March 9, 1954 M. STUBNITZ 2,671,498

SEAT SPRING CUSHION OF THE AIR CUSHION TYPE

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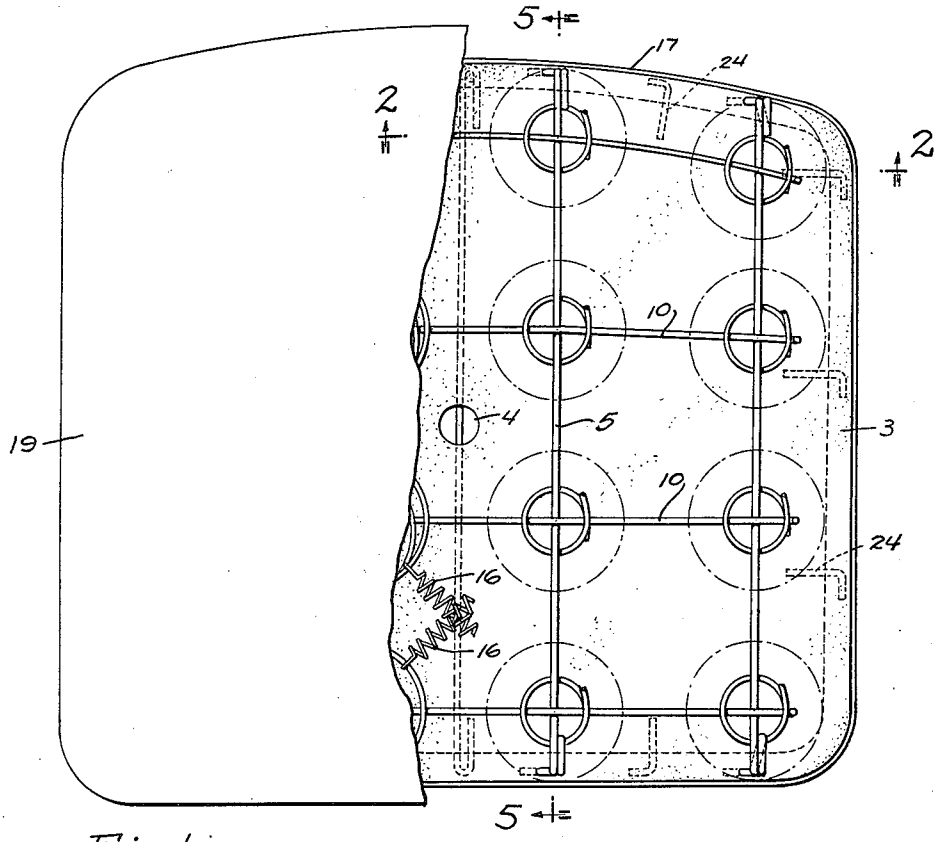


Fig. 1.

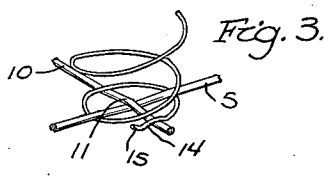


Fig. 3.

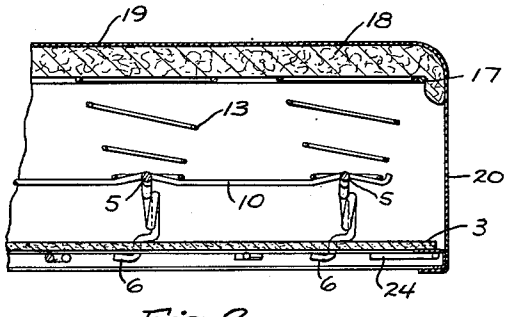


Fig. 2.

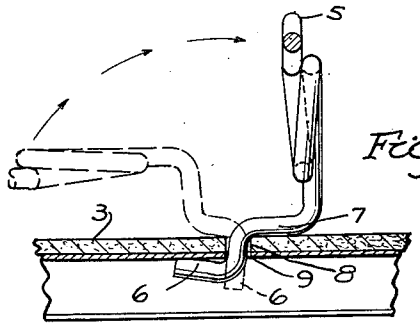


Fig. 4.

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SEAT SPRING CUSHION OF THE AIR CUSHION TYPE

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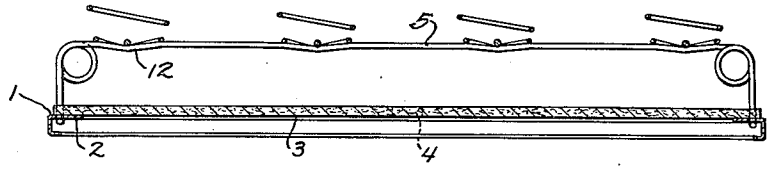


Fig. 5.

