Jan. 18, 1955 H. W. HAPMAN 2,699,558

AREA SUPPORT FOR BEDS

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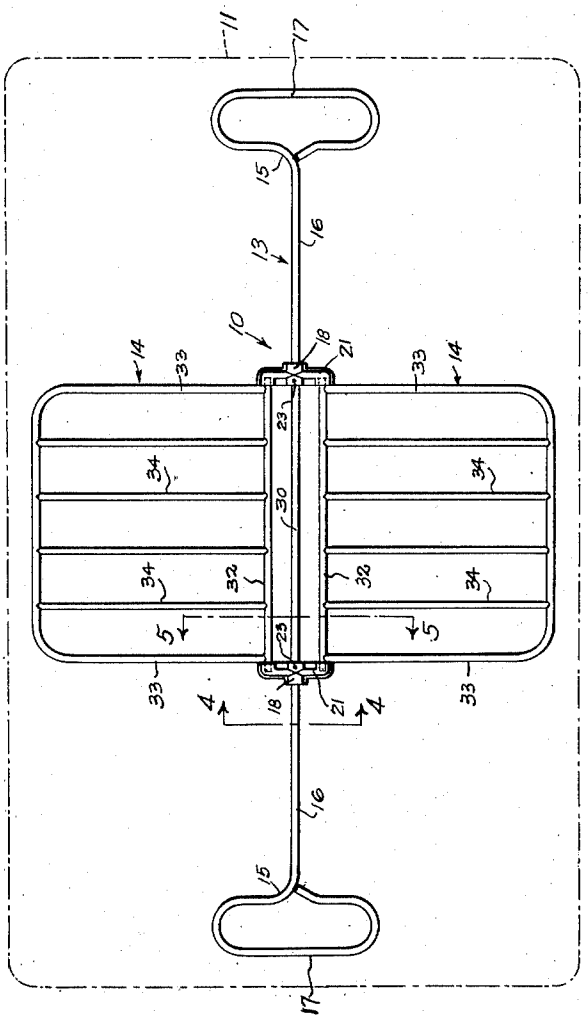


Fig. 1.

Fig. 2.

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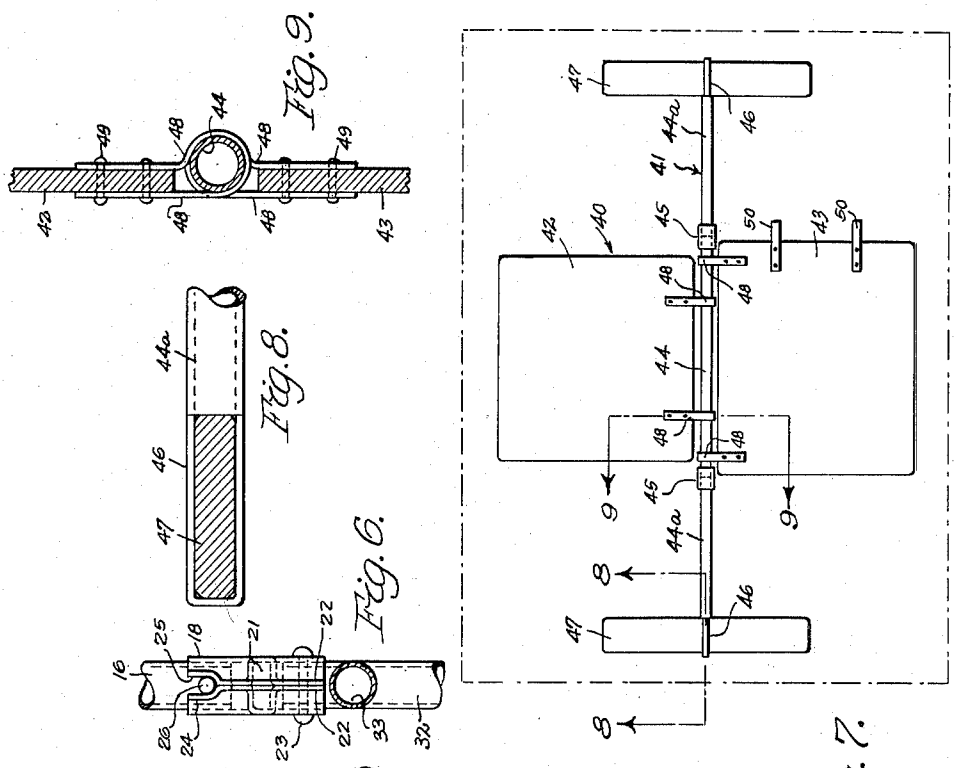


Fig. 9.

