

Oct. 18, 1949.

A. M. HOLTZMAN
RESILIENT UNIT FOR BED SPRINGS,
CHAIRS AND THE LIKE

2,485,199

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2 Sheets-Sheet 1

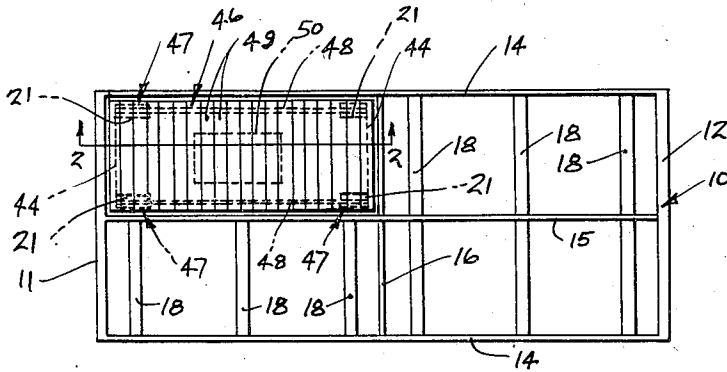


FIG. 1

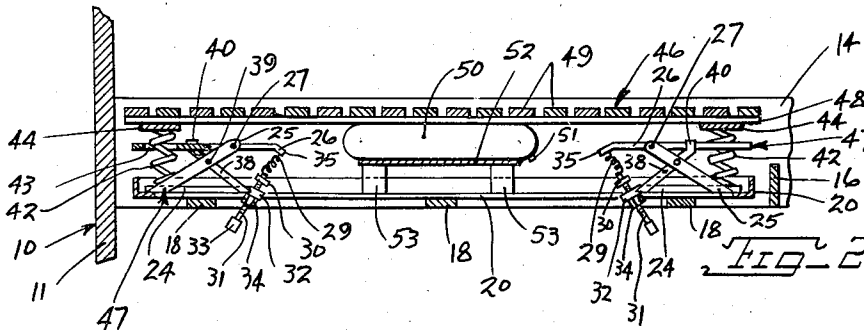
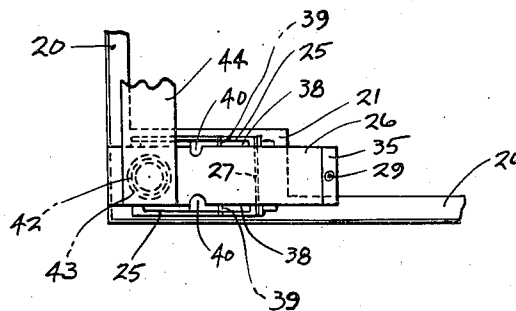


FIG. 3



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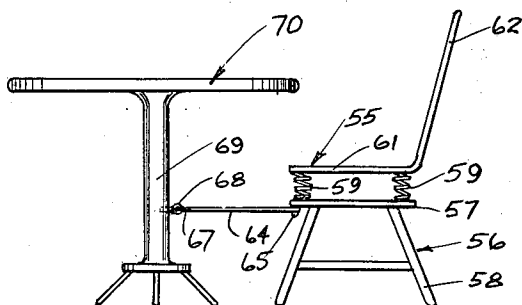


