Nov. 21, 1967 L. GUILLON 3,353,196

ADJUSTABLE SUPPORT

Filed Aug. 17, 1966

FIG. 1.

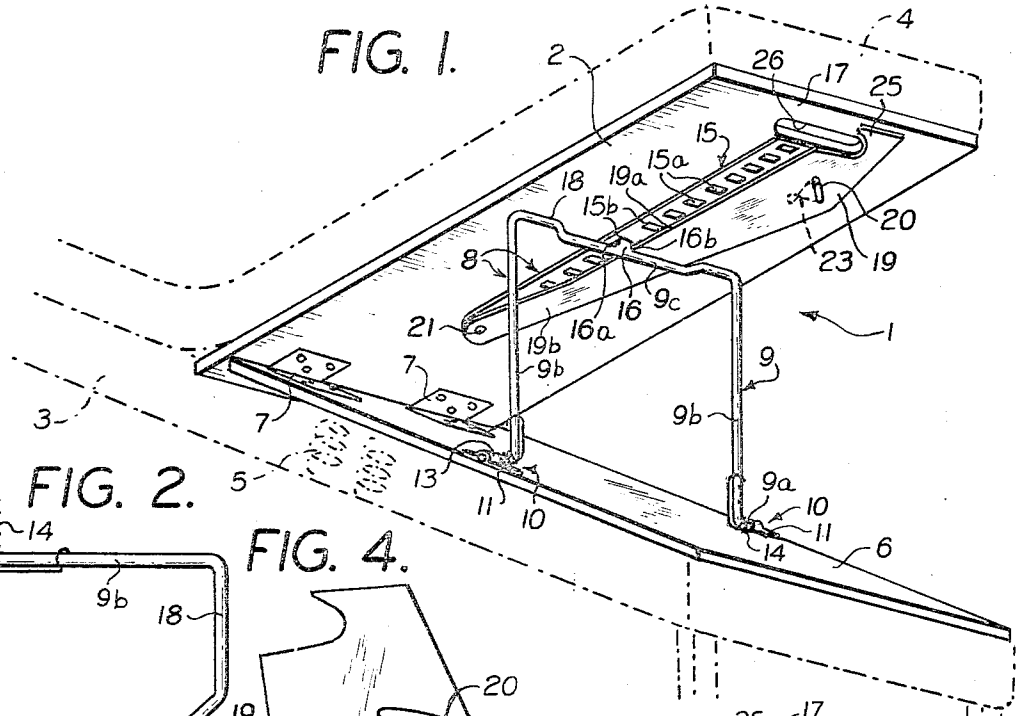


FIG. 2.



FIG. 4.

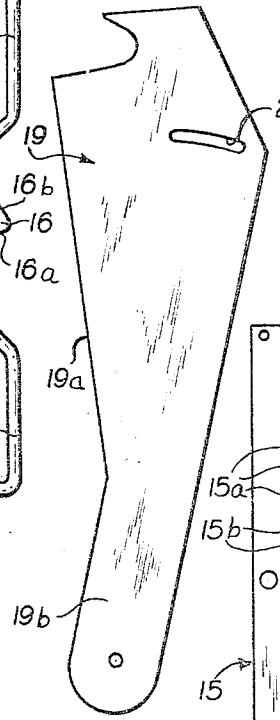


FIG. 3.

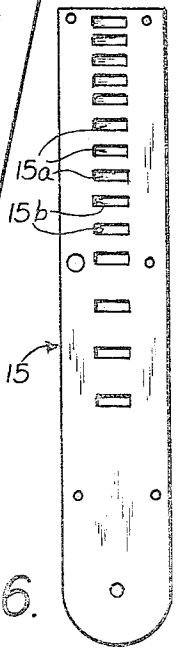


FIG. 5.

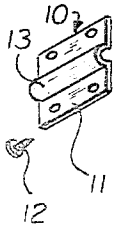
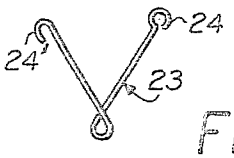


FIG. 6.