Fig. 8.

Fig. 6.

Fig. 7.

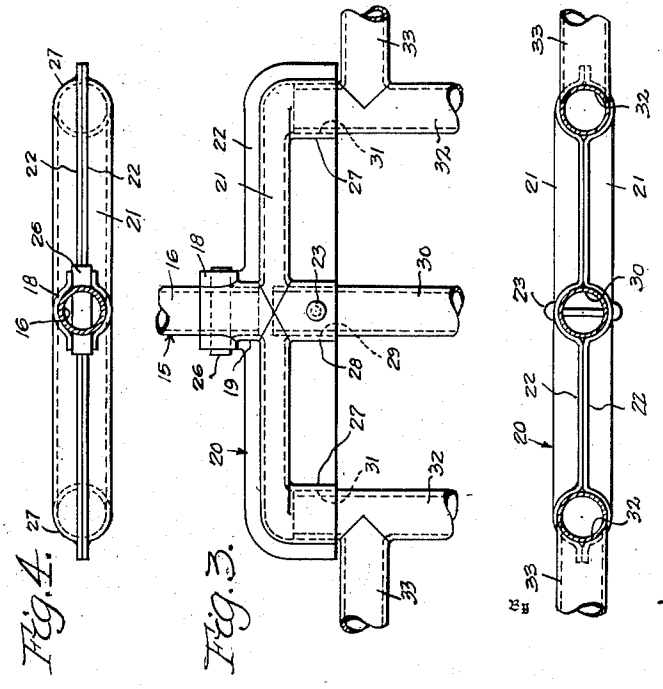


Fig. 4.

Fig. 3.

Fig. 5.

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AREA SUPPORT FOR BEDS

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Application June 21, 1947, Serial No. 756,148

6 Claims. (Cl. 5—354)

This invention relates to furniture, and in particular to beds.

One object of this invention is to provide an area support or weight distributor for insertion beneath the mattress of a double bed, in order to distribute the weight of two persons of very different weights so as to enhance the sleeping comfort of such persons.

Another object is to provide an area support or weight distributor, as set forth in the preceding object, wherein the support is provided with weight distributing structures adapted to be located beneath the hips of the persons and adapted to serve to spread the weight over a large area to prevent concentrating it in a small area, as in beds unprovided with such a support.

Another object is to provide an area support or weight distributor, as set forth in the preceding objects, wherein the support is provided with longitudinally-extending approximately T-shaped end members, the laterally-extending portions of which are located near the head and foot respectively of the bed.

Another object is to provide an area support or weight distributor, as set forth in the preceding objects, wherein the load of the persons sleeping in the bed is transmitted from the center to the ends of the support, the proportion of the load transmitted thereto depending upon the span of the end members.

Another object is to provide an area support or weight distributor, as set forth in the preceding objects, wherein the upper surface of the mattress is maintained fairly level, despite the fact that persons of quite different weights are occupying the bed, so that the person of light weight does not tend to slide down hill toward the heavier person, as in beds unprovided with such a support.

Another object is to provide a modified area support or weight distributor, of the general type set forth in the preceding objects, wherein the supporting structures are attached to an elongated longitudinal member on opposite sides thereof, and are optionally slidable along the longitudinal member in order to adjust the device for different heights of persons.

In the drawings:

Figure 1 is a top-plan view of an area support or weight distributor according to a preferred form of the invention, with the mattress shown in chain lines;

Figure 2 is a side elevation of the device shown in Figure 1, with the mattress and box spring shown in chain lines;

Figure 3 is an enlarged fragmentary plan view of the central portion of Figure 1;

Figure 4 is a vertical section taken along the line 4—4 in Figure 1 and showing the structure of Figure 3 in end elevation, but with the weight-supporting structure omitted;

Figure 5 is a vertical section along the line 5—5 in Figure 1;

Figure 6 is a right-hand side elevation of the structure shown in Figure 3;

Figure 7 is a top-plan view of a modification of the device shown in Figure 1;

Figure 8 is a longitudinal section along the line 8—8 in Figure 7; and

Figure 9 is a cross-section along the line 9—9 in Figure 7.

Hitherto, when persons of radically different weights have occupied a double bed, the person of heavier weight has made a deeper depression in the mattress and springs, causing the person of lighter weight to tend to roll down hill toward the heavier person. This results in great discomfort and loss of sleep for both persons, and particularly for the person of lighter weight. The same effect occurs when a tall person and a short person are occupying the same bed, except that the weight of the tall person is concentrated at a lower location in the bed than that of the short person, the weight of a person being ordinarily concentrated in the region of the hips.

