

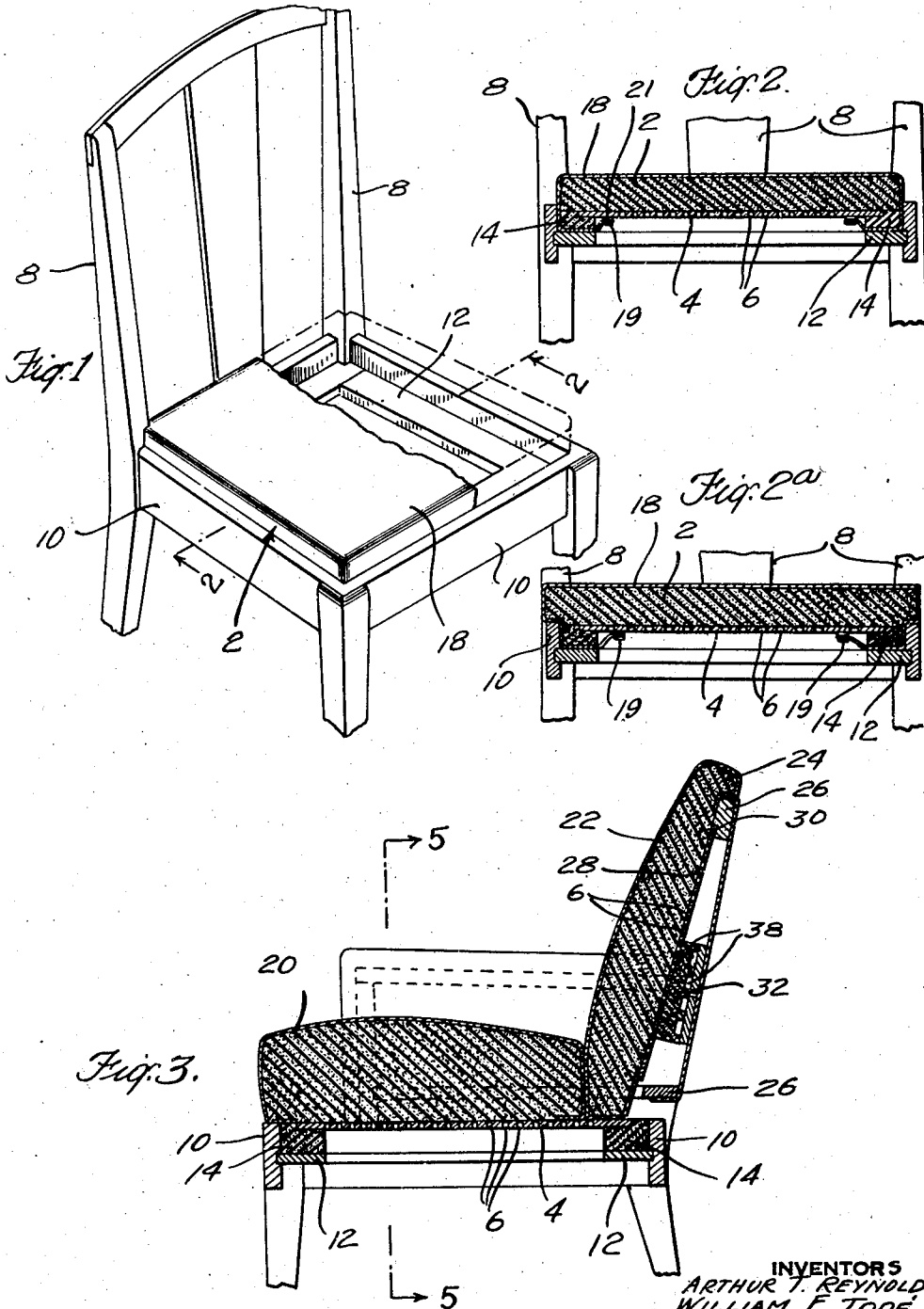
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A. T. REYNOLDS ET AL
SEAT AND MATTRESS CONSTRUCTION