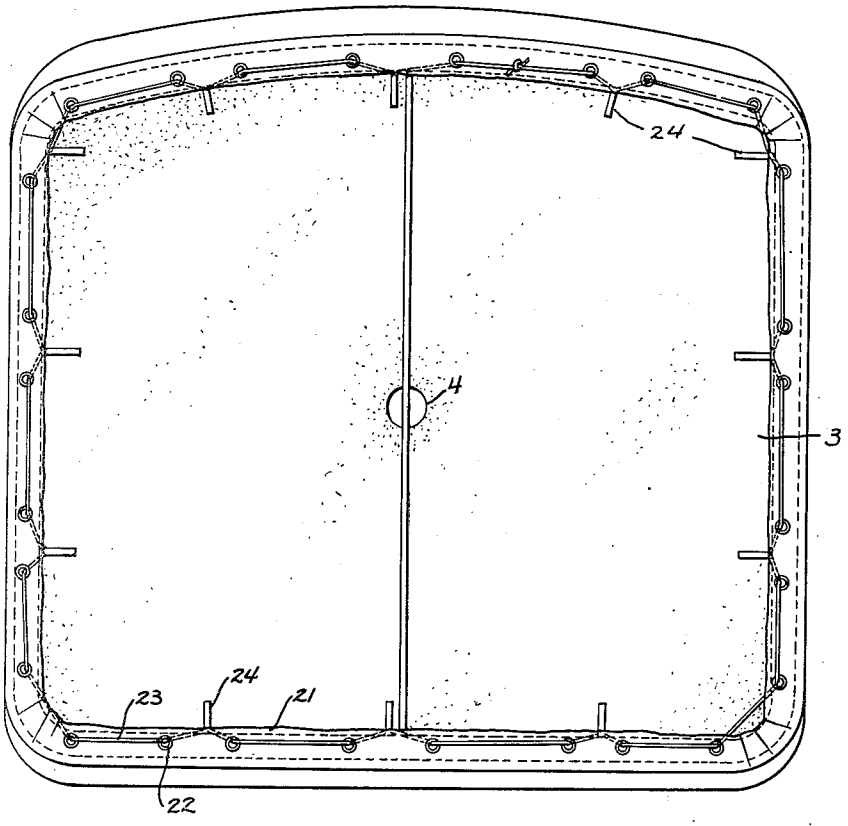


Fig. 6.

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UNITED STATES PATENT OFFICE

2,671,498

SEAT SPRING CUSHION OF THE AIR CUSHION TYPE

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Application May 15, 1951, Serial No. 226,399

8 Claims. (Cl. 155—179)

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This invention relates to spring seat cushions of the air cushion type. A seat spring cushion of this type is shown, described and claimed in my prior Patent No. 2,031,745.

It is the object of the present invention to provide an improved seat spring cushion of this type in which the assembly of the bottom plate is made with the bottom frame by means of the spring stringers or wire beams that support the upper coil spring structure.

Another feature of my improvement is that the bottom frame carries lacing pins or hooks over which the upholstering cover may be stretched and held in place by a draw string passing over the hooks and through eyes in the turned over skirt of the upholstering.

Referring to the drawings:

Fig. 1 is a plan view of the seat cushion with a part of the upholstering broken away to show the spring structure.

Fig. 2 is a section taken on the line 2—2 of Fig. 1.

Fig. 3 is a detail showing the coil spring construction with the crossed stringers.

Fig. 4 is a detail enlarged view showing how the spring stringers or beams are hooked into holes in the diaphragm and the bottom frame and then turned up into vertical position.

Fig. 5 is a cross section taken on the line 5—5 of Fig. 1.

Fig. 6 is an elevational view of the bottom of the seat cushion.

The spring cushion of the type shown in my prior Patent 2,031,745 operates on the principle of using spring resistance and also air resistance to carry the load. The air resistance is of the dash pot type. The air in the spring of 2,031,745 is allowed to escape along the edge of the bottom plate or diaphragm and the diaphragm is also perforated. In the present spring construction, I provide a channel or preferably a J frame 1 at the bottom. This has a large flange 2 on which rests the diaphragm 3 usually made of paper board. This may have a ventilating opening 4 through which the air is expelled when the load takes effect on the cushion.

