Oct. 31, 1967 K. H. GUTNER 3,349,414

BEDRAIL ELEMENT AND METHOD OF MANUFACTURE

Filed Nov. 27, 1962 2 Sheets-Sheet 1

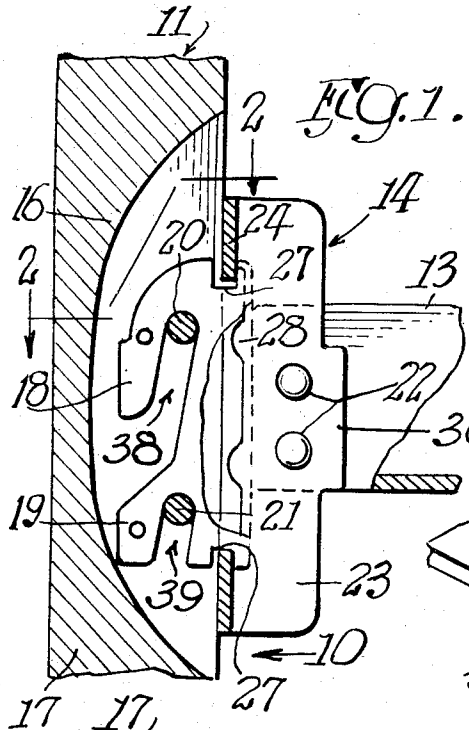


FIG. 1.

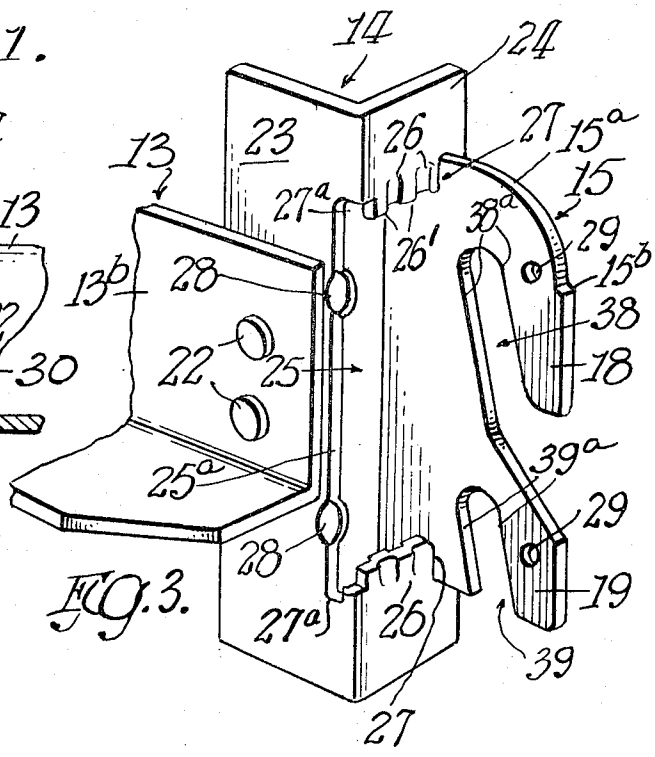


FIG. 3.

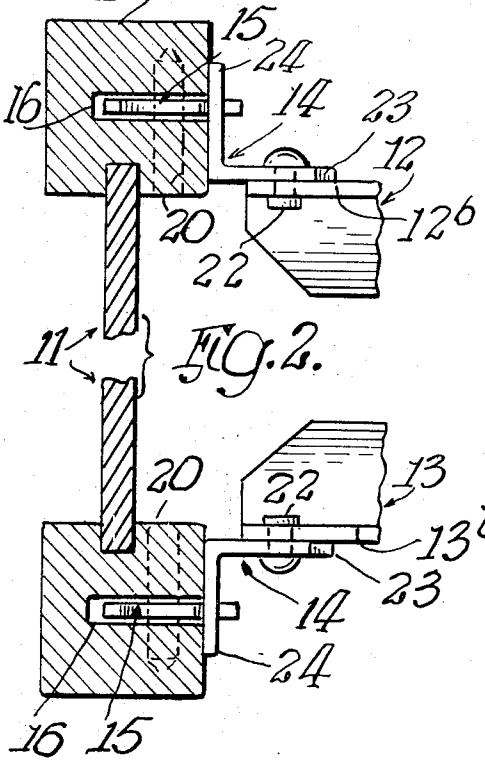


FIG. 2.

