Nov. 10, 1936. D. A. GREENE 2,060,465

SPRING CUSHION SEAT

Filed June 10, 1935 2 Sheets-Sheet 1

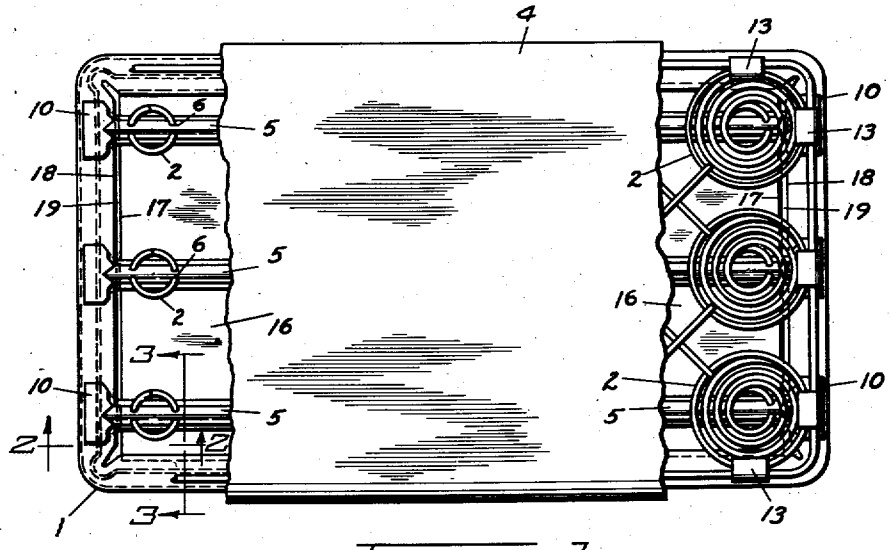


FIG. 1.

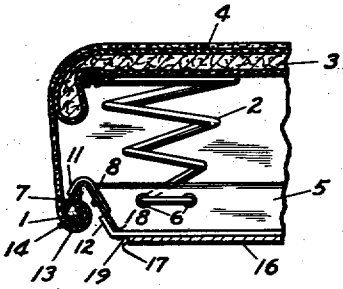


FIG. 2.

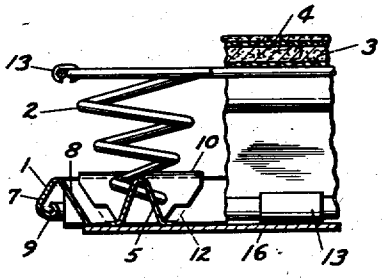


FIG. 3.

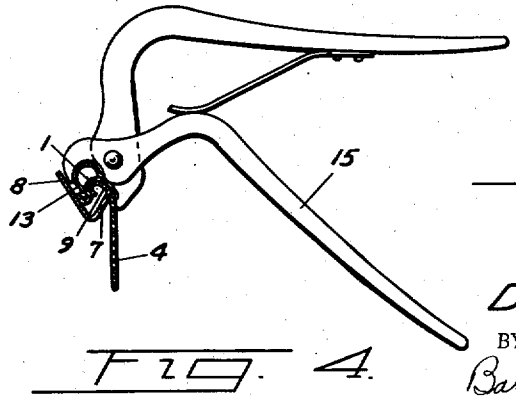


FIG. 4.

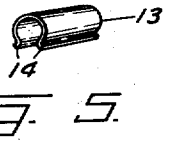


FIG. 5.