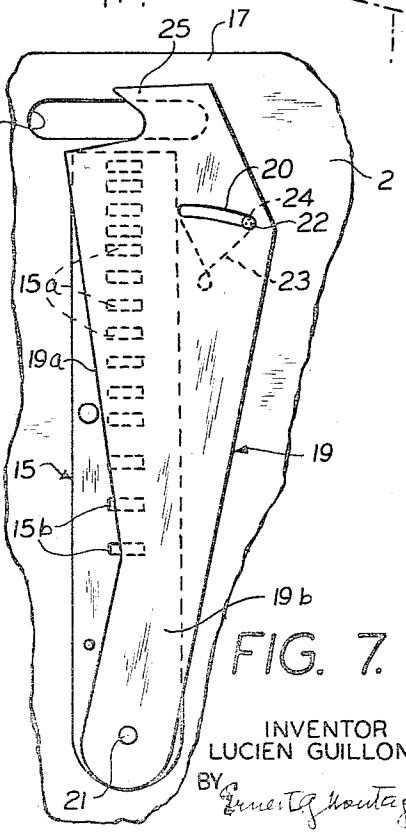


FIG. 7.

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ADJUSTABLE SUPPORT

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8 Claims. (Cl. 5—327)

The present invention relates to adjustable supports, in general, and to adjustable supports having a spring biased slide member, in particular.

Adjustable supports are used for bed supports, lounge chairs and the like, wherein an upper member is adjustably hinged to a base member. Conventionally, a swing support is pivotally mounted on a base member for engagement with hooks, openings, etc. on the upper member for holding the upper member in various inclined positions.

With prior adjustable supports, raising or lowering the upper member generally required the simultaneous manual raising or lowering of the swing support. It was necessary to manually move the swing support so that the swing support did not inadvertently engage hooks and openings which were desired to be bypassed. As an improvement, a slide member having a smooth portion movably attached to the upper member, was suggested in the past, which, when manually moved forward of the hooks and openings, prevented the swing support from inadvertently engaging the hooks and openings of the upper member, as the swing support slid on the smooth portion of the slide member without contacting the hooks and openings. This improvement permitted the swing support to be spring urged against the upper member, eliminating the necessity for manual positioning of the swing support.

However, the slide member heretofore used, was manually operated, and still required the simultaneous manual movement of two parts. Here the operator had to move the upper member for adjustment, as well as the slide member. In a bed support, the setting of the support in a predetermined position was rather difficult and required two hands. Furthermore, the prior slide member was biased in the inoperative position, so that during engagement of the swing support, accidental disengagement could not occur. Therefore it had to be held throughout the entire adjustment movement, since otherwise it could spring back or revert to an inoperative position behind the hooks and openings, causing the swing support to inadvertently engage the wrong hook or opening.

It is one object of the present invention to provide a readily adjustable support for beds, lounge chairs or the like, which includes an improved slide member having none of the aforementioned disadvantages.

It is another object of the present invention to provide an adjustable support for beds, lounge chairs or for other uses, which includes an improved slide member wherein the adjustable support comprises an upper member and a base member hingedly connected together, a swing support pivotally connected to the base member and spring urged against the upper member, a plurality of means on the upper member for engaging the swing support when the swing support contacts one of the means and for preventing movement of the upper member toward the base member, and wherein said slide member is spring biased for automatically covering the plurality of means when the swing support is disengaged from the locking means.

It is still another object of the present invention to provide an adjustable support for beds, lounge chairs or the like which includes an improved slide member, wherein the adjustable support comprises an upper member and a base member hingedly connected together, a swing support pivotally connected to the base member

and spring urged against the upper member, a plurality of means on the upper member for engaging the swing supports when the swing support contacts one of the means and for preventing movement of the upper member toward the base member, and wherein the slide member is spring biased for automatically covering the plurality of means when the swing support is disengaged from said means, and wherein the swing support is disengaged from said means when the upper member is moved slightly apart from the base member, and wherein the swing support slides along the slide member when adjusting the upper member by movement thereof relative to the base member.

It is yet another object of the present invention to provide an adjustable support for beds, lounge chairs or the like which includes an improved slide member in accordance with the aforementioned objectives wherein engagement of the swing support by one of the plurality of means occurs when the upper member is adjusted by movement relative to the base member to an approximately desired position, the swing member sliding along the slide member during this adjustment; and then the slide member is momentarily moved to uncover the means adjacent the swing support for engaging the swing support in the desired position.