2,259,534

Filed Sept. 12, 1938

3 Sheets-Sheet 1



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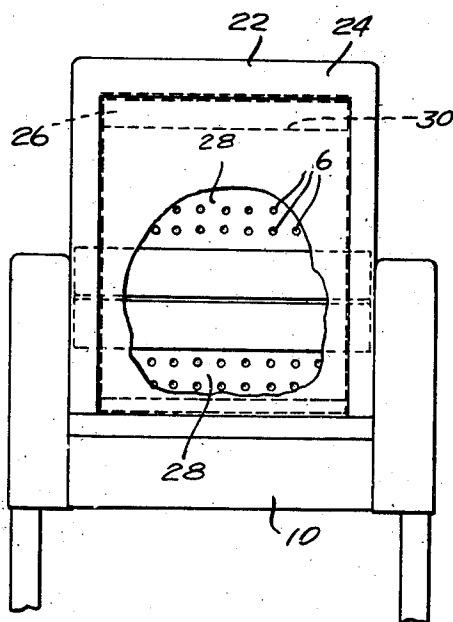
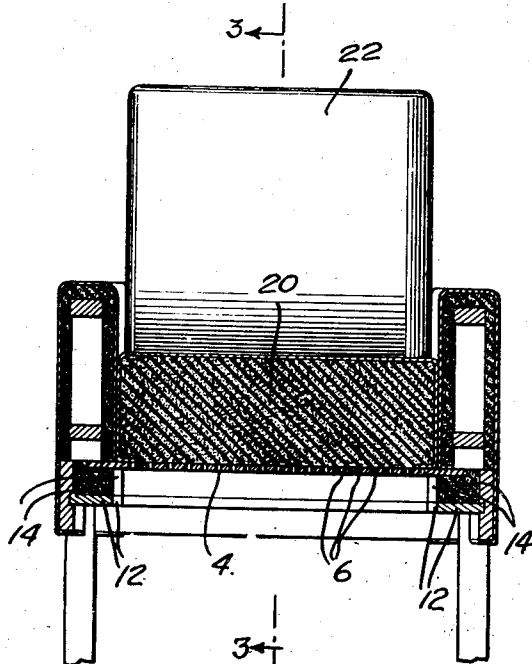
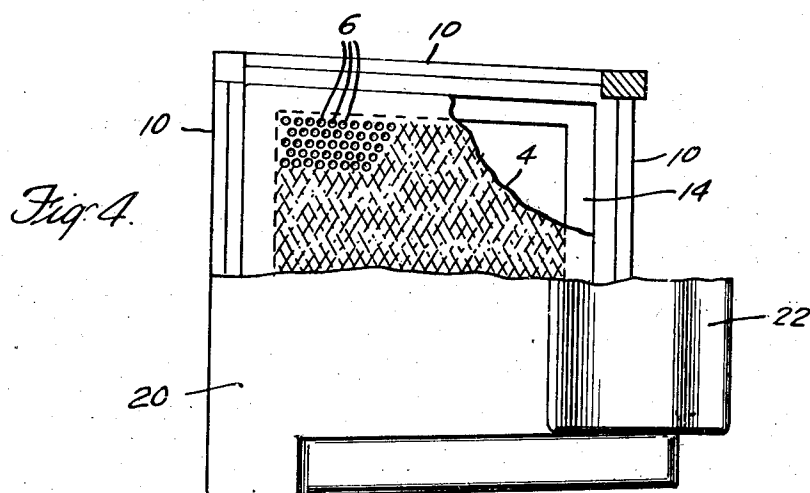
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SEAT AND MATTRESS CONSTRUCTION