FIG 4

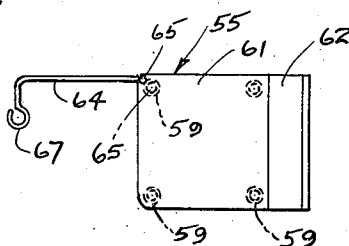


FIG 5

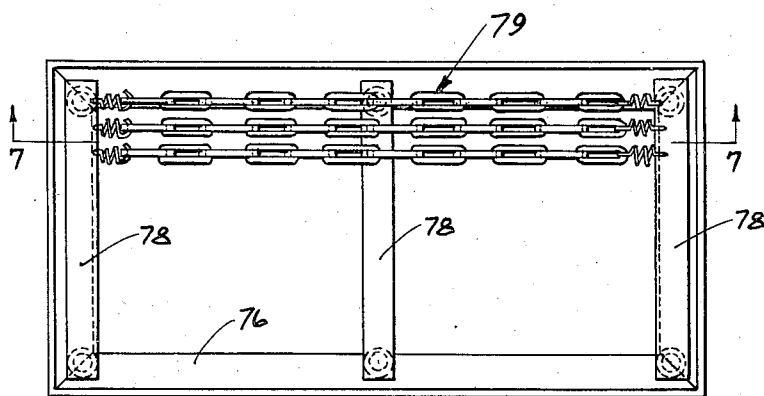


FIG 6

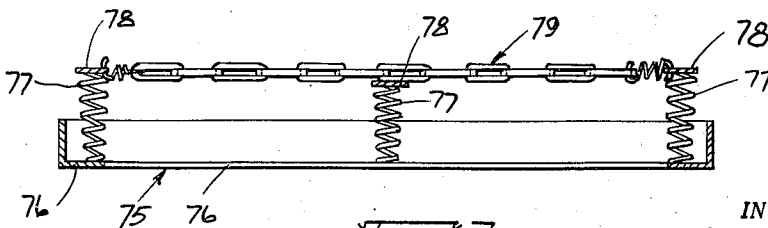


FIG 7

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2,485,199

RESILIENT UNIT FOR BEDSPRINGS,
CHAIRS, AND THE LIKE

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5 Claims. (Cl. 5—246)

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This invention is an improvement upon my United States Letters Patent No. 2,018,721, granted October 29, 1935, for improvements in chairs having flexibly supported seats.

This invention particularly proposes a new system, or arrangement for obtaining superior resiliency, which may be used in numerous articles and devices, such as automobile and other seats, bed springs, chairs, and the like.

It is proposed to characterize the new system, or arrangement by the fact that it includes a plurality of spring bars resiliently supported and adapted to cooperate with compressed air or pneumatic resilient or cushioning devices. It is contemplated to support the spring bars upon coiled springs. Seating or supporting material may readily be mounted across the spring bars. This seating or supporting material may be in the nature of slats, woven straw, and other covering materials and substances.

This invention also relates to a resilient unit for bed springs, chairs, and other articles.

It is proposed to so construct the new resilient unit that it imparts a certain resilient action to the bed spring or chair or other article to which it is applied. It is proposed that the resilient action be initially exceptionally soft, and after a certain degree of depression, it becomes relatively firm. With this arrangement when a bed spring, or chair or other article to which the invention is applied is manually felt by pressing down with the hands it will feel very soft. However, when a heavy load is placed on the bed spring or chair or other article, as for example when a person lies or sits on the article, the firm support of the resilient unit will come into play for properly supporting the person. The important advantage of the new construction resides in the fact that because of the initial softness of the resilient support it will give the impression that the resilient unit is exceptionally resilient and comfortable.

It is also proposed that a group of resilient units be used in each bed spring or chair, preferably in the corners thereof. It is contemplated to mount a spring bar top across the groups of resilient units. This spring bar top may include a plurality of spring bars upon which a person may rest, or upon which suitable upholstery or other seating or supporting members may be applied.

Because the spring bar top is supported at the corners there is sufficient room at the center for a pneumatic (compressed air) or hydraulic pad

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to be applied to supplement the supporting action of the resilient units.

Another object of this invention is the construction of a device as described which is simple and durable and which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a plan view of a bed with a spring section constructed in accordance with this invention.

Fig. 2 is a fragmentary enlarged vertical sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary enlarged plan view of a corner of the bed spring shown in Figs. 1 and 2, but illustrated with the spring bar top removed so that more parts are discernible.

Fig. 4 is an elevational view of a table with which a chair is associated which is constructed in accordance with this invention.

Fig. 5 is a plan view of the chair shown in Fig. 4.

Fig. 6 is a plan view of a bed spring, or seat embodying the features of this invention.

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 6.

The new and improved resilient unit, in accordance with that form of the invention illustrated in Figs. 1 to 3, is applied to a bed 10. This bed may be of any design and construction. It may be a single or double sized bed. The bed 10 includes a headboard section 11, a footboard section 12, and side rails 14. The space between the side rails 14 is divided by a longitudinal partition 15 and a transverse partition 16 into four equal sections. Spring support boards 18 are mounted across each of these sections for supporting a bed spring.