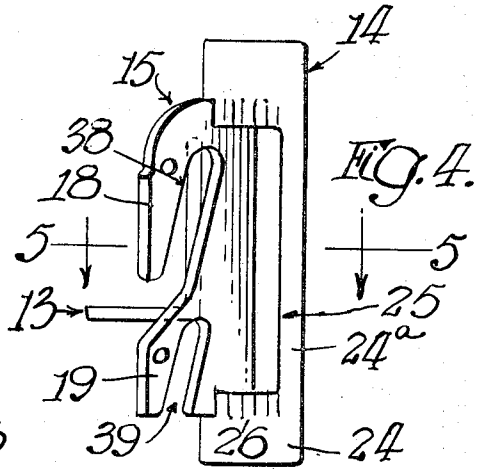


FIG. 4.

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Oct. 31, 1967 K. H. GUTNER 3,349,414

BEDRAIL ELEMENT AND METHOD OF MANUFACTURE

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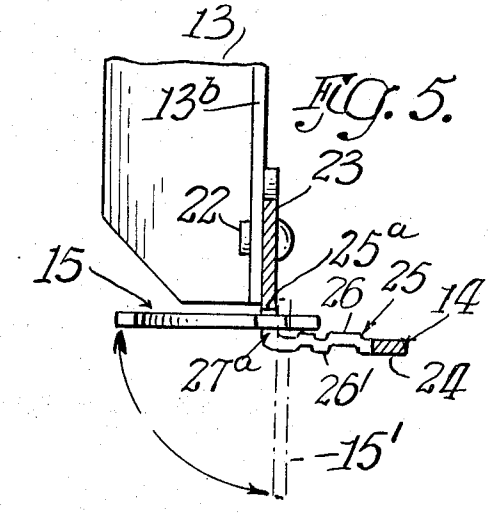


FIG. 5.

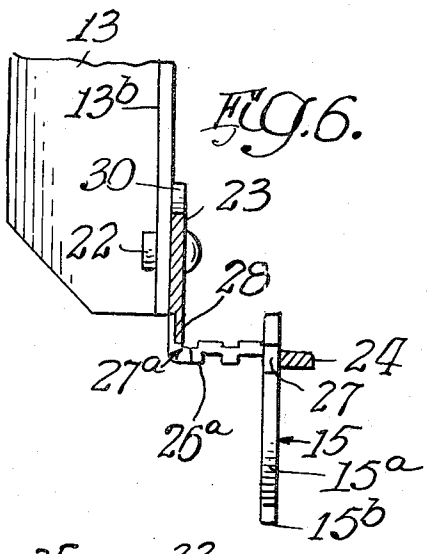


FIG. 6.

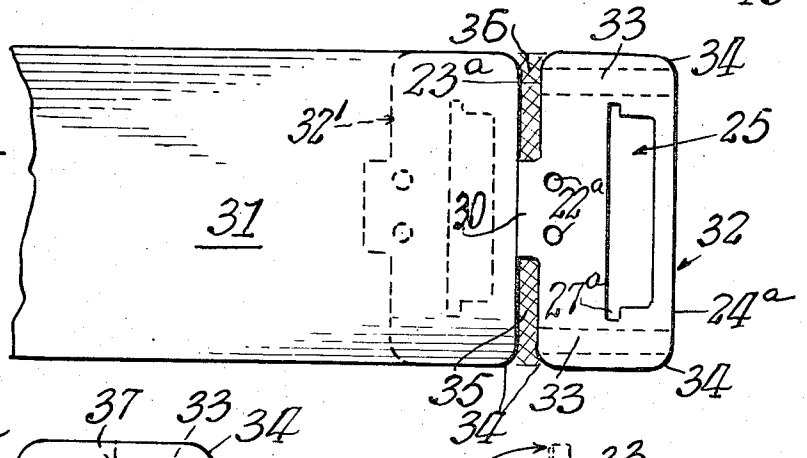


FIG. 7.

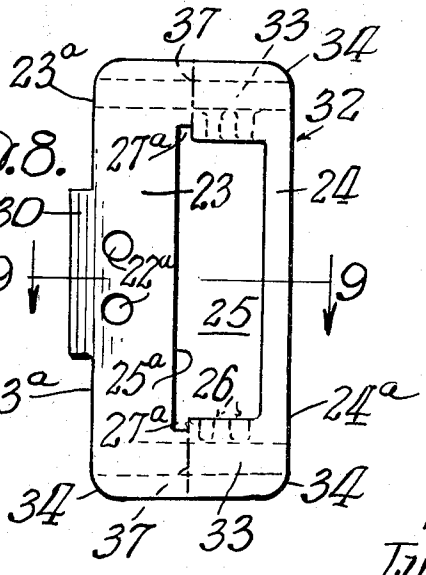


FIG. 8.