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3 Sheets-Sheet 2



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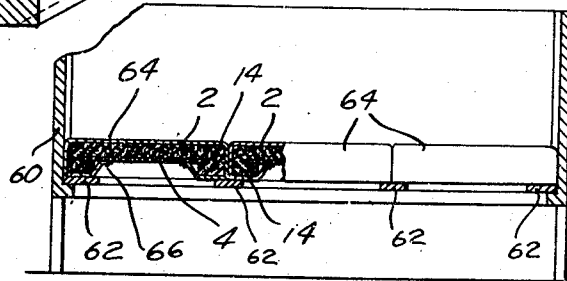
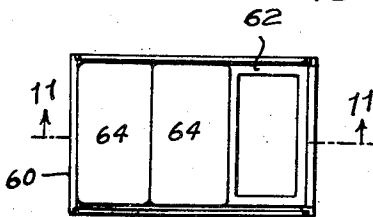
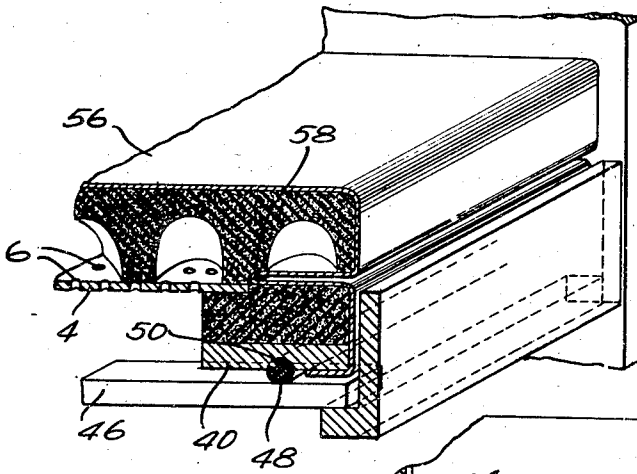
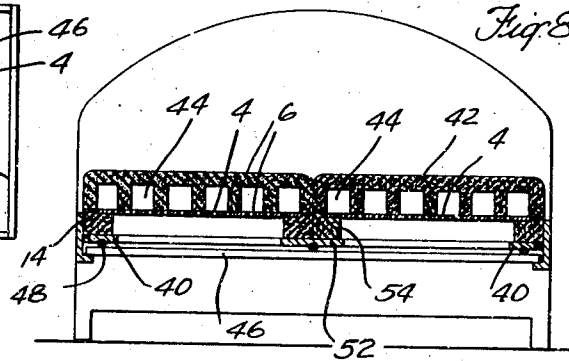
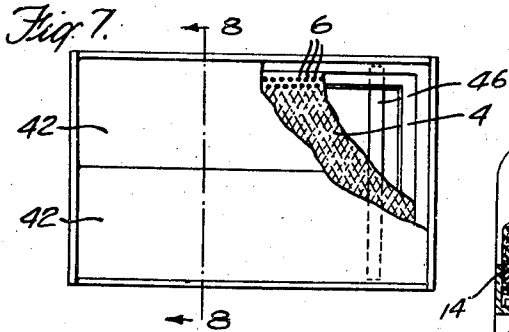
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SEAT AND MATTRESS CONSTRUCTION

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3 Sheets-Sheet 3



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SEAT AND MATTRESS CONSTRUCTION

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4 Claims. (Cl. 155-179)

This invention relates to improvements in the art of utilizing sponge rubber in the construction of cushions for the seats and backs of chairs and sofas and the resilient supports therefor and also in the construction of mattresses for beds, cots, cribs, etc., together with the resilient supports therefor.

Among the modern materials used in the upholstering of chairs, sofas and similar articles of furniture, and even for mattresses for beds and couches, are various forms of sponge rubber, one of the most satisfactory of these forms being that made directly from liquid latex and having interconnected air cells connected also to the exterior atmosphere. This form of sponge rubber, or "latex sponge," as it is usually called, has been molded into various designs and shapes of cushions, supported in various manners, but the most of these designs have either been of a special character, suitable only for special uses, or have been too expensive to go into general use.

An object of the present invention is not only to simplify chair, sofa, bed and similar constructions which utilize latex or other rubber sponge for the cushions or mattresses and the resilient supports therefor, but so to improve the construction that a single type of construction will be adaptable to a wide variety of uses.

A further object of the invention is to provide a construction for the purposes aforementioned which, while it is as comfortable and as resilient as prior types of sponge rubber constructions intended for the same uses, will on the whole require less of the sponge rubber to secure the desired results. The invention also aims to provide a construction for the purposes aforementioned, utilizing sponge rubber for the cushioning and resilient supporting features thereof, which will avoid the tendency to the jelly-like movements which characterize some of the sponge rubber seat and mattress constructions heretofore known and which will more nearly approximate the cushioning and resilient supporting effects of upholstered seats or mattresses and springs of the best of other types of construction.

The improved construction of cushion and resilient support therefor of the present invention makes possible the utilization thereof to improve bed and cot constructions, and a further object of the invention, therefore, is to provide improved bed and cot constructions in which sponge rubber is utilized for the mattresses and for the resilient supports therefor.

Other objects and important features of the

invention will appear from the following description and claims when considered in connection with the accompanying drawings in which—

Figure 1 is a perspective view, with parts broken away, of a chair having a slip seat embodying the present invention;

Figure 2 is a section on the line 2-2 of Figure 1;

Figure 2a shows a modification of Figure 2;

Figure 3 is a section, on the line 3-3 of Figure 5, of a chair provided with seat and back cushions constructed and mounted in accordance with the present invention;

Figure 4 is a plan view, partly in section, of the chair shown in Fig. 3;

Figure 5 is a vertical section on the line 5-5 of Fig. 3;

Figure 6 is a rear elevation, with parts broken away, of the chair shown in Figs. 3 and 5;

Figure 7 is a plan view, with parts broken away, of a mattress and spring construction embodying the present invention;

Figure 8 is a section on the line 8-8 of Fig. 7;

Figure 9 is an enlarged perspective detail showing the provision between the mattress and its resilient support for the tucking in of bed clothes;

Figure 10 is a plan view of a three-section baby's crib mattress with one section removed;

Figure 11 is a section through a crib provided with the three-section mattress of Figure 10.