With these and other objects in view which will become apparent in the following detailed description, the present invention will clearly be understood in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view of an adjustable bed support of the present invention in engaged position;

FIG. 2 is a plan view of the swing support of FIG. 1;

FIG. 3 is an exploded perspective view of the articulations for the swing support;

FIG. 4 is a plan view of the slide member of FIG. 1;

FIG. 5 is a plan view of the slide member spring;

FIG. 6 is a plan view of the rack member of FIG. 1; and

FIG. 7 is a bottom plan view of the assembled slide member and rack member in covered position.

Referring now to the drawings and in particular to FIG. 1, an adjustable bed support **1** is shown having a movable upper member **2**, supporting at the foot or at the head of bed **3**, a mattress **4**. Upon the springs **5** of the bed **3** is disposed a base member **6** which is hingedly connected to the upper member **2** by hinges **7**.

To adjust the upper member **2** to various inclined positions, a holding means **8** is provided which comprises a U-shaped swing support **9** (FIG. 2) having outwardly turned horizontal leg bottoms **9***a*, parallel legs **9***b* and a connected central portion **9***c*. The swing support **9** is pivotally mounted to the base member **6** at its outwardly turned horizontal leg bottoms **9***a* in bearing articulations **10**. As shown in FIG. 3, the articulations **10** consist of a curved plate **11** rigidly fixed to the base member **6** by screws **12**. The plate **11** has a curved portion **13** complementary to the cross-section of the leg bottoms **9***a* of the swing support **9** for pivotal movement of the swing support **9** therein.

The swing support **9** is spring biased pivotally, upwardly by springs **14** held in the articulations **10** between the plate **11** and base member **6** at one end of the springs **14** and is coiled about the leg bottoms **9***a* of the swing support **9**, extending upwardly along the parallel legs **9***b* of the swing support **9** to which it is affixed at the other end of the springs **14**. The springs **14** continuously urge the swing support **9** against the bottom of the upper member **2**.

Referring now again to the drawings and in particular to FIGS. 1 and 6, the holding means **8** further comprises an elongated rack plate **15** secured to the bottom face of the upper member **2**. The rack plate **15** is preferably

metallic and contains a spaced series of punched slots 15*a* each having a lateral side edge 15*b* for complementary engagement therein by a rack cog 16 (FIG. 2), having a corresponding cog edge 16*a*, affixed to and protruding from the central portion 9*c* of the swing support 9 for rigidly holding the upper member 2 in one of several inclined positions (as shown in FIG. 1). The rack cog 16 also has a slide plate edge 16*b* disposed opposite from the edge 16*a*. The slots 15*a* are close together providing a high and low position and several intermediate positions of adjustment; the slots 15*a* are more closely spaced adjacent the outer edge 17 of the upper member 2 so as to provide slightly varying positions of support near the closed position. In the closed position the unit is substantially flat. When in a support position and the rack cog 16 engages one of the slots 15*a*, support arms 18 defining raised sections of the central portion 9*c* of the swing support 9, support the weight of the upper member 2. In this way, the cog 16 serves as an engaging means and does not carry the weight of the upper member. The relative dimensions of slots 15*a*, rack plate 15, cog 16 and arms 18 are adapted relative the upper member 2 so that in engagement the arms 18, and not the cog 16, support upper member 2.

Referring again to the drawings, and in particular to FIGS. 1, 4 and 7, a movable spring biased and flat slide member 19, having an edge 19*a* adjacent the slots 15*a*, is hinged at its lower end 19*b* to the bottom of the rack plate 15 for covering the rack plate 15 and slots 15*a* as shown in FIG. 7. The slide member 19 preferably consists of a metallic plate with a smooth surface facing the rack cog 16 when the slide member 19 covers the slots 15*a*.

The slide member, or plate 19, has an opening 20 therein defining an arc of the circumference of a circle with origin at pivot connection 21 of the slide plate 19, at which pivot connection 21 the slide plate 19 is pivotally joined to the rack plate 15 and the upper member 2. In the opening 20 there is provided a headed pin 22 affixed to the upper member 2 for guiding the slide plate 19 along the opening 20 covering or uncovering the slots 15*a*. The head of the pin 22 is wider than the width of the opening 20 so as to pivotally guide and secure the slide member 19 moving relative the upper member 2.

