuous spring strips having end portions secured to the frame and web portions providing a first resilient surface substantially parallel to the plane of the frame, a sinuous spring strip extending transversely to the parallel strips and having a web and also having end portions secured to the frame, clip means interconnecting the web of the transverse strip and the webs of the parallel strips, and a second plurality of parallel sinuous spring strips mounted upon the first strips and providing a second resilient surface substantially parallel to the first.

4. In a cushion construction, the combination of a frame, a plurality of sets of sinuous spring strips, each set providing a resilient surface substantially parallel to the plane of the frame, one of the sets being mounted upon the frame and the other of the sets being mounted in series relationship upon the frame mounted set whereby the entire load applied to the construction passes through each set of strips.

5. In a cushion construction, the combination of a frame, a plurality of sets of sinuous spring strips, each set providing a resilient surface substantially parallel to the plane of the frame, one of the sets being mounted upon the frame and the other of the sets being mounted in series relationship upon the frame mounted set whereby the entire load applied to the construction passes through each set of strips, and a sinuous spring strip mounted upon the frame and extending transversely to strips of the frame mounted set and secured to intermediate portions of the strips of the frame mounted set.

6. In a cushion construction, the combination of a frame, a plurality of sets of parallel sinuous spring strips, the springs of each set extending in substantially the same direction and parallel to the springs of the other set, each set providing a resilient surface substantially parallel to the plane of the frame, one of the sets being

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mounted upon the frame and the other of the sets being mounted in series relationship upon the frame mounted set whereby the entire load applied to the construction passes through each set of strips.

7. In a cushion construction, the combination of a frame, a plurality of sets of spaced and parallel sinuous spring strips, each set providing a resilient surface substantially parallel to the plane of the frame, the strips of each set extending in substantially the same direction and parallel to the strips of the other set and strips of adjacent sets being staggered so that they lie in the planes of the spaces between the strips of the adjacent set, and means resiliently connecting the sets of strips to the frame.

8. The invention as claimed in claim 4 wherein the strips of the frame mounted set are formed of wire of larger diameter than the strips of the other set and provide greater resistance to unit deflection than the strips of the other set.

9. In a cushion construction, the combination of a frame, a first plurality of parallel sinuous spring strips having web portions and end portions bent beneath the web portions, said end portions being secured to the frame to resiliently support the webs thereabove whereby the webs provide a resilient surface, a second plurality of parallel sinuous spring strips having web portions of greater length than the web portions of the first plurality of strips and end portions bent beneath the web portions, and means securing the end portions of the second strips to the webs of the first strips whereby the webs of the second strips provide a resilient surface that is spaced from the other resilient surface.

10. The invention as claimed in claim 9 wherein the means comprises sinuous spring strips extending transversely to the first strips and mounted upon the frame, the end portions of the second strips being secured to a transverse strip and the transverse strip being secured to the webs of the first strips.

11. In a cushion construction, the combination of a frame, a first plurality of spaced and parallel sinuous spring strips having web portions and end portions bent beneath the web portions, said end portions being secured to the frame to resiliently support the webs thereabove whereby the webs provide a first resilient surface, a second plurality of spaced and parallel sinuous spring strips having web portions of greater length than the web portions of the first strips and end portions bent beneath the web portions, a pair of sinuous spring strips extending transversely to the first strips having web portions and end portions secured to the frame so as to dispose the web portions in engagement with the web portions of the first strips, clips securing the web portions of the transverse strips to the web portions of the first strips, the web portions of the second strips being in relaxed condition of the construction disposed above and out of contact with the web portions of the first strips, and clips securing the end portions of the second strips to the web portions of the transverse strips whereby the second strips provide a second resilient surface substantially parallel to the first.

12. The invention as claimed in claim 11 wherein the first strips are formed of heavier wire than the second strips.

13. In a cushion construction, the combination of a frame, a first set of sinuous spring strips, a second set of sinuous spring strips, each of said strips having a web and end portions extending

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from and in continuation of the web, the first set of strips having the end portions thereof connected to the frame and the webs thereof disposed so as to lie on substantially a first common surface, the second set of strips having the end portions thereof connected to the frame and the webs thereof disposed so as to lie on substantially a second common surface spaced from the first and located at a greater distance from the frame than the first surface, the webs of the second set strips being at least coextensive with the webs of the first set strips and out of contact with the webs of the first set strips when the construction is in relaxed or unloaded condition.

14. The invention set forth in claim 13 wherein the strips of the second set of springs are formed of lighter wire than the strips of the first set and thus deform more readily.

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15. In a spring construction having a frame, a plurality of parallel sinuous spring strips having load receiving webs, a sinuous spring strip extending transversely to said plurality of strips and supported on the frame, and means mounting the plurality of strips on said transverse strip so that loads on the plurality of strips are at least partly transmitted to the transverse strip.

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