In the embodiment of the invention illustrated in Figures 1, 2 and 2a, which show it applied to a slip seat for a chair, a cushion 2, preferably of latex sponge having comparatively small interconnected air cells connected to the exterior atmosphere, is shown as supported principally on a diaphragm 4 of relatively stiff material, such as ply-wood or the like, this diaphragm being preferably provided with numerous perforations 6 to permit the escape of the air pressed out of the cushion 2 when it is compressed and the entrance of new air when the cushion is to expand again, these perforations or holes, therefore, providing for aeration or ventilation of the cushioning material.

As illustrated, the chair frame 8, with which the slip seat is to be used, is provided with a seat frame 10 having a seat supporting ledge 12, preferably extending along the four inner sides of the frame 10. On this ledge 12 is supported the resilient means 14 for supporting the diaphragm 4 and with it the cushion 2. This resilient means 14 is preferably also sponge rubber and pref-

erably latex sponge and it may have its pores or air cells of dimensions somewhat larger than those of the cushion 2.

In order to cushion the movements of the diaphragm 4 in its own plane as well as transverse thereto, the resilient supporting means 14 preferably overlaps the edges of the diaphragm 4, as shown at 18, the diaphragm 4 being preferably of dimensions in its own plane somewhat less than the corresponding dimensions of the cushion 2.

Since the resilient supporting means 14 and the projecting margin of the cushion 2 to engage each other where the resilient supporting means 14 overlaps the edge of the diaphragm, the cushion 2 and the resilient supporting means 14 may, if desired, be made integral with each other, even though of different cell dimensions, as, for example, by vulcanizing them together.

An upholstery covering 18 may be applied in any suitable manner, a convenient way of applying it, to permit easy replacement, being illustrated in Fig. 2, in which it is shown as brought in beneath the resilient supporting means 14 and secured with snap fastenings 19 and 21, the stationary parts 21 of the snap fastenings being secured to the under side of the diaphragm 4.

The construction just described is suitable for chairs, sofas, benches, etc.

In Figures 3 to 6, inclusive, is shown a modified chair construction having a loose seat cushion and a back cushion which bears against a swing panel. In this construction the latex sponge cushion 20 is made as a separate unit covered with upholstering material but arranged to be supported principally upon a resilient supporting means substantially of the same construction as that described in connection with the slip seat, that is, it comprises a diaphragm 4 of plywood or other relatively stiff material, preferably provided with air vents or perforations 6, and resilient supporting means 14 carried upon a supporting ledge 12 forming a part of the seat frame 10 of the chair.

As herein shown the cushion 20 will rest principally upon the diaphragm 4 but, by reason of its location in front of the back cushion 22, will be pushed forward somewhat so that the front edge of the cushion 20 will overlap the frame 10. The back cushion 22 is also preferably of latex sponge construction and, as shown, its upper edge 24 overlaps the back frame 26 of the chair.

To secure the desired cushioning effect at the back, the back cushion 22 preferably bears principally against a diaphragm 28 of plywood or other relatively stiff material provided with the ventilating holes or perforations 6 and this diaphragm 28 is preferably so arranged that it constitutes a swing panel swinging about a bearing on the back frame at the upper end 30 of said diaphragm, the panel being yieldingly supported by resilient supporting means 32, comprising a latex sponge unit, preferably of molded cellular construction, this unit bearing at its rear against cross members 34 of the back frame, which may also be provided with perforations 36 to permit escape and entrance of air, these perforations preferably registering with the molded cells 38 of the resilient support 32.

In Figures 7, 8 and 9 the invention is shown as applied to a mattress and spring construction for beds. To provide a removable spring construction, the resilient supporting means 14, which carries the diaphragm 4, is itself mounted

upon a portable frame 40 of wood or other suitable material. The mattress proper 42, which is principally supported upon the diaphragm 4, is preferably of latex sponge having the molded cellular construction, with comparatively large molded cells 44.

To provide a further cushioning effect and also to prevent any noise from the contact of the frame 40 with the bed slats 46, a strip 48 of the latex sponge, preferably substantially circular in cross section, may be inserted in a groove 50, of semi-circular cross-section, in the frame 40.