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Fig. 6

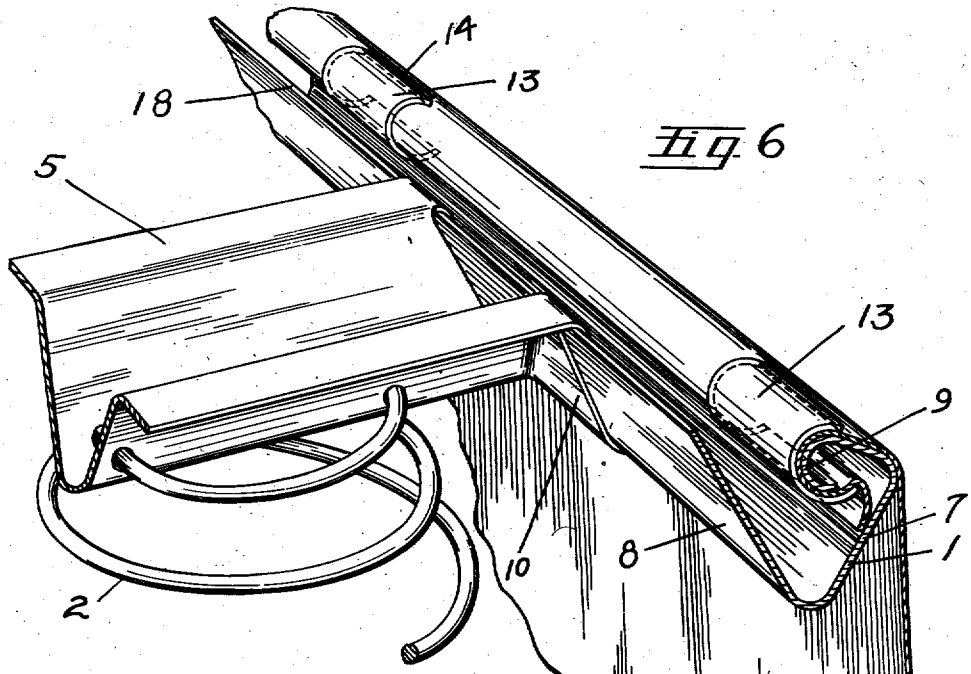
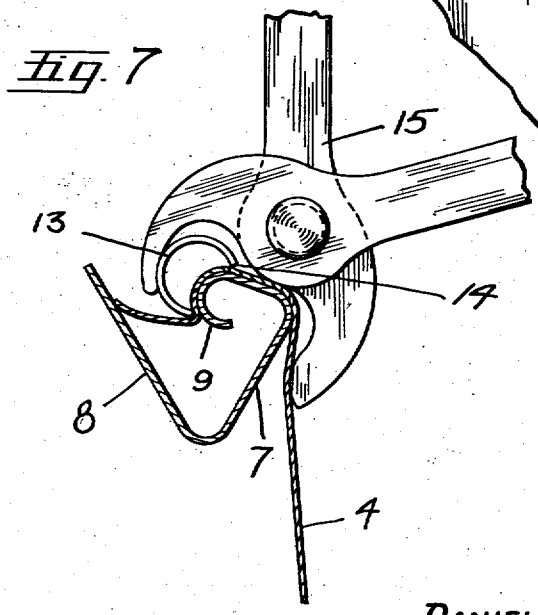


Fig. 7



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2,060,465

SPRING CUSHION SEAT

Daniel A. Greene, Flint, Mich., assignor to Stubnitz-Greene Spring Corporation, Adrian, Mich., a corporation of Michigan

Application June 10, 1935, Serial No. 25,771

9 Claims. (Cl. 155—180)

This invention relates to a spring cushion seat.

The broad idea of securing cushion trimming or cover to the bottom frame by means of a spring clip is old. However, the heretofore known arrangement for securing the seat cover to the bottom frame by a spring clip has a serious disadvantage in that the spring clip is inaccessible for removal purposes. It is an object of this invention to produce a spring cushion seat, the cushion cover of which is secured to the bottom frame by means of a spring clip which is readily accessible and removable so that repairs to the spring cushion seat may be readily effected by any ordinary mechanic and the cover easily replaced thereafter.