The present invention provides an area support or weight distributor which is inserted in a double bed between the mattress and the spring in order to more evenly proportion the weight of the two persons and distribute it over a wider area. The device, in general, consists of an elongated or longitudinal structure terminating in transverse portions near the head and foot of the bed, and having central supporting structures of extended area attached to the elongated structure approximately midway between the transverse portions, so as to receive and distribute the weights of the persons occupying the bed.

Referring to the drawings in detail, Figures 1 and 2 show an area support or weight distributor for double beds, generally designated **10**, as inserted between the box spring **11** and mattress **12** of a double bed (not shown). The area support or weight distributor **10** consists generally of elongated central frame structure **13** and weight supporting structures **14** pivotally attached to the central frame structure **13**, the latter serving somewhat as a "backbone" for supporting the former.

The central frame structure **13** consists of T-shaped opposite end members **15** of similar construction, formed preferably from tubular stock, such as pipe, and having an elongated shank **16** terminating in a laterally-extending loop **17** (Figure 1). The inner end of each shank **16** is seated in a socket **18** (Figures 3 and 6) in the central projecting portion **19** of a bridge member **20**. The bridge member **20** is formed from two stampings or half members **21** (Figures 4 and 6) of similar but opposite construction with abutting flanges **22** and secured to one another as at **23** in abutting relationship. The flanges **22** are provided with oppositely-extending offset portions **24** forming notches **25** (Figure 6) which receive the exposed ends of pins **26**, the shanks **16** being drilled transversely to receive the pins **26**. In this manner the end members **15** are frictionally held in the sockets **18** and prevented from rotating by means of the pins **26**. The stamped or half members **20** are provided with two spaced parallel projecting portions **27** and a similar central portion **28** parallel thereto. The portions **28** have sockets **29** therein for receiving the opposite ends of a tubular member **30**, the latter being secured in position by the fasteners **23**. The outer projecting portions **27** are similarly provided with sockets **31** which serve to pivotally receive the opposite ends of the inner longitudinal members **32** of the weight supporting structures **14** (Figures 1 and 3). Secured, as by welding, to the longitudinal members **32** near the opposite ends thereof, is a U-shaped outer frame member **33**. Rods **34** parallel to the side portions of the outer frame members **33** are secured at intervals to the longitudinal members **32** (Figure 1) and serve to strengthen the latter, as well as to share the load sustained thereby. The frame members **33** and rods **34**, as well as the frame members **32** and **30**, are preferably tubular and may be made out of pieces of pipe or steel tubing and the parts of structure **14** welded together. The flanges **22** of the bridge members **20** may also be welded together, if desired, to further strengthen the members **20**.

In the operation of the invention, the device is placed between the mattress **12** and the spring **11** in the manner shown in Figure 2, with the weight supporting structures **14** positioned where they will lie under the hips of the occupants of the bed. The weight of each person on each half of the mattress **12** will be transmitted downward through the latter and resisted by the adjacent structure **14**. The longitudinal structure **13** transmits a portion of this load from the structures **14** and the proportion of the load transmitted depends upon the span of the portions **17** of the end members **13**. The invention also prevents undue sagging of the mattress and springs by persons of heavy weight, and causes their weight to be distributed over a wide area instead of concentrated within a small

zone as heretofore. A lighter person on the opposite side of the central frame structure **13** will, therefore, be able to sleep comfortably because of the prevention of excessive sloping of the mattress and spring toward the heavier person. The corners of the mattress **12** and spring **11** also remain raised and unaffected, and the device **10** maintains a level throughout the bed.

The open frame construction facilitates ventilation and the pivotal arrangement enables the device to be folded up and easily transported in a compact bundle. The modified area support or weight distributor **40**, shown in Figures 7 to 9 inclusive, is similar in principle to that shown in Figures 1 to 6 inclusive, and consists generally of a longitudinal frame structure **41** and weight supports **42** and **43** on opposite sides thereof. The longitudinal frame structure **41** consists of a central tubular member **44** and tubular end members **44*a*** connected thereto end to end by means of sleeve-like couplings **45**. The outer extremities of the end portions **44*a*** are provided with loop portions **46** through which pass transverse members **47** such as boards.

Secured to the weight supports **42** and **43**, are brackets **48** (Figures 7 and 9) of roughly U-shaped form with their ends held against the opposite sides of the weight supports **42** and **43** by fasteners **49**. The inner portions of the brackets **48** encircle the tubular member **44** so as to maintain a pivotal connection therewith. Supplementary brackets **50** may be similarly bolted to the transverse edge of either of the weight supports **42** or **43** (Figure 7) if the weight support is made in elongated shape and it is desired to place its long axis transverse to the central frame structure **41**, rather than parallel to it. The weight supports **42** and **43** may be made of any suitable material, preferably plywood. By making the central portion of the longitudinal member **44** sufficiently longer than the distances separating the brackets **48**, the weight supports **42** and **43** may be slid lengthwise along the longitudinal member **44** in order to adjust the device for different heights of persons.