Referring now to FIGS. 5 and 7, a V-shaped spring 23 having at one end a hook eye 24 engages the pin 22 and is mounted under the slide plate 19 and is connected thereto hooking over the opening 20 at the other end 24' of the spring 23. The spring 23 is under compression and urges the slide member 19 to tend to move over the rack plate 15 so as to cover the slots 15*a*.

In operation when the upper member 2 is supported by the support arms 18 of the swing support 9 and is locked from moving toward the base member 2 by the cog 16 engaged in one of the slots 15*a*, the spring biased slide plate 19 is prevented from covering the rack plate 15 and slots 15*a* (as shown in FIG. 2), since the cog edge 16*b* of the cog 16 abuts the edge 19*a* of the slide plate 19 and restrains its movement.

When it is desired to lower the upper member 2, only a single movement of the upper member 2 is necessary. The upper member 2 is initially, slightly raised, thereby disengaging the cog 16 from the slot 15*a*, causing the spring biased slide member 19 to cover the rack plate 15 and slots 15*a*. In this position, the upper member 2 may be lowered or raised, to any new position, without the cog 16 engaging any of the other slots 15*a*, the cog 16 sliding on the smooth surface of the slide plate 19 during the adjustment of the upper member 2.

When the upper member 2 is raised or lowered to its desired position, the slide plate 19 is moved back away from the recesses 15*a* by a handle 25 formed about an access opening 26 in the upper member 2 adjacent the edge 17, in a momentary movement. The cog 16 is then slid into the adjacent uncovered slot 15*a*, after which the handle 25 is immediately released since engagement itself prevents the slide plate 19 from disengaging the cogs 16 from the slots 15*a*.

The slide plate 19 is spring urged in the direction of tending to cover the slots 15*a* (i.e. tending toward the disengaged position). When the rack cog 16 is engaged in one of the slots 15*a*, the rack cog 16 is held laterally firm in the slot. Consequently the slide plate 19 is held in its inoperative position from covering the slots 15*a*. The slots 15*a*, accordingly, with the cog 16 perform this slide plate restraining function. The side edges 15*b* of slots 15*a* firmly abut the corresponding cog edge 16*a*, resisting the lateral force from the spring biased slide plate 19, holding the slide plate edge 19*a* against the other cog edge 16*b*. The cog 16 does not support the weight of the upper member 2, but serves as a downward, as well as lateral slide, restraining member: i.e., downward by preventing the upper member from closing relative the base member (but not locking upwardly, since upward movement provides disengagement); and lateral—by preventing the slide plate 19 from moving over the slots 15*a* into the operative position.

Therefore the slide plate 19 is spring biased toward its operative position (i.e. covering the slots 15*a* and providing for sliding adjustment of the swing support 9 by a one part movement designed for easy handling—that is, by only moving or holding one part, namely the upper member 2). Yet, although the slide plate 19 is spring biased toward its operative position, the engagement of the cog 16 in slot 15*a* itself restrains the slide plate 19 from assuming its operative position during such engagement. Only disengagement by the cog 16 from the slot 15*a*, by slightly raising the upper member 2, permits the spring biased slide plate 19 to assume its operative position. Were the slide plate 19 biased in the opposite direction (toward the inoperative position), in order to adjust the upper member, the slide plate 19 would have to continuously be held manually in the operative position, thereby disadvantageously requiring movement and holding of two parts simultaneously. However, merely reversing the biasing of the slide plate 19 is not sufficient, without providing for a swing support engagement with combination function of positioning the upper member and of temporarily and automatically restraining the operative biasing of the slide plate 19 during the engaged position of the swing support 9 and upper member 2. The present invention provides for this combined function, in its preferred embodiment by, for example, the flatness of the slide plate 19; its pivotal connection adjacent the rack plate 15; that it is slidingly urged toward and above the rack plate 15; the slots 15*a* and edges 15*b* thereof; the projecting cog 16 and its corresponding lateral edges 16*a* and 16*b*—all contributing essentially to the preferred form of the invention.