In the construction of cushion seats it is highly desirable to utilize the air entrapped within the seat cushion to effect a cushioning and snubbing action on the springs by controlling the venting of the air as the cushion is depressed when loaded and as the cushion expands when the load is removed. In the heretofore known seat cushion constructions the seat frame has been shaped in such a manner that the cover for closing the bottom frame to obtain this air cushioning and snubbing action has been very expensive due to the die costs necessary to make the cover properly fit the frame. It is an object of this invention to so construct the bottom frame that a very simple, plain and inexpensive cover for closing the opening in the bottom frame may be used thus obviating the need for the above mentioned expensive dies.

This invention also contemplates a simple and inexpensive arrangement for easily securing the slats to the bottom frame.

In the drawing:

Fig. 1 is a top plan view of the seat with the trim cover partially broken away.

Fig. 2 is a section along the line 2—2 of Fig. 1.

Fig. 3 is a section along the line 3—3 of Fig. 1.

Fig. 4 is a detail view showing the method of attaching the trim cover to the seat frame by means of spring clips.

Fig. 5 is a perspective of the clip.

Fig. 6 is a fragmentary perspective of the inverted seat frame with the bottom cover 16 omitted showing the fabric secured to the V frame by spring clips. Fig. 7 is a section through the frame illustrating the method of snapping the clips and fabric on to the frame.

Referring more particularly to the drawing the seat comprises a bottom frame 1, a plurality of coil springs 2, padding 3, a cover 4, and slats 5. The cover 4 is preferably leather, but it may be any other suitable trimming fabric or material. The slats 5 are V shaped in cross section and provided with a plurality of opposed openings 6 for receiving the bottom convolutions of the coil springs 2.

The bottom frame member 1 is rolled in the form of an inverted V in cross section having an outer side wall 7 and an inner side wall 8. The bottom edge of the outer side wall 7 is provided with a curved return bent portion in the form of a bead 9 for purposes described below.

The slats 5 which extend crosswise of the seat are secured to the side members of the bottom frame 1. For this purpose each end of each slat 5 is flared outwardly as at 10 and curved downwardly as at 11 so that it fits snugly over the outer faces of the side walls 7 and 8 of the frame 1. The flared portion 10 of each slat 5 adjacent the point where it merges with the main portion of the slat is provided with a pair of struck out ears 12 which are bent into a tight engagement with the bottom face of the side wall 8 of the frame 1. Thus the ears 12 in conjunction with the curved and flared end 11 securely fix each end of the slat 5 to the frame. If desired, although not necessary, the ears 12 and end portions 11 of the slats may be spot welded to the frame 1.

In view of the fact that it is a very common occurrence for a seat, such as shown, to be repaired after being installed and used in an automotive vehicle, it is essential that the trim material 4 be readily and easily detached from the frame and that the manner of attachment be obvious to the ordinary garage man or repairman. To this end it is proposed to secure the trim 4 to the bottom frame member 1, with a novel clip arrangement. A perspective of this clip is shown in Fig. 5. The clip 13 is made from suitable spring metal such as steel and is U shaped in section. The spaced edges 14 along the mouth of the clip 13 are turned slightly outwardly so that they will readily slide over the trim material during assembly without tearing the material. The edges 14 of the clip are spaced apart a distance somewhat less than the diameter of the beaded edge 9 of the frame 1.

The assembling of the trim cover 4 to the frame 1 is illustrated in Fig. 4. After the springs 2 have been placed under the proper tension in the usual manner, the trim 4 is drawn taut over the beaded edge 9 of the frame 1. A clip 13, as shown in Fig. 4, is then placed over the beaded edge 9 and the trim material 4 and preferably between the walls 7 and 8 of the frame 1 so that

after assembly the clip will not be visible when the seat is installed in the vehicle body. A suitable tool 15, similar to a pincers, is then placed over the clip 13 and the bead 9. The pincers 15 are then drawn closed so that the clip 13 snaps over the bead 9 into the position shown in Fig. 2 to hold the trim 4 on to the frame 1. As many clips may be used as desired. The spacing of the clips 13 will depend upon the size and the specific type of cushion seat.

