March 4, 1941. C. H. MENGE 2,233,545

CUSHION CONSTRUCTION

Original Filed Feb. 1, 1936

Fig. 1.

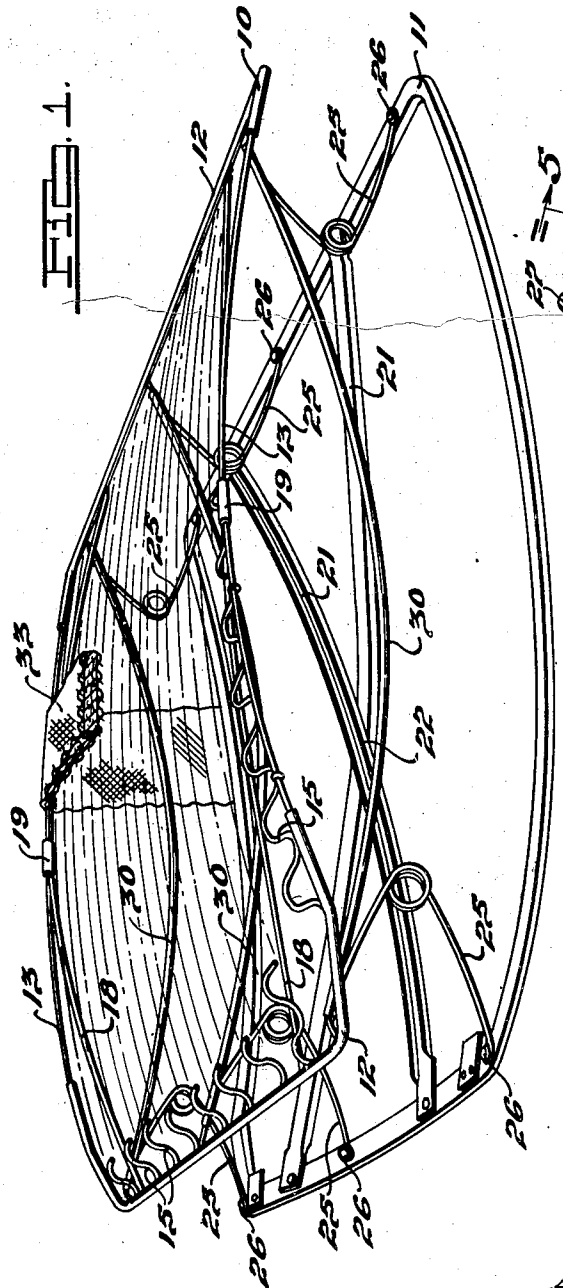


Fig. 3.

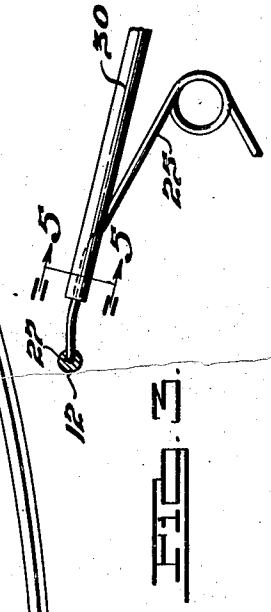


Fig. 5.

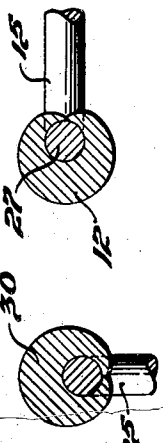
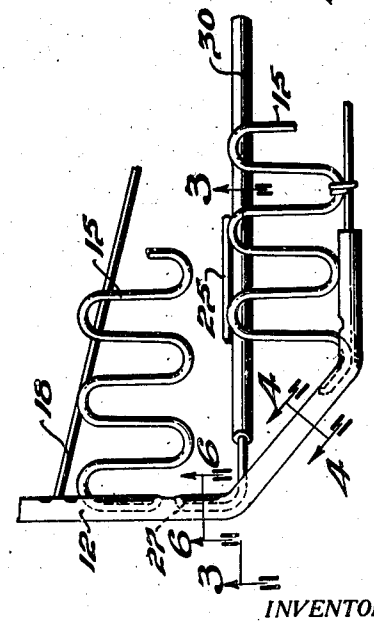


Fig. 6.

Fig. 4.



Fig. 2.