The operation of the modification shown in Figures 7 to 9 inclusive is similar to that of the principal form of the invention shown in Figures 1 to 6 inclusive, and thence requires no repetition. The weight supports **42** and **43** sustain and distribute the weights respectively of the persons lying above them and the transverse members **47** transmit a portion of this load to the end portions of the springs **11**. Since the weight supports **42** and **43** are pivoted to the tubular member **44**, they may be folded together for convenience in transportation or storage, and the tubular members **44*a*** may easily be removed from their sockets **45** in order to further dismantle the device and pack it into small space.

The invention, either in the principal form shown in Figures 1 to 6 inclusive or in the modification shown in Figures 7 to 9 inclusive, also operates to prevent or reduce the lengthwise sag of a bed spring and mattress to which it is applied, as well as to relieve the crosswise sag described above. All bed springs and mattresses, after a period of extended use, tend to sag both lengthwise and crosswise so that the present invention eliminates excessive sag in either direction. In bed springs or mattresses where the sag crosswise is not excessive, but where the lengthwise sag is objectionable, the weight supporting structures **14** or weight distributors **40** may be removed and the central frame structure **13** or **41** used alone. When thus used alone, the central structures **13** or **41** operate to distribute the weight of the occupants in a lengthwise direction, assisted by the loops **17** or transverse members **47**, as the case may be.

What I claim is:

1. A weight-distributing device for a bed, said device comprising a centrally disposed elongated framework substantially the length of the bed, and a pair of substantially flat thin horizontal weight supporting structures having areas adapted to extend over the major part of the central portion of the area of said bed connected to the middle portion of said framework on opposite sides thereof, said framework having a transverse member mounted adjacent each end thereof and extending laterally therefrom, said weight-supporting structures and said framework lying substantially in a single plane.

2. A weight-distributing device for a bed, said device comprising a centrally disposed elongated framework substantially the length of the bed, and a pair of substantially flat thin horizontal weight supporting structures having areas adapted to extend over the major part of the central portion of the area of said bed connected to the middle portion of said framework on opposite sides thereof, one of said weight-supporting structures being slidably movable longitudinally along said framework, said framework having a transverse member mounted adjacent each end thereof and extending laterally therefrom, said weight-supporting structures and said framework lying substantially in a single plane.

3. A weight-distributing device for a bed, said device comprising a centrally disposed elongated framework substantially the length of the bed, and a pair of substantially flat thin horizontal weight supporting structures having areas adapted to extend over the major part of the central portion of the area of said bed pivotally connected to the middle portion of said framework on opposite sides thereof, one of said weight-supporting structures being slidably movable longitudinally along said framework, said framework having a transverse member mounted adjacent each end thereof and extending laterally therefrom, said weight-supporting structures and said framework lying substantially in a single plane.

4. A weight-distributing device for a bed, said device comprising a centrally disposed elongated framework, and a pair of substantially flat thin horizontal weight supporting structures having areas adapted to extend over the major part of the central portion of the area of said bed connected to said framework on opposite sides thereof, said framework comprising an elongated central member and a pair of transverse bridge members mounted in longitudinally-spaced relationship thereon, said framework having a transverse member mounted adjacent each end thereof and extending laterally therefrom, said weight supporting structures being pivotally connected to said bridge members, said weight-supporting structures and said framework lying substantially in a single plane.

5. A weight-distributing device for a bed, said device comprising a centrally disposed elongated framework, and a pair of substantially flat thin horizontal weight supporting structures having areas adapted to extend over the major part of the central portion of the area of said bed pivotally connected to said framework on opposite sides thereof, both of said weight supporting structures being slidably movable longitudinally along said framework, said weight-supporting structures and said framework lying substantially in a single plane.

6. A weight-distributing device for a bed, said device comprising a centrally disposed elongated framework, and a pair of substantially flat thin horizontal weight supporting structures having areas adapted to extend over the major part of the central portion of the area of said bed pivotally connected to said framework on opposite sides thereof, said framework having a transverse member mounted adjacent each end thereof and extending laterally therefrom, each weight supporting structure having an edge member arranged in a loop-shaped path and a plurality of cross members interconnecting the opposite ends of said weight-supporting structure, said weight-supporting structures and said framework lying substantially in a single plane.

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