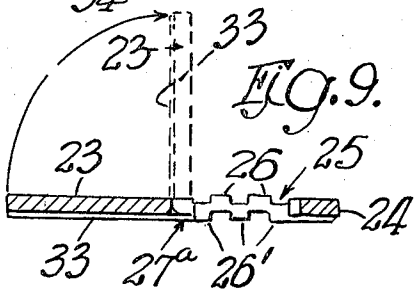


FIG. 9.

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BEDRAIL ELEMENT AND METHOD OF MANUFACTURE

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Filed Nov. 27, 1962, Ser. No. 240,325
11 Claims. (Cl. 5—296)

This invention relates to a bedrail element and method of manufacture, and, more particularly, to a connection-type fitting of an adjustable nature employed in conjunction with a box spring, or the like.

This invention is a continuation-in-part of my copending application, Ser. No. 146,917, filed Oct. 23, 1961, now abandoned.

Conventionally, box springs, mattresses, etc., are supported on wooden slats or boards which extend between angle-shaped side rails connecting the head and footboards of the bed. The use of such supports presents a number of problems which extend throughout all the activities in which the bed is involved: manufacture, transportation, installation, and ultimate use. The special slats occupy considerable space during shipment and storage; increase the cost by virtue of handling, with the possibility of damage; wear out in use; offer the possibility of failure by virtue of shifting; interfere with cleaning operations; and collect dust.

In the past, a number of expedients have been advanced for eliminating the slats, relying upon the horizontal leg of the bedrail angle to carry the box spring or mattress. These expedients necessarily required an adjustable feature to accommodate variations in spring or mattress size. The means for providing the adjustable feature in the past has proved unacceptable because of complexity and unreliability. Both of these drawbacks are overcome in the instant invention, and the provision of a bedrail connector of the adjustable type which overcomes these drawbacks constitutes an important object of the invention.

It is another object of the invention to provide a unique connective fitting to be interposed between a bedrail and the bed end board, i.e., head or footboard, along with a novel method of manufacture and assembly which is simple, yet rugged in construction. Here, it should be appreciated that a complex structure often defeats its intended purpose because of the difficulty of proper adjustment, and this drawback in particular is avoided in the inventive construction.

Other objects and advantages of the invention may be seen in the details of construction, manufacture and operation set down in the following specification.

The invention, in conjunction with an illustrative embodiment, is shown in the accompanying drawing, in which

FIG. 1 is a fragmentary elevational view, partially in section, of a bed equipped with the inventive construction;

FIG. 2 is a fragmentary view of the arrangement of FIG. 1 such as would be seen along the sight line 2—2 applied to FIG. 1;

FIG. 3 is a perspective view, in fragmentary form, of the inventive construction;

FIG. 4 is a front elevational view showing the hook plate in the process of being inserted into the bracket;

FIG. 5 is a sectional view such as would be seen along the sight line 5—5 applied to FIG. 4;

FIG. 6 is a view similar to FIG. 5 but of the inventive construction in completed form;

FIG. 7 is an elevational view, in fragmentary form, of a metal strip in the process of being formed into a blank to develop the bracket portion of the inventive construction;

FIG. 8 is an enlarged view of the bracket blank in an

intermediate stage and wherein the final stage operations are designated in dotted line; and

FIG. 9 is a sectional view taken along the line 9—9 of FIG. 8.

In the illustration given, the numeral 10 designates generally a bed, including the usual headboard 11, footboard (not shown), and side rails 12 and 13 (compare FIGS. 1 and 2). Each side rail, at each end thereof, is equipped with a bracket generally designated 14 carrying a plate generally designated 15. The plate 15 extends into the usual half moon-shaped (as by a circular saw) bed leg slot 16 provided in each bed leg 17. In the past, the side rails 12 and 13 have been equipped with end hooks generally similar to those shown at 18 and 19 on the plate 15, and the bed rail hooks themselves have been inserted into the slot 16 for engagement with pins 20 and 21. However, these hooks were not adjustable.

The bracket 14 is seen to be secured to the bed rail 13 (as in FIG. 3) by means of rivets 22. The bracket 14 has a pair of legs 23 and 24, the leg 23 carrying the above-mentioned rivets 22, while the other leg is cut out as at 25 to provide a generally rectangular opening. The opening is equipped with offset teeth 26 defining slots 26′ (see FIG. 9) along the top and bottom edges, and the teeth 26 are spaced apart by the slots 26′ and are selectively engageable with recesses or notches 27 provided in the upper and lower edges of the plate 18. The rectangular cutout 25 (see FIG. 5) is extended partway along the width of the leg 23 to provide means for insertion of the plate into the cutout 25.