As viewed in Fig. 2 it will be noted that the clip 13 is concealed behind the trim 4 and the outer wall 7 of the frame 1 when the seat is placed in upright position. However, upon raising the seat and inspecting the manner of attachment of the trim 4 to the frame 1, any ordinary mechanic would appreciate that a suitable tool such as a screw-driver can be used to pry or spring each clip out of engagement with the bead 9 thus permitting the trim 4 to be removed and the seat repaired. After the seat has been repaired the self-same clips 13 may again be used to secure the trim 4 to the frame because the clips are not destroyed or otherwise injured in disassembling them from the frame.

It is very desirable in any automotive vehicle seat to utilize the air entrapped within the seat for cushioning purposes as the seat is being loaded and to retard the return flow of air into the deflated seat for preventing undue rebound of the springs as the load is removed. This invention contemplates a seat bottom frame and cover plate therefor which will obtain this air cushioning action and which is very simple in structure and inexpensive. As above described, the frame 1 is in the form of an inverted V provided with an outer wall 7 and an inner wall 8. This inverted V construction of the frame 1 has a very definite purpose, namely, it facilitates the installation of a cover 16 for the bottom frame 1. This cover 16 may be a sheet of leather, fabric, fiber board, or sheet metal. Preferably the cover 16 takes the form of a flat sheet of metal 16 which may be welded or otherwise suitably secured along its side edges to the side portions of the frame 1. The end edges 17 may be spaced a short distance, such as one-sixteenth or one-eighth of an inch, from the bottom edge 18 of the inside walls 8 of the end portions of the frame 1, thus forming an elongated vent opening 19 at each end. The size of this vent opening 19 will vary depending upon the size of the seat; the larger the seat the smaller the vent and vice versa. In view of the fact that the walls 7 and 8 of the frame 1 are imperforate the frame member 1 in conjunction with the cover plate 16 effectively inclose the bottom of the seat and cooperate with the trim cover 4 to form a lung or bellows type of air cushion which cushions the seat during loading and prevents undue rebound during unloading. This inverted V construction of the frame 1 likewise permits the use of an ordinary flat cover plate 16 secured along its side edges as above described to the frame 1 and obviates the need for any complicated die work which would otherwise be necessary to properly shape the edges of the cover plate 16 to form a proper sealing joint with the frame 1.

I claim:

1. In a seat, the combination comprising a frame member having a curved beaded edge, a web of covering material for the seat having an edge portion wrapped about the curved beaded edge of the frame member, and a freely movable spring clip snapped over and resiliently gripping the web of covering material and the bead of said edge of the frame for securing the covering to the frame whereby the covering can be readily removed without injuring the same.

2. In a seat, the combination comprising a frame member having an inwardly turned beaded edge, a web of covering material for the seat wrapped about the inwardly turned beaded edge of the frame member, and a C shaped spring clip snapped over and resiliently gripping the web of covering material and the beaded edge of the frame member for securing the covering to the frame whereby the covering can be readily removed without injuring the same.

3. In a seat, the combination comprising a frame member in the form of an inverted V section, the outer wall of the frame member being turned inwardly and return bent to form a bead positioned between the two walls of the inverted V frame member, a web of covering material for the seat wrapped about the inwardly turned beaded edge of the frame member, and a plurality of C shaped spring clips snapped over the covering material and the beaded edge of the frame for securing the covering to the frame, each of the said spring clips being located on the outside of the beaded edge of the wall of the frame member whereby they are readily removable.

4. In a seat, the combination comprising a metal bottom frame member in the form of a rolled inverted V section comprising inner and outer walls, the lower edge of the outer wall being turned inwardly and curved upwardly to form a bead positioned between the inside and outside walls of the frame member, a web of covering material for the seat wrapped about the beaded edge of the bottom frame member, and a C shaped spring clip snapped over the web of covering material and the beaded edge of the bottom frame member for removably securing the covering to the frame, the bottom lip of the spring clip being positioned along the inwardly turned edge of the outside wall member whereby the bottom edge of the wall may be used as a fulcrum for a suitable tool such as a screwdriver and the bottom lip of the spring clip engaged by the tool to remove the same.