One of the sections referred to in the previous paragraph is illustrated provided with a bed spring in accordance with this invention. This bed spring includes a bottom support frame 20 rested upon the support bars 18. The support frame 20 is rectangular. At each of the corners it is provided with a support lug 21 for a resilient unit 47. Each resilient unit 47 includes a flat plate or support base 24 attached to a support lug 21 with fastening elements or welding. The support base 24 is provided with a pair of side arms 25 for supporting a lever 26 spaced from

the base 24. The lever 26 is pivotally supported on the side arm 25 with a pintle rod 27. A tension spring 29 is connected between the rear end of the lever 26 and the rear end of the base 24 and is for the purpose of urging the front end of the lever 26 upwards.

The spring 29 is associated with adjusting means by which its tension may be controlled. This adjusting means includes a member 30 attached to one end of the spring 29. A screw 31 which is threadedly engaged through an angularly downturned portion 32 formed upon the rear end of the base 24, and rotatively connects with the member 30. The screw 31 has a head 33 by which it may be easily turned. It is provided with a lock nut 34 by which it may be locked in adjusted positions. The top end of the spring 29 is connected with an angularly downturned portion 35 formed upon the rear end of the lever 26. When the nut 34 is loosened the screw 31 may be turned for controlling the tension of the spring 29.

The lever 26 is limited to pivot upwards to a substantially horizontal position. It is limited by a pair of side arms 38 which are rigidly connected at their bottom ends with the support base 24, preferably by welding. Intermediate of their ends the side arms 38 are rigidly connected with the side arms 25 by rivets 39 or other fastening members. The top ends of the side arms 38 are provided with inturned lug portions 40 which extend over the top face of the lever 26 to the front of the pintle rod 27 for limiting upward pivoting of the front end of the lever 26.

A stiff compression spring 42 is mounted upon the base 24 and extends upwards to a point above the front end of the lever 26. More particularly, the lever 26 is provided with an opening 43 through which the compression spring 42 passes. A transverse member 44 for supporting a spring bar top 46 is mounted on the compression spring 42, whereby said compression spring 42 will support a load on said spring bar top 46 up to a certain amount and then said member 44 will engage the lever 26 for pivoting the front end of the lever 26 downwards so that the tension spring 29 supports some of the load.

The spring bar top 46 is mounted across and supported by the resilient units 47. These resilient units are generally indicated by the reference numerals 47. The spring bar top 46 comprises longitudinal support strips 48 rigidly connected with and supporting a plurality of closely spaced transverse spring bars 49. The transverse members 44 extend across and are supported by two of the resilient units 47. The longitudinal strips 48 extend across and are supported by at least two of the transverse members 44. A mattress may be placed directly upon the spring bar top 46.

The spring bar top 46 is also shown supported by a pneumatic (air) or hydraulic pad 50. This pad has an inlet valve 51 through which it may be inflated or filled with hydraulic fluid. The pad 50 is supported on a transverse board 52 which is supported by feet 53 rested upon the frame 20.

The operation of the resilient units 47 may also be understood by noting that when a load is initially placed on the spring bar top 46 the compression springs 42 will support the load and will be compressed under the load. After a certain amount of compression of the springs 42, the transverse members 44 will engage the front ends of the levers 26, causing the levers to pivot and

stretching the springs 29 so that the springs 29 now assist in supporting the load. Because the levers 26 have a certain mechanical advantage, the springs 29 will function as relatively stiff or firm supporting means in relation to the supporting action of the springs 42. The degree of resiliency of the springs 29 may be varied by the adjustment screws 31. After the transverse members 44 depress the front ends of the levers 26 a predetermined amount the spring bar top 46 will engage the top ends of the side arms 25, preventing any further downward motion of the spring bar top 46.

In Figs. 4 and 5 another embodiment of this invention is disclosed. This time the new system or arrangement is applied to a chair 55. This chair 55 includes a stationary bottom support 56 consisting of a top 57 and supporting legs 58. A plurality of springs 59 are stationarily supported on the top 57 and support a seat 61 for the chair. A seat back 62 is rigidly connected with a seat 61. A rod 64 is pivotally connected by a pintle 65 with one corner of the top 57. This rod 64 is provided at its outer end with a coiled portion 67 adapted to engage about an eye member 68 on the support bar 69 of a table 70. This arrangement is particularly intended for restaurants and other public places where the public shifts the chairs to undersirable places from the tables. With the new construction it is possible to move the chair 55 only into positions as limited by the rod 64.

