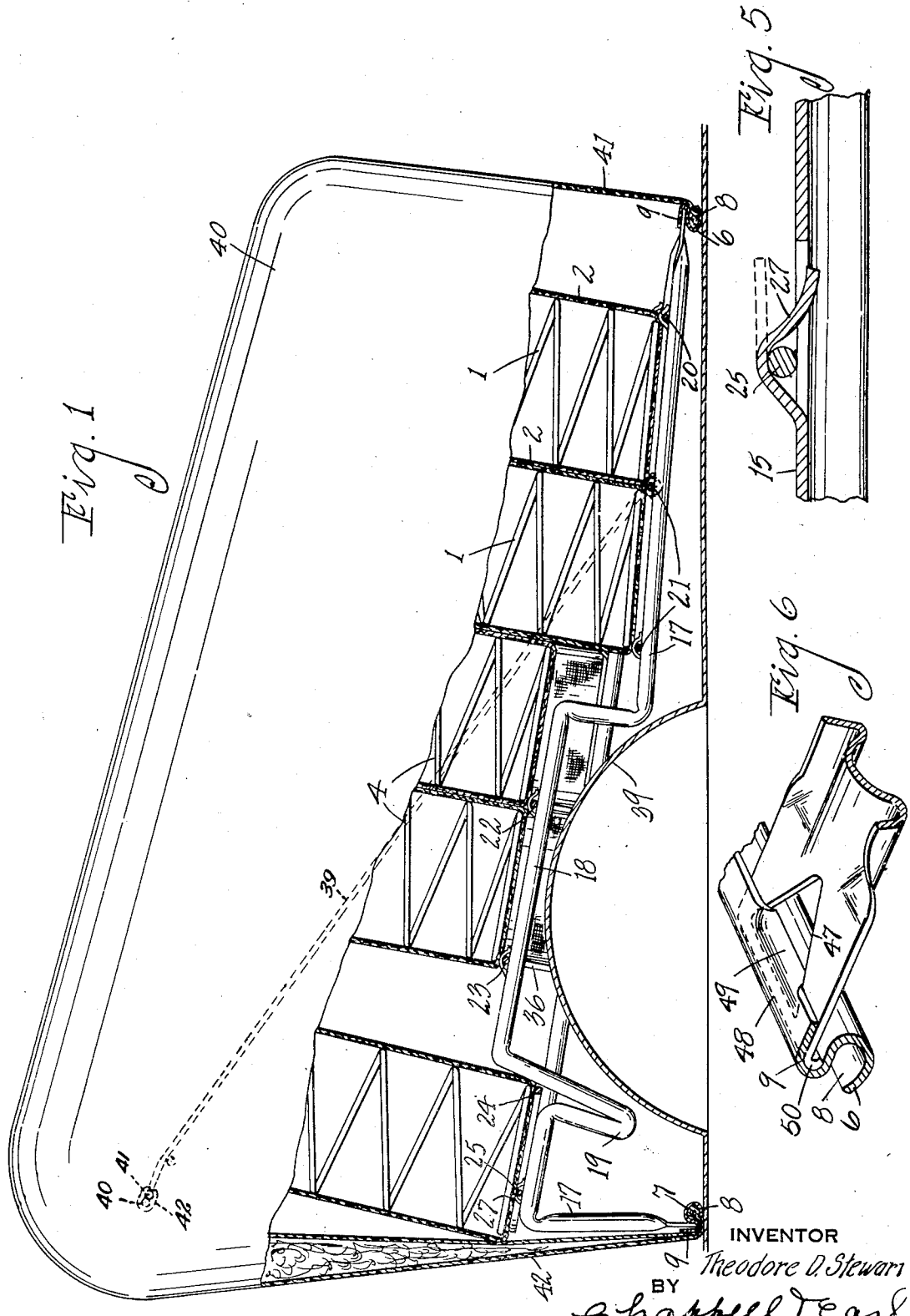
Oct. 17, 1933. T. D. STEWART 1,930,697

SPRING CUSHION STRUCTURE

Filed Jan. 18, 1933 2 Sheets-Sheet 1



Oct. 17, 1933. T. D. STEWART 1,930,697

SPRING CUSHION STRUCTURE

Filed Jan. 18, 1933 2 Sheets-Sheet 2

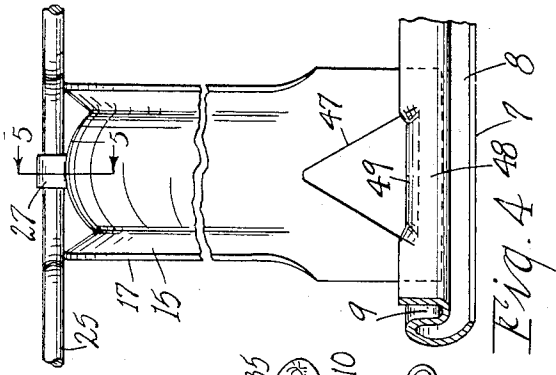


Fig. 4

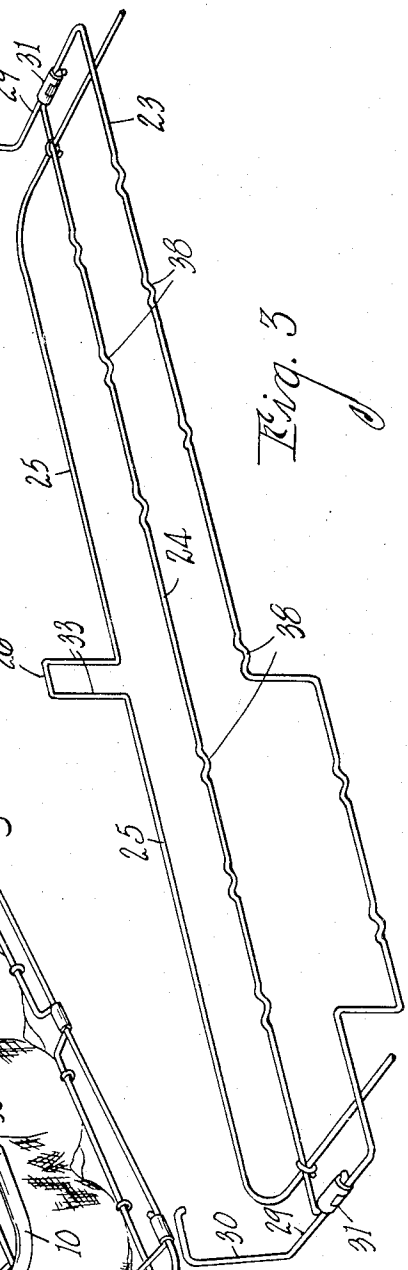


Fig. 3

Fig. 2

INVENTOR
Theodore D. Stewart
BY
Chappell & Earl
ATTORNEYS

Patented Oct. 17, 1933 1,930,697

UNITED STATES PATENT OFFICE

1,930,697

SPRING CUSHION STRUCTURE

Theodore D. Stewart, Detroit, Mich., assignor to L. A. Young Spring & Wire Corporation, Detroit, Mich.

Application January 18, 1933. Serial No. 652,267

9 Claims. (Cl. 155—179)

The main objects of this invention are:

First, to provide a spring cushion structure which is well adapted for the modern types of pleasure automobiles in which there is little headroom and frequent obstructions or raised portions in the seat platform or support portion of the vehicle are present.

Second, to provide a spring construction having these advantages, which may be readily adapted to meet particular conditions or requirements of the character outlined.

Third, to provide a structure having these advantages, which is comparatively simple and economical in its parts and at the same time very strong and rigid.

Objects pertaining to details and economies of my invention will definitely appear from the description to follow. The invention is defined in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings, in which:

Fig. 1 is an end elevation partially in vertical transverse section of a seat cushion embodying the features of my invention, a portion of the seat platform or vehicle bottom being conventionally illustrated.

Fig. 2 is an inverted perspective view of a structure embodying the features of my invention with the upholstery omitted.

Fig. 3 is a fragmentary perspective view of portions of the spring supporting rods or wires.

Fig. 4 is an enlarged fragmentary view showing the relation of the spring supporting cross strips, the spring supporting rods and the frame.

Fig. 5 is an enlarged detail section on line 5—5 of Fig. 4.