In my prior application, Serial No. 45,175, filed August 19, 1948, now Patent No. 2,642,929 I have described and claimed a seat spring with abbreviated length coiled load supporting springs which are supported on spring wire beams or stringers. These stringers or spring beams are designated 5 in the present application. To assemble my present air cushion spring, I provide the jack springs or safety pin type of springs at

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the ends of the spring beams with hooks 6 on their ends. These hooks are part of a shallow S-shaped leg 7. The hooks are passed down through the perforations 8 in the diaphragm 3 and perforations 9 in the flange or stem of the J strip. These perforations register, as shown in Fig. 4. The stringers may be turned down to horizontal position, the S-shaped leg with its hook is passed down through the registering perforations, then the stringer is turned up to the vertical position as shown by the full lines. The upper bar of the S-shaped leg forms a rest for the stringer on the diaphragm above the flange of the border frame. When the several stringers are turned up to the vertical position as shown in the full lines of Fig. 4, then the cross stringers 10 may be laid over the spring stringers. These cross stringers 10 have bumped up portions 11 which lie in the depressions 12 in the spring stringers as shown in Figs. 2 and 5. This arrangement locates the cross stringers properly with respect to the spring stringers. Then the abbreviated or truncated hour glass type of load supporting springs 13 may be screwed in place as shown in Fig. 3 and as described in the application of Harlan L. Davis, Serial No. 139,214, filed January 18, 1950, which has become abandoned. The spring is turned or screwed over the left hand portion of the cross stringer 10, then under the right hand portion of the spring stringer 5, and then the bumped up portion 14 of the end of the coil comes to rest on the top of the right hand portion of the cross stringer 10, being guided over the cross stringer by means of the turned up end 15 of the coil. All the springs are thus easily screwed into position. Then the short coil tractile springs 16 are hooked over the top whorls of the spring to connect them together at the top. The wire top frame 17 is clipped to the top whorls of the load supporting springs.

The upholstering mat 18 is laid over the top of the coiled load supporting springs and then the trimming or upholstering cover 19 is stretched over the mat and the skirt 20 extends down on all sides and the turned over edge material 21 is provided with eyes 22 through which passes the drawstring 23 and this drawstring is looped or laced over the hooks 24 which are welded to the large top flange of the J frame or rim member. This easily and simply assembles the trim material over the seat cushion and provides a fairly good air seal to hold the air in the inside of the cushion to be expelled only through the center opening 4 on the dash pot principle. The

stringers will not tip over, because these stringers are all tied together by the cross wires 10 which are firmly anchored to the ends of the supporting conical springs, and the supporting springs are tied to the top frames and to one another.

What I claim is:

1. A seat spring cushion assembly to which is to be applied an upholstering cover over the top, sides and rim of the seat spring to form a combined air cushion and spring seat having in combination, a top frame, a bottom frame provided with perforations, a diaphragm provided with perforations registering with the perforations of the bottom frame, said diaphragm resting on the top of the bottom frame and provided with an air release to provide a dash pot action for the cushion, spring stringers with jack springs at their ends hooked through said registering perforations in the bottom frame member and the diaphragm, cross stringers laid over the spring stringers, and short coil springs anchored to the cross stringers at the crossing and secured at their tops to the top frame member and to each other.

2. The combination claimed in claim 1 in which the cross stringers are floating wire members having their ends completely free of the two frames.

3. The combination claimed in claim 1 in which the cross stringers have bumped up portions and the spring stringers have depressed portions for locating the cross stringers properly with respect to the wire stringers and in which the short coil springs are screwed over and under the crossed wires at their intersections.

4. The combination claimed in claim 1 in which the bottom frame is J-shaped in cross section with the stem of the J in the upper position, upon which the diaphragm is supported by means of hooking the jack spring ends of the spring

stringers in the registering perforations of the diaphragm and the stem of the J.

5. The combination claimed in claim 4 in which lacing pins or hooks are welded to the underside of the long stem of the J.

6. The combination claimed in claim 4 in which the hooked in ends of the jack springs are S-shaped legs.

7. A seat cushion having in combination a seat spring comprising an upper frame, a lower frame, crossed stringers, coiled springs supported upon the stringers, and with some of the stringers and springs connecting the upper and lower frames, lacing pins welded to the lower frame, an upholstering cover fitted over the top and all the sides of the cushion assembly with the skirts turned under and provided with a plurality of eyes in the turned under skirt portion, and a drawstring threaded through the eyes and looped over the lacing pins to complete the assembly of the upholstering to the seat spring.

8. The combination claimed in claim 7 in which the lower frame is a J section with a flange and a perforated diaphragm or bottom plate having its edges supported on the stem of the J to form an air cushion.

MAURICE STUBNITZ.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
813,923	Staples	Feb. 27, 1906
977,566	Sorey	Dec. 6, 1910
1,051,466	Travis	Jan. 28, 1913
2,125,519	Oldham	Aug. 2, 1938
2,222,052	Vanderploeg	Nov. 19, 1940

FOREIGN PATENTS

Number	Country	Date
228,253	Great Britain	Jan. 30, 1925