5. In a seat, the combination comprising a bottom frame member in the form of a rolled metal inverted V section having inside and outside walls, a slat for reinforcing the bottom frame member in the form of a rolled V section, the slat having a flattened end in the form of a V for fitting over the upper face of the inverted V frame member, and one or more ears struck out of the end of the slat for engaging the under face of the frame member whereby the ears cooperate with the flattened V end of the slat to secure the slat to the frame.

6. A spring cushion comprising a frame having an outer side wall and an inwardly turned edge forming a corner with the outside wall, the said inwardly turned edge of the frame having a bead extending therealong spaced inwardly from the outer side wall of the frame, a plurality of springs carried by the frame, a covering for said springs drawn taut over the springs and downwardly along said outer side wall and then inwardly from said side wall around said corner and about the said bead, one or more spring clips adapted to be sprung over said covering and bead and having a resilient interengagement with said covering and bead to removably secure the covering to said bead where-

by the drawing of the covering about said frame corner snubs the covering and relieves the said clip or clips of a portion of the upward pull exerted by the covering.

7. A spring cushion comprising a sheet metal frame having an outer side wall and an inwardly turned edge forming a corner with the outside wall, the said inwardly turned edge of the frame having a bead extending therealong spaced inwardly from the outer side wall of the frame, a plurality of springs carried by the frame, a covering for said springs drawn taut over the springs and downwardly along said outer side wall and then inwardly from said side wall around said corner and about the said bead, one or more freely removable spring clips C-shaped in cross section adapted to be sprung over said covering and bead and having a resilient interengagement with said covering and bead to removably secure the covering to said bead whereby the drawing of the covering about said frame corner snubs the covering and relieves the said clip or clips of a portion of the upward pull exerted by the covering and permits the clips to be sufficiently yieldable so that they can be readily removed without damage to the covering.

8. A spring cushion comprising a sheet metal frame having an outer side wall and an inwardly turned edge forming a corner with the outside wall, the said inwardly turned edge of the frame having a bead extending therealong spaced inwardly from the outer side wall of the frame, a plurality of springs carried by the frame, a covering for said springs drawn taut over the springs and downwardly along said outer side wall and then inwardly from said side wall around said corner and about the said bead, one or more freely removable spring clips C-shaped in cross section, said spring clip or clips having a mouth of less width than the diameter of the bead and cover material whereby the clip is sprung over the covering and the beaded edge of the frame and tensioned to have a resilient interengagement with said covering and bead to removably secure the covering to said bead whereby the drawing of the covering about said frame corner snubs the covering and relieves the said clip or clips of a portion of the upward pull exerted by the covering and permits the clips to be sufficiently resilient so that they can be readily assembled to, and removed from, the said bead without damage to the covering.

9. A spring cushion comprising a sheet metal frame having an outer side wall and an inwardly turned edge forming a corner with the outside wall, the said inwardly turned edge of the frame having a bead extending therealong spaced inwardly from the outer side wall of the frame, a plurality of springs carried by the frame, a covering for said springs drawn taut over the springs and downwardly along said outer side wall and then inwardly from said side wall around said corner and about the said bead, a plurality of freely removable spring clips C-shaped in cross section sprung over said covering and bead in spaced relation whereby the clips are substantially concealed when the spring cushion is viewed from the top or side, said spring clips having a resilient interengagement with said covering and bead to removably secure the covering to said bead whereby the drawing of the covering about said frame corner snubs the covering and relieves the said clip or clips of a portion of the upward pull exerted by the covering and permits the clips to be sufficiently yieldable so that they can be readily removed without damage to the covering.

DANIEL A. GREENE.

CERTIFICATE OF CORRECTION.

Patent No. 2,060,465. November 10, 1936.

DANIEL A. GREENE.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 74, claim 1, for the word "movable" read removable; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 19th day of January, A. D. 1937.

Henry Van Arsdal

(Seal) Acting Commissioner of Patents.

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