Fig. 6 is an enlarged fragmentary perspective view showing the connection between the cross arm and border frame.

In the embodiment of my invention illustrated, the body springs 1 are of the cylindrical type and arranged in pocketed strips 2, the springs being arranged in rows and the springs of the rows transversely alined. The tops of the springs are arranged in the same plane, certain of the springs, as the end springs 3, 3 in the embodiment illustrated and an intermediate group of springs 4, being shorter than the other springs so that their lower ends are disposed in planes above the plane of the lower ends of the longer springs. A top border frame 5 is provided, but as this forms no part of my present invention it is not described or detailed herein.

In the embodiment illustrated, I provide a bottom border frame consisting of the rear border frame member 6 and the front border frame member 7. These are of S cross section, providing an upholstery securing channel 8, that of the rear border frame member facing outwardly and that of the front border frame member facing downwardly. The inwardly facing channels 9 of these border frame members are adapted to receive and be clamped upon parts supported thereby, which will appear as the description proceeds.

The rear border frame member has upwardly offset end portions 10 at each end terminating in arms 11 constituting border frame end members. The front border frame member 7 is disposed in a plane substantially below the plane of the arms 11 and terminates in rearwardly projecting arms 12 connected to the arms 11 by the wires 13 crimped within the inner channels of the frame members.

I provide corrugated cross strips 14, 15 and 16 formed as stampings, the rear ends of which are secured to the border frame member 6 while their front ends have downturned arms 17 secured to the front frame member, the inwardly facing channels of the members being clamped upon these cross pieces. For this purpose, the ends of the cross pieces have triangular openings 47, leaving end webs 48 which are clamped by upset portions 49 of the S-channel border frames to the latter. The end webs are bent at 50 to the shape of the channel to thereby strengthen the connections. The cross piece 16 has an upwardly offset portion 18 to bring it into approximately the plane of the lower ends of the short intermediate springs 4. The cross pieces 14 and 16 have downward offsets 19 which serve as anchoring members engaging a part to hold the seat in position, the retaining part not being illustrated.

The springs are supported by spring supporting wires or rods 20, 21, 21, 22, 23, 24, and 25. Separate numerals are used for these parts to facilitate description. These supporting wires or rods are arranged across the cross strips and secured thereto, the cross strips having clamping tongues 27 for anchoring the rods other than the rod 20 which has loop-like offsets 28 intermediate its ends clamped by the rear border frame member 6.

The supporting rod 23 has arms 29 at its ends terminating in downwardly offset portions 30 clamped by the front border frame member 7 so that these arms constitute part of the border frame. The ends of the supporting wire or rod

24 are secured to these arms by the clips 31. The ends of the supporting wires 20, 21, 22 and 23 are clamped by the end portions 11 of the rear border frame member 6. The wire 25 has a downwardly extending U-shaped offset 26 provided with side arms 33. The offset is clamped by the front border frame member 7. The outer reaches of the wire 25 are extended into end members 34 which are disposed along the ends of the rows of springs. These end members are clamped by the end members of the bottom border frame member and constitute supports for the end springs.

The ends of the spring supporting members 20 and 21 are upwardly offset at 35 while an intermediate portion of the supporting members 22 and 23 is upwardly offset at 36, thereby bringing them into approximately the plane of the bottoms of the shorter springs. The supports 21, 22, 23 and 24 are arranged intermediate the rows of springs.

The bottom coils of the springs are secured to these supports by clips 37, the rods having crimps 38 at suitable intervals so that they may be engaged by the clips, thereby preventing the sliding of the clips on the rods. A crimp is not provided for each clip, but they are located at such intervals that each spring is effectively anchored to prevent its sliding relative to the rods. The cushion is provided with a plurality of spaced diagonal stay wires or braces 39 extending from the rearmost support 21 upwardly and forwardly to the front member 40 of the top border frame 5, the wires being turned parallel to the member 40 at 41 and secured thereto by clips 42.

With this arrangement, the bottom of the spring structure can be formed to accommodate irregularities in the platform or bottom of the car such as indicated at 39, the springs being effectively supported throughout the structure.

My improved arrangement of parts, while simple and economical, is nevertheless strong and rugged by virtue of the crimps 38 in the rods, the clamping tongues 27, and the connection between the border frames and the cross strips, including the triangular opening and the bends at the ends of the cross strips in the channel.