If the mattress and associated springs are to be used with a double bed, it may be preferable, in order to avoid the tendency of a heavy weight upon one side to tilt the whole construction in that direction, to provide a frame member 52 intermediate between the two side frame members and to provide two diaphragms 4 having their inner edges supported by an intermediate double resilient support 54 of a construction similar to the resilient support 14 except that it has two rabbets for receiving the edges of two diaphragms 4.

The mattress 42 and its spring support, comprising the resilient supporting means 14 and the frame 40, may be so constructed as to form a single unit to be placed on and removed from the bed frame as a whole, or the mattress may be a separate unit removable from its spring support.

If formed as a combined unit of mattress and spring support, the ticking 56 will preferably cover both the mattress and the side and a part of the bottom of the spring support, therefore, to permit tucking in of the bed clothes between the mattress and the spring support, the mattress will preferably be cut away slightly near its edges to permit the ticking to be forced back into the slot thus formed between the side of the mattress and the spring support. The tucked-in loop of ticking can be held in position in any suitable manner as, for example, by rods 58.

The construction hereinabove described of a combined cushion unit and resilient supporting means therefor finds a new utility in the construction of babies' cribs. As shown in Figs. 10 and 11, a crib frame 60 is provided with four transverse supports 62 to support three combined mattress and spring units, each made up of a cushion 2, diaphragm 4 and resilient supporting means 14; the cushion 2 and resilient supporting means 14 being preferably formed as one unit, as hereinabove suggested. Each of these units is covered with a suitable covering 64 of ticking or any other suitable material which is brought around beneath the resilient supporting means 14 and secured by snap fastenings 66 to the under side of the diaphragm 4.

When the crib, as shown, requires three units to complete the mattress length, a fourth spare unit will be provided, which can be kept in reserve for an occasion when one of the other units has become wet, usually the middle unit, thus permitting the wet unit to be removed, washed, sterilized and deodorized and the clean spare unit slipped into position to take its place.

What is claimed as new is:

1. An article of furniture comprising, a cushion composed of a mass of sponge rubber of the type having small intercommunicating cells throughout its mass and venting to atmosphere, a bodily movable perforated diaphragm underlying and supporting said cushion, sponge rubber resilient

supporting means for said diaphragm having surfaces fitting against a portion of the bottom of said diaphragm and against an edge thereof, and supporting means for said resilient supporting means, said last-named means acting to seal a substantial portion of the surface of the sponge rubber resilient supporting means, whereby compression of said resilient means by body weight on the article will cause expulsion of air from the cells of said sponge rubber resilient support and the expulsion will be damped by the sealing effect of the support for the resilient means.

2. A resilient seat for a cushioned article of furniture comprising, a cushion of sponge rubber of the type having small intercommunicating air cells which vent to atmosphere, a floating diaphragm underlying and supporting said cushion, said diaphragm having perforations therein in registry with only a portion of the air vents on the underside of the cushion, a resilient support for said diaphragm, said support having surfaces fitting about the marginal portions and edges of said diaphragm to cushion the floating action thereof, said resilient support having air spaces therein, and rigid means for supporting said resilient support, the surfaces of said rigid means serving to limit the rate of egress of air from said resilient means upon compression thereof.

3. A resilient seat for a cushioned article of furniture comprising, a cushion of sponge rubber of the type having small intercommunicating air cells which vent to atmosphere, a relatively stiff

resilient floating diaphragm underlying and supporting said cushion, said diaphragm having perforations therein in registry with only a portion of the air vents on the underside of the cushion, a resilient support for said diaphragm, said support having surfaces fitting about the marginal portions and edges of said diaphragm to cushion the floating action thereof, said resilient support having air spaces therein, and rigid means for supporting said resilient support, the surfaces of said rigid means serving to limit the rate of egress of air from said resilient means upon compression thereof.

4. A resilient seat for a cushioned article of furniture comprising, a cushion of sponge rubber of the type having small intercommunicating air cells which vent to atmosphere, a floating diaphragm underlying and supporting said cushion, said diaphragm having perforations therein in registry with only a portion of the air vents on the underside of the cushion, a sponge rubber support notched to receive the marginal portions of the underside of said diaphragm and the edges thereof to cushion the floating action, said sponge rubber support having air spaces therein venting to atmosphere, and rigid means for supporting said resilient support, the surfaces of said rigid means covering at least half of the surface of the sponge rubber support to limit the rate of egress of air therefrom upon compression thereof.

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