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CUSHION CONSTRUCTION

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Application February 1, 1936, Serial No. 61,863
Renewed March 24, 1939

2 Claims. (Cl. 155—179)

This invention relates to spring cushion construction. More particularly it relates to a simply and easily fabricated spring cushion construction which is particularly adaptable for use as either a vehicle seat cushion or as a vehicle seat back.

The present invention contemplates the provision of a cushion construction utilizing sinuous, arcuate resilient spring elements of the type disclosed in Kaden No. 2,002,399 and the present invention relates to a cushion construction which is designed as an improvement over applicant's prior co-pending applications, Serial No. 40,741 and No. 40,742, relating to vehicle seat cushions of the same general character as are disclosed in the present application.

It is a general object of the present invention to provide a seat cushion construction comprising a pair of spaced frames. One of said frames serves to provide means for mounting a parallel series of arcuately disposed, sinuous, spring elements, each formed of a series of lateral convolutions all lying in substantially the same surface. Means are provided for strengthening the frame member carrying these spring elements and means in addition are provided for resiliently mounting this spring frame upon a relatively rigid non-flexible base frame.

The present invention contemplates the provision of a novel base frame particularly adaptable for use in cushion constructions of this type and which is formed of relatively simple construction and is designed to be extremely rigid as is necessary in cushions of this general character.

Still further the present invention contemplates the provision of arcuately disposed bow members which serve to strengthen the spring supporting frame and in addition of resilient means for interconnecting these bow members with the base frame the interconnecting means also serving the purpose of connecting the bow members to the spring frame.

Many other and further objects and advantages of the present invention will become apparent from the following specification when considered in connection with the accompanying drawing forming a part thereof.

In the drawing:

Figure 1 is a perspective view with portions broken away illustrating the improved cushion construction;

Fig. 2 is an enlarged fragmentary top plan view of one corner of the spring supporting frame, showing the manner in which the sinuous spring elements are mounted therein and the manner in which the strengthening members and supporting springs are secured thereto;

Fig. 3 is a transverse sectional view taken substantially on the line 3—3 of Fig. 2, illustrating in detail the mounting of the spacing springs with respect to the spacing bows and the spring frame;

Fig. 4 is an enlarged transverse sectional view taken substantially on the line 4—4 of Fig. 2 illustrating in detail the type of border wire utilized in the manufacture of the spring frames of the present invention;

Fig. 5 is an enlarged sectional view taken substantially on the line 5—5 of Fig. 3 illustrating in detail the manner in which portions of the spacing springs are secured to the bracing elements of the spring frame;

Fig. 6 is an enlarged sectional view taken substantially on the line 6—6 of Fig. 2 illustrating in detail the manner in which the terminal ends of the spacing springs are secured into the spring supporting frame.

With more particular reference to the drawing, the improved cushion construction described herein comprises an upper or spring supporting frame 10 and a lower or base frame 11. While the specific embodiment of the invention disclosed in the drawing illustrates a seat back cushion of the type particularly adaptable for use in rumble seats of automobiles, it will be appreciated that only minor modifications are necessary in order that the inventive concept set forth in this application may be utilized for the purpose of providing seat back cushions for other forms of seats as well as many and various forms of seat cushions.

The upper or spring supporting frame 10 preferably comprises a pair of similarly bent sections of border wire 12 which forms the front and back portions of this frame. These border wire sections may be bent in order that they will not only form the front and back portions but also the corner portions and portions of the ends of this upper spring supporting frame 10. These two complementary sections of border wire 12 are preferably secured together by arcuately extending lengths of spring wire 13 which form the ends of the spring supporting frame and which wires have their terminal ends crimped into the channel of the border wire 12 in order to provide a substantially integral rectangular frame structure. While the border wire element 12 may be of any suitable form such as is conventional in the art, it has been found preferable to utilize a metallic border wire element which is of substantially cylindrical configuration and has a relatively deep channel cut therein, adapted to receive not only connecting wires but also the transversely extending arcuately disposed sinuous spring elements hereinafter described in detail.