The upholstery indicated at 40 is provided with skirt portions 41 and 42 which are clamped in the outer channel of the rim. Other types of rim for securing the upholstery, such as tacking inserts, may be employed. I have not illustrated such a structure, as it is believed that this disclosure will enable those skilled in the art to which the invention relates to embody or adapt my improvements as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A spring cushion structure comprising rows of springs disposed with the springs of the rows in transverse alinement and with their tops in substantially the same plane, certain of the springs at each end and certain of the inner springs being of less length than the other springs so that the lower ends of the shorter springs are in planes above the plane of the lower ends of the longer springs, a rear bottom border frame member having upwardly offset portions at each end therminating in border frame end members, a front bottom border frame member disposed in a plane below the bottoms of the springs and having rearwardly projecting arms at its ends, rods connecting the ends of said arms to the end members of the rear border frame member, cross bars having their rear ends secured to said rear border frame member and their front ends turned downwardly and secured to said front border frame member, one of said cross bars having an upwardly offset portion lying in approximately the plane of the bottoms of said shorter inner springs, longitudinal spring supporting rods supported by said cross bars, certain of said rods having upwardly offset portions lying in approximately the planes of the bottom of the shorter springs, the rear spring supporting rod being secured intermediate its ends to the rear bottom border frame member, the front supporting rod having end portions disposed across the ends of the rows of springs and secured at their rear ends to the rear border frame member, said front supporting rod having a downwardly extending offset secured to said front border frame member, one of the intermediate supporting rods terminating in forwardly projecting arms with downturned ends secured to said front border frame member and constituting border frame elements, the intermediate bottom supporting rods being disposed between the rows of springs and secured at their ends to said border frame end members, and clips connecting said springs to said supporting rods.

2. A spring cushion structure comprising rows of springs disposed with the springs of the rows in transverse alinement and with their tops in substantially the same plane, certain of the springs at each end and certain of the inner springs being of less length than the other springs so that the lower ends of the shorter springs are in planes above the plane of the lower ends of the longer springs, a rear bottom border frame member having upwardly offset portions at each end terminating in border frame end members, a front bottom border frame member disposed in a plane below the bottoms of the springs and having rearwardly projecting arms at its ends, rods connecting the ends of said arms to the end members of the rear border frame member, cross bars having their rear ends secured to said rear border frame member and their front ends turned downwardly and secured to said front border frame member, one of said cross bars having an upwardly offset portion lying in approximately the plane of the bottoms of said shorter inner springs, longitudinal spring supporting rods supported by said cross bars, certain of said rods having upwardly offset portions lying in approximately the planes of the bottom of the shorter springs, one of the intermediate supporting rods terminating in forwardly projecting arms with downturned ends secured to said front border frame member and constituting border frame elements, the intermediate bottom supporting rods being disposed between the rows of springs and secured at their ends to said border frame end members, and clips connecting said springs to said supporting rods.

3. A spring cushion structure comprising rows of springs disposed with the springs of the rows in transverse alinement and with their tops in substantially the same plane, certain of the springs at each end and certain of the inner springs being of less length than the other springs so that the lower ends of the shorter springs are in planes above the plane of the lower ends of the longer springs, a rear bottom border frame member having upwardly offset portions at each end terminating in border frame end members, a front bottom border frame member disposed in a plane below the bottoms of the springs and having rearwardly projecting arms at its ends, rods connecting the ends of said arms to the end members of the rear border frame member, cross bars

having their rear ends secured to said rear border frame member and their front ends turned downwardly and secured to said front border frame member, one of said cross bars having an upwardly offset portion lying in approximately the plane of the bottoms of said shorter inner springs, longitudinal spring supporting rods supported by said cross bars, certain of said rods having upwardly offset portions lying in approximately the planes of the bottom of the shorter springs, and clips connecting said springs to said supporting rods.

