April 26, 1949. G. P. JOHNSON 2,468,558

TENSION CUSHION

Filed Sept. 26, 1945

Fig. 1

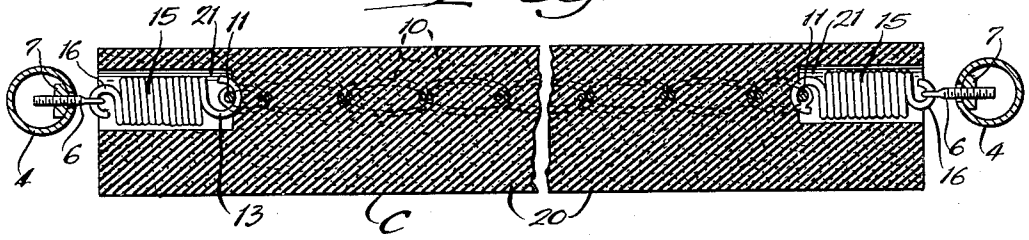
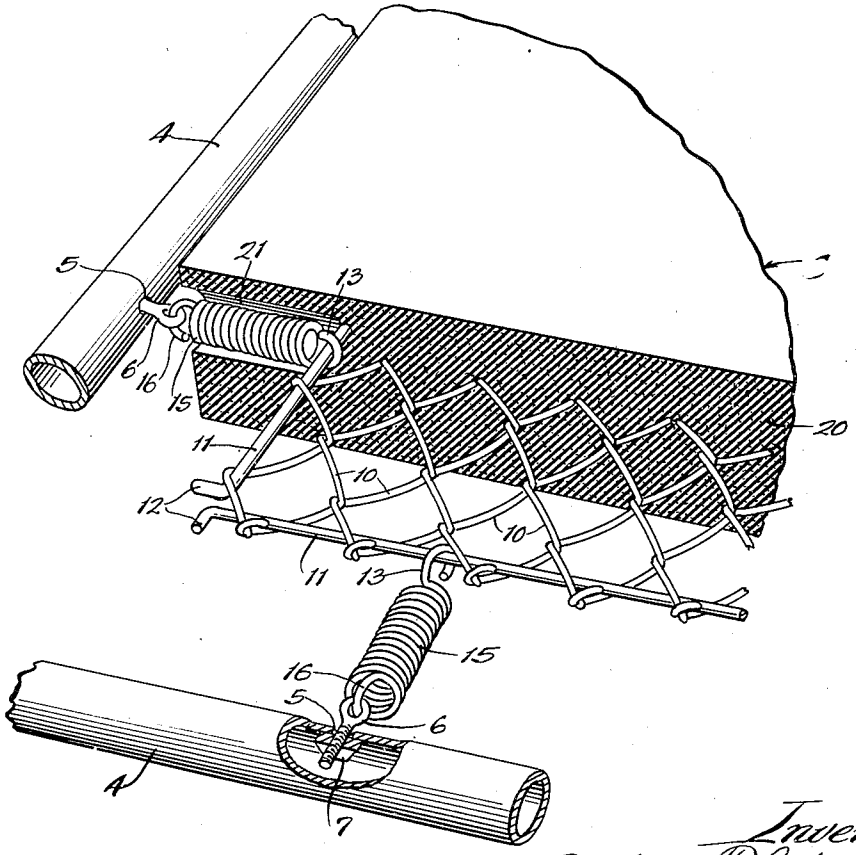


Fig. 2



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TENSION CUSHION

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4 Claims. (Cl. 155—179)

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My invention relates to a composite tension cushion adapted specially for installation in chairs and seats of various kinds. In use, the cushion is edge-supported between opposed bars of framework with freedom for deflection out of its normal plane in response to an applied load. A cushion of this character is admirably suited for the seat or back, or both, of the chair equipment of a conveyance such as a bus, aeroplane, etc.

It is an object of my invention to provide a cushion of the kind described which will be resilient and comfortable, and absorptive of shocks incident to rough travel of a conveyance; and a cushion which utilizes, to maximum advantage, the properties of sponge rubber, or foam rubber, as it is commonly called, in conjunction with a deflectable reenforcement therefor. Such a reenforcement may be of various kinds, an example being a metallic link structure which is deflectable out of its normal plane with little or no stretching in any direction.

In the accompanying drawing, I have illustrated a suggestive embodiment of my invention in the manner following:

Fig. 1 is a transverse section through the tension cushion and the opposed members of a supporting frame; and

Fig. 2 is a sectional detail in perspective showing the relationship of the cushion pad to the reenforcement therefor and to certain bars of the supporting framework.

My present tension cushion C is shown as supported upon opposed hollow bars 4 which with other opposed bars commonly form the framework of a seat back. At spaced intervals, the confronting faces of these bars are provided with openings 5 for receiving eye-bolts 6 which are in threaded engagement with nuts 7, arranged interiorly of the bars. Such a construction, which incorporates bars and eye-bolts is suggestive of a framework which is suitable for support of the tension cushion now to be described.