Another advantage of the preferred embodiment is that only a centrally arranged rack plate 15 is used permitting of only the necessity for a single slide plate 19. The rack, slide, swing support and cog are preferably of metallic or plywood construction and accordingly are durable and strong.

Although the swing member 9 is pivotally connected to the base member 6, and the rack plate 15 and slide plate 19 are disposed on the upper member 2 for ready accessibility of the handle 25 of the slide member 19, it is within the scope of the invention that these members be reversed. If access from the upper member to the slide member is desired, the handle 25 of the slide member 19 could be so fashioned (not shown) as to extend to a convenient position near the operator.

While I have disclosed several embodiments of the present invention, it is to be understood that these embodiments are given by example only and not in a limiting sense, the scope of the present invention being determined by the objects and the claims.

I claim:

1. An adjustable support comprising

a first member,

a second member hingedly connected to said first member,

a spring biased swing support pivotally connected to said first member, said swing support having a central portion slidably urged against said second member for supporting said second member in an inclined position,

said second member containing a plurality of means for engaging said central portion of said swing and preventing movement of said second member toward said first member,

a spring biased slide member movably connected to said second member adjacent said plurality of means and being urged in a direction covering said plurality of means,

said central portion of said swing support preventing said slide member from covering said plurality of means when said central portion is engaged by one of said means,

said central portion disengaging from said means when said second member is adjusted slightly further apart from said first member,

said slide member covering said plurality of means when said central portion of said swing support is disengaged from said means,

said slide member having a substantially smooth portion facing said first member for causing said central portion of said swing support to slide thereon when said slide member covers said plurality of means and said second member is raised and lowered relative said first member, and

said slide member adapted for being moved to uncover said means when said central portion is slide along said smooth portion of said slide member to an approximately desired position, said central portion then engaging an adajacent one of said plurality of means.

2. The adjustable support, as set forth in claim 1, wherein

said first member comprises a base member, and

said second member comprises an upper member oriented above said base member.

3. The adjustable support, as set forth in claim 2, wherein

said central portion comprises a support portion and a locking cog,

said plurality of means comprises a series of slots for engagement of said locking cog therein,

said support portion for supporting said upper member when said locking cog is engaged in one of said slots, and

said locking cog sliding on said smooth portion of said slide member when said slide member covers said series of slots and said upper member is raised and lowered relative said base member.

4. The adjustable support, as set forth in claim 3, wherein

said slide member comprises a substantially flat slide plate for covering said series of slots and said smooth portion being constituted by one surface of said plate.

5. The adjustable support, as set forth in claim 4, wherein

said upper member includes an outer edge,

said series of slots are substantially linearly arranged in an elongated rack plate having two ends affixed to said upper member, one of said ends adjacent said outer edge,

said slide plate being elongated and having a pivot end pivotally connected relative the other end of said rack plate for pivoting on and covering said rack plate, said slide plate having a guide opening therein spaced from said pivot end and defining an arc of a circumference of a circle having its origin at said pivot end,

a guide pin fixed to said upper member and disposed in said guide opening and including a head portion wider than the width of said guide opening, and

a V-shaped spring having two legs disposed between said slide plate and upper member and connected at one leg to said guide pin and at the other leg to said slide plate for spring biasing said slide plate pivotally about said pivot end to cover said rack plate and slots therein.

6. The adjustable support, as set forth in claim 5, wherein

said slide plate includes a handle portion spaced from said pivot end and adjacent said outer edge of said upper member.

7. The adjustable support, as set forth in claim 6, wherein

said upper member includes a handle opening adjacent said outer edge and adjacent said handle portion providing access to said handle portion.

8. The adjustable support, as set forth in claim 7, wherein

said swing support comprises a U-shaped rod including two leg portions and a center portion joined therebetween,

said series of slots more closely spaced adjacent said outer edge of said upper member than adjacent said other end of said rack plate,

said support portion comprising two horizontal arms, each arm secured to said center portion adjacent the leg portion, and each arm spaced from each other, and

said locking cog secured to said center portion in spaced relationship from and between said arms and projection slightly beyond said arms in a direction away from said swing support.

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