4. A spring cushion structure comprising rows of body springs, certain of the springs being of less length than the other springs so that the lower ends of the shorter springs are in planes above the plane of the lower ends of the longer springs, a rear bottom border frame member terminating in border frame end members, a front bottom border frame member disposed in a plane below the bottoms of the springs and having rearwardly projecting arms at its ends, rods connecting the ends of said arms to the end members of the rear border frame member, cross bars having their rear ends secured to said rear border frame member and their front ends turned downwardly and secured to said front border frame member, longitudinal spring supporting rods supported by said cross bars, certain of said rods having upwardly offset portions lying in approximately the planes of the bottom of the shorter springs, the rear spring supporting rod being secured intermediate its ends to the rear bottom border frame member, the front supporting rod having end portions disposed across the ends of the rows of springs and secured at their rear ends to the rear border frame member, said front supporting rod having a downwardly extending offset secured to said front border frame member, one of the intermediate supporting rods terminating in forwardly projecting arms with downturned ends secured to said front border frame member and constituting border frame elements, the intermediate bottom supporting rods being disposed between the rows of springs and secured at their ends to said border frame end members, and clips connecting said springs to said supporting rods.

5. A spring cushion structure comprising rows of body springs, certain of the springs being of less length than the other springs so that the lower ends of the shorter springs are in planes above the plane of the lower ends of the longer springs, a rear bottom border frame member terminating in border frame end members, a front bottom border frame member disposed in a plane below the bottoms of the springs and having rearwardly projecting arms at its ends, rods connecting the ends of said arms to the end members of the rear border frame member, cross bars having their rear ends secured to said rear border frame member and their front ends turned downwardly and secured to said front border frame member, longitudinal spring supporting rods supported by said cross bars, certain of said rods having upwardly offset portions lying in approximately the planes of the bottom of the shorter springs, one of the intermediate supporting rods terminating in forwardly projecting arms with downturned ends secured to said front border frame member and constituting border frame elements, the intermediate bottom supporting rods being disposed between the rows of springs and secured at their ends to said border frame end members, and clips connecting said springs to said supporting rods.

6. A spring cushion structure comprising rows of body springs, certain of the springs being of less length than the other springs so that the lower ends of the shorter springs are in planes above the plane of the lower ends of the longer springs, a rear bottom border frame member terminating in border frame end members, a front bottom border frame member disposed in a plane below the bottoms of the springs and having rearwardly projecting arms at its ends, rods connecting the ends of said arms to the end members of the rear border frame member, cross bars having their rear ends secured to said rear border frame member and their front ends turned downwardly and secured to said front border frame member, longitudinal spring supporting rods supported by said cross bars, certain of said rods having upwardly offset portions lying in approximately the planes of the bottom of the shorter springs, and clips connecting said springs to said supporting rods.

7. A spring cushion structure comprising rows of body springs, certain of the springs being of less length than the other springs so that the lower ends of the shorter springs are in planes above the plane of the lower ends of the longer springs, a border frame, cross bars secured at their ends to said border frame, longitudinal spring supporting rods supported by said cross bars, certain of said rods having upwardly offset portions lying in approximately the planes of the bottom of the shorter springs, the rear spring supporting rod being secured intermediate its ends to the rear bottom border frame member, the front supporting rod having end portions disposed across the ends of the rows of springs and secured at their rear ends to the rear border frame member, the front supporting rod being secured to said front border frame member, the intermediate bottom supporting rods being disposed between the rows of springs and secured at their ends to the border frame end members, and clips connecting said springs to said supporting rods.

8. A spring cushion structure comprising rows of body springs disposed with their tops in substantially the same plane, certain of the inner springs being of less length than the other springs so that the lower ends of the shorter springs are in planes above the plane of the lower ends of the longer springs, a border frame, cross bars secured at their ends to said border frame, one of said cross bars having an upwardly offset portion lying in approximately the plane of the bottoms of said shorter inner springs, longitudinal spring supporting rods supported by said cross bars and connected to said border frame, certain of said rods having upwardly offset portions lying in approximately the planes of the bottom of the shorter springs, and clips connecting said springs to said supporting rods.

9. A spring cushion structure comprising in combination front and rear border frame elements of substantially S-section, and longitudinally ribbed cross members having end openings forming end webs disposed in channels of said S-sections, the end webs being bent to the shape of and seated in the channels, and portions of said border frame elements being upset through said openings and over said webs to clamp the frame elements and cross members in assembled relation.

THEODORE D. STEWART.