I utilize, as a foundation, a deflectable reenforcement which may take the form of a series of interconnected links 10 defining a generally rectangular structure. Through the outer links may be threaded rods 11 having turned ends 12 to oppose endwise movement. When installed, these rods define sides for the link structure, as best shown in Fig. 2.

The size of the reenforcement will be determined according to the space between opposed bars of the framework, it being desirable that the rods 11 lie inwardly thereof a substantial distance

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to receive engagement from one hooked end 13 of a plurality of clasps 15. As shown, these clasps are resilient, being in the form of coiled springs whose opposite ends 16 are hooked into the several eye-bolts. By this means of connection, the link structure is normally maintained taut between the opposed bars of the framework by which it is resiliently supported through the medium of the several spring clasps 15.

The parts thus far described may all conveniently be produced from metal. The reenforcing link structure which is relatively non-stretchable may deflect easily out of its normal plane in response to imposition of a load which is usually concentrated or localized. Using such a deflectable reenforcement as a foundation, I unite thereto a cellular cushion pad 20 of sponge rubber, or foam rubber, or the like. This union of one with the other may be conveniently performed by moulding the pad around and through its reenforcing base. Such a pad, which is resilient to a high degree, requires supplemental support in order to serve satisfactorily as a tension cushion when suspended within a framework, hence the necessity of the embedded reenforcement. The dimensions of the pad may exceed that of its reenforcement by a distance sufficient to surround the several spring clasps 15 which lie in edge pockets 21 wherein their full freedom of movement is preserved. Only the rods 11 of the reenforcement structure are exposed, these being located at the inner ends of the several pockets where they may be engaged by the hooked ends 13 of the clasps.

In practice, the cushion pad may be formed to lie more to one side of its reenforcement than to the other, as suggested in Fig. 1; in other words, the reenforcement may lie closer to one face of the pad than to the other. The purpose of this is to locate the major part of the pad above the reenforcement if a seat cushion is desired, or forwardly of the reenforcement if a back cushion is to be formed. By so proceeding, it is possible to obtain an adequate thickness of the pad for the sustaining of a calculated load by use of a minimum amount of rubber material—an important consideration because of the cost and weight factors that are involved.

The tension cushion of this invention will be found very comfortable and absorptive of shocks. A link structure, such as that illustrated, affords a light but adequate reenforcement for the pad, and one which may yield or deflect out of its normal plane as required by the load which it sustains. In case of average load, the cushion is

free to bow endwise, its resilient material being variously displaced and shifted, and the link structure yielding in response to the imposed load. The spring clasps will yield under such conditions. It is manifest, therefore, that the present tension cushion affords an easy and satisfactory support for the occupant of a seat which is so equipped, even though it be installed in a conveyance which is subject to frequent shocks and bumps.

I claim:

1. In a tension cushion, the combination with opposed spaced frame bars, of a link support extending therebetween and terminating short thereof, a plurality of spring means interconnecting the link support and spaced frame bars, and a cushion pad of resilient material moulded around and through the link support in its entirety and formed to extend substantially the full distance between the frame bars with a slight clearance at its edges and provided interiorly thereof with pockets surrounding the several spring means whereby to preserve full freedom of movement thereto.

2. In a tension cushion, the combination with opposed frame bars, of a deflectable reeinforcement entirely surrounded by a resilient cushion pad extending beyond the edges thereof and formed with edge pockets exposing the edges of the reenforcement, and means disposed in the pockets interconnecting the reenforcement and frame bars.

3. In a tension cushion, the combination with opposed frame bars, of a resilient, cellular pad

sized to fit between the bars and formed with a plurality of edge pockets, a flexible, relatively non-stretchable, reenforcement embedded within the pad and extending to the pockets thereof for exposure therewithin, and resilient means disposed within the pockets spaced from the walls thereof interconnecting the reenforcement and frame bars.

4. As a new article of manufacture, a tension cushion comprising a flexible, relatively non-stretchable, reenforcement embedded within a resilient, cellular pad, the latter extending beyond the edges of the former and formed with a plurality of edge pockets reaching to the edges of the reenforcement therewithin and adapted to receive means for connecting the reenforcement to a supporting frame.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
135,580	Penfield	Feb. 4, 1873
1,094,787	Hoey	Apr. 28, 1914
1,725,479	Rissmann	Aug. 20, 1929
1,906,233	Leigh	May 2, 1933
2,012,042	Gerlofson et al.	Aug. 20, 1935
2,067,621	Singer et al.	Jan. 12, 1937
2,281,341	Turner	Apr. 28, 1942
2,283,116	Young	May 12, 1942