In order to form a resilient surface for the cushion a plurality of arcuately disposed sinuous spring elements 15 extend from front to rear

of the spring supporting frame and have their ends anchored in the border wire by crimping the border wire around the last lateral convolution of each of the spring elements. As has been described in detail in the applications referred to above, these spring elements 15 comprise spring wire bent in sinuous form to provide a series of similar adjacent lateral convolutions all lying in substantially the same surface. This spring wire is normalized so that it will tend to lie on an arc of a circle of considerably less radius than that in which it is actually used and consequently it is necessary to tension these elements substantially in order to mount them in the frame 10. As has been brought out in detail in the prior co-pending applications referred to above, this arcuate tensioning of these spring elements serves to materially increase their resilience and to maintain them normally lying in an arc of predetermined curvature. The elements 15 when placed in the spring frame 12 are tensioned in order that they will lie along arcs of substantially the same radius as arcuate member 13 forming the end portion of the frame.

In order to strengthen this spring supporting frame and maintain it in its predetermined substantially rectangular form, and also to maintain a surface structure of predetermined curvature, it has been found desirable to utilize auxiliary bracing means extending underneath the arcuately disposed springs in order to brace the frame as a whole transversely and to materially increase its general rigidity. To accomplish this end, I provide brace members comprising sections of wires which have their ends crimped into the border wire substantially inward from the ends of the frame. These brace wire elements 18 extend diagonally outward and are secured to the end wire elements 13 in substantially the central portion thereof by means of suitable clips or other fastening means 19. From this point of securement, the reinforcing wires 18 extend to the opposite side of the frame and have their terminal ends crimped into the opposite border wire element 12 in order to provide diagonally extending braces across each of the four corners of the spring supporting frame member. The base frame utilized in connection with the cushion construction of the present invention comprises a sheet metal, substantially rectangular, base portion 11 which is preferably preformed to provide a channel cross-section, thus materially increasing the rigidity of the base frame as a whole. It has been found desirable to materially strengthen the base frame and to accomplish this end I provide an X-member composed of a pair of diagonally disposed, oppositely presenting, channel members 21 which have their ends secured at suitable spaced points on the base frame and which cross in substantially the central portion of the base frame. Inasmuch as these channel members are oppositely disposed they are preferably permanently secured together back to back in substantially the central portion of the base frame at the point 22 and consequently greatly increase the strength and general rigidity of structure as a whole.

Jack springs are preferably utilized for maintaining the base frame and the spring supporting frame in resiliently spaced relation with respect to each other. These jack springs 25 preferably are secured at their lower ends in spaced points along the base frame by means of suitable pins or screws 26. These springs extend inwardly and at their central portions described several convolutions and then extend outwardly and upwardly and have their upper ends 27 bent laterally and crimped in the border wire element 12. Crimped on to the upper end of these jack springs 25 adjacent the portion thereof which is crimped into the border frame element are arcuately extending reinforcing bows 30. These bows 30 preferably are formed of border wire, similar in configuration to the border wire element 12, described above, and serve to maintain the front and rear marginal edges of the spring supporting frame 10 in properly spaced relation with respect to each other. It will be appreciated that these reinforcing bows 30 also serve to definitely limit the upward movement of the jack springs with respect to the upper frame and consequently even though the upper frame 12 and base frame 11 are compressed into rather close proximity with each other, the jack springs will not be permitted to extend up into the plane of the surface of the spring supporting frame. It will be further appreciated that due to the mounting of these arcuate bow members upon the jack springs the ends of these bow members are provided with a resilient connection between their respective ends and the spring supporting frame. The entire cushion construction may be covered with suitable upholstery 35 as may be desired and as is conventional in the art.

From the foregoing it will be appreciated that a construction has been provided in which both the upper and lower frames are reinforced and the upper frame serves to carry and solely support the resilient spring members which make up the resilient surface thereof.

While but one specific embodiment of the inventive concept disclosed in this case has been shown and described, many and other further modifications thereof falling within the scope of the subjoined claims will be apparent to those skilled in the art.

What is claimed is:

1. In a cushion construction, a rectangular border frame having members of inwardly presented channel section at opposite sides thereof, arcuate brace members of channel cross section extending transversely across said frame, connecting wires for securing said brace members to said frame, said wires being crimped into the channel of said brace members and crimped into the channel of said frame, and arcuate sinuous spring elements having their ends crimped into the border elements of said frame and tensioned transversely thereacross.

2. In a spring cushion construction, a base frame and a spring-supporting frame, jack springs resiliently interconnecting said frames for maintaining the same in resiliently spaced relation, arcuately extending brace members of generally channel cross section interconnecting said jack springs on opposite sides of said frame, said brace members being crimped to engage said jack springs adjacent the point of securement of said jack springs to said frame.

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