The seat 61 and back 62 may be of wood, or other hard materials. The springs 69 are depended upon to provide resiliency for the seat 61 and seat back 62 so as to make the chair comfortable.

In Figs. 6 and 7 another embodiment of the invention is shown. It is here applied to a bed spring, or foundation for an automobile seat. This device includes a frame 75 having a bottom flange 76 upon which a plurality of springs 77 are fixedly attached. These springs 77 extend upwards and are fixedly attached to and support a plurality of transverse spring bars 78. A covering 79 is attached to and mounted across the spring bars 78. This covering 79 may be in the nature of a wire link fabric connected to the spring bar 78 by coil springs. It may also comprise other covers of various designs and natures. When a mattress is placed upon the cover 79 the article may be used as a spring for a bed. Seat material may be built upon the covering 79 so that the device may then comprise an automobile seat, or other seating articles.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

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

1. A resilient unit for bed springs, chairs and the like, comprising a support base, side arms for supporting a lever spaced from said base, said lever pivotally mounted intermediate of its ends upon said arms, a tension spring connected between the rear ends of said lever and said base for urging the front end of said lever upwards, means for adjusting said tension spring, limiting means for said lever, a compression spring mounted on said base and extending above the

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front end of said lever, and a transverse member for supporting a load mounted on said compression spring, whereby said compression spring supports the load up to a certain amount and then said member engages said lever so that said tension spring supports some of said load.

2. A resilient unit for bed springs, chairs and the like, comprising a support base, side arms for supporting a lever spaced from said base, said lever pivotally mounted intermediate of its ends upon said side arms, a tension spring connected between the rear ends of said lever and said base for urging the front end of said lever upwards, means for adjusting said tension spring, limiting means for said lever, a compression spring mounted on said base and extending above the front end of said lever, and a transverse member for supporting a load mounted on said compression spring, whereby said compression spring supports the load up to a certain amount and then said member engages said lever so that said tension spring supports some of said load, said means for limiting said lever comprising arms rigidly connected with said support base and with said side arms and having lug portions engaging over said lever.

3. A resilient unit for bed springs, chairs and the like, comprising a support base, side arms for supporting a lever spaced from said base, said lever pivotally mounted intermediate of its ends upon said side arms, a tension spring connected between the rear ends of said lever and said base for urging the front end of said lever upwards, means for adjusting said tension spring, limiting means for said lever, a compression spring mounted on said base and extending above the front end of said lever, and a transverse member for supporting a load mounted on said compression spring, whereby said compression spring supports the load up to a certain amount and then said member engages said lever so that said tension spring supports some of said load, said means for adjusting said tension spring including an adjustment screw threadedly connected with said support base and turnably connected with one end of said tension spring.

4. A resilient unit for bed springs, chairs and the like, comprising a support base, side arms for supporting a lever spaced from said base, said lever pivotally mounted intermediate of its ends upon said side arms, a tension spring connected

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between the rear ends of said lever and said base for urging the front end of said lever upwards, means for adjusting said tension spring, limiting means for said lever, a compression spring mounted on said base and extending above the front end of said lever, and a transverse member for supporting a load mounted on said compression spring, whereby said compression spring supports the load up to a certain amount and then said member engages said lever so that said tension spring supports some of said load, said lever being provided with an opening through which said compression spring passes.

5. A resilient unit for bed springs, chairs, and the like, comprising a support base, side arms for supporting a lever spaced from said base, said lever pivotally mounted intermediate of its ends upon said side arms, a tension spring connected between the rear ends of said lever and said base for urging the front end of said lever upwards, means for adjusting said tension spring, limiting means for said lever, a compression spring mounted on said base and extending above the front end of said lever, a transverse member for supporting a load mounted on said compression spring, whereby said compression spring supports the load up to a certain amount and then said member engages said lever so that said tension spring supports some of said load, and a spring bar top mounted upon and supported by said transverse member.

ABRAHAM MAX HOLTZMAN.

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