In the operation of the connector made up of brackets 14 and plate 15, the plate 15 is inserted in the fashion depicted in FIG. 4, after which it is rotated to the dotted line position 15′ seen in FIG. 5. In other words, the plate is initially positioned parallel to the leg 24, and after the same has been inserted into the opening or cutout 25, is rotated 90° so as to be parallel with the leg 23. In FIG. 4, the plate 15 is about to be swung to the dotted line position 15′ of FIG. 5. Thereafter, the leg 23 along the edge 25*a* of the cutout 25 is deformed to provide projections 28. These serve to preclude removal of the plate 15.

When it is intended to install the bedrail 13 equipped with the brackets 14 and plate 15 in a bed 10, the plate 15 is positioned in engagement with the first tooth or "nick" 26*a*, i.e., the position nearest the leg 23. Thereafter, the plate 15 is moved downwardly within the slot 16 to a position of engagement with the pins 20 and 21. This is performed relative to both side rails insofar as both the head and footboards of the bed are concerned, and when the arrangement seen generally in FIG. 2 is achieved, the distance between the bedrail upstanding flanges 12*b* and 13*b* is measured. The measurement for a standard box spring for a double bed is ordinarily 52½", while for a single bed the measurement is 37½". In some cases, the spacing of the slots 16 in the bed end boards may vary, so that adjustment of the plates 15 is required. Thereafter, each rail 12 and 13 is moved to position the plates 15 associated therewith in the correct tooth position, and each bracket 14 is tapped to set the hooks 18 and 19 in snug engagement with the pins 20 and 21.

From the foregoing, it will be seen that there is no possibility of loss or detachment of the plates 15 from the brackets 14. Further, the plates 15 slide readily over the teeth 26 and slots 26′ until cinched in place against the pins 20 and 21. The cinching develops a slight pressure between the leg 24 and the confronting face of the bed leg 11 so as to effectively immobilize the plate 15 within the cutout 25.

Each plate 15 is equipped with openings 29 in the hooks 18 and 19 which serve to lock the two bedrails 12 and 13 together during shipment. For this purpose, a block

of wood may be installed between the plates **15** of the two bedrails **12** and **13** and nails inserted through the openings **29**.

The bracket **14** is characterized by rounded corners so as to preclude any possible injury to the person installing or using the invention. The leg **23** additionally is equipped with a coplanar, integral projection as at **30** which extends over the area of stress associated with the rivets **22** to strengthen the connection between the brackets **14** and the associated bedrail **12** or **13**, as the case may be.

In the production of the invention connection made up of the bracket **14** and plate **15**, the first stage of manufacture is depicted in FIG. 7, where a continuous strip of 11 gauge steel **31** is advanced to a punching station. The die (not shown) may be of conventional construction and is equipped with a punch organized to develop a blank **32** which is essentially the shape of the bracket **14** when the latter is still in planar form. As seen in FIG. 7, the projection **30** is contiguous to the next formed blank **32'**.

The blank **32** is seen to be equipped with the cutout **25** and openings **22***a* for the receipt of rivets **22**. The blank also has transversely-extending ribs as at **33** and rounded corners as at **34**. The projection **30** not only provides an advantageous rigidification for the portion of the blank **32** equipped with the openings **22***a*, but also minimizes the amount of throw-away material as at **35** and **36**, the latter being necessary to provide the rounded corners **34** at the four corners of the blank **32** as well as the usual ⅛" to ¼" spacing characteristic of conventional punching of side-by-side elements. Thus, the subsequent blank to be developed from the strip **31** is indicated in dotted line as at **32'**.

The opening **25** is seen to be closer to the edge **24***a* than it is to the edge **23***a* of the blank **32**, and the subsequent forming operation indicated in FIG. 8 develops the FIG. 3 configuration by folding the blank **32** along a line **37** parallel to the edges **23***a* and **24***a* and lying within the opening **25**. The line **37** is seen to be midway between the edges **23***a* and **24***a* (see FIG. 8), with the line **37** being offset from the longitudinal center line of the opening **25**.

Still referring to FIG. 8, the blank **32** is seen to be ready for folding along the line **37** so as to develop an opening **27***a* in the leg **23** of sufficient size to permit the insertion of the plate **15**. The width of **27***a* is slightly greater than the width of the plate **15**, about ⅛" for a 3/32" thick plate. Simultaneously with the folding of the blank **32** along the line **37**, the teeth **26** are coined into the upper and lower sides or edges of the opening **25**, the resultant structure being depicted in dotted line in FIG. 9.

The plate **15**, as pointed out above, is equipped with hooks **18** and **19** which are defined in part by slots **38** and **39** (see FIG. 3). During the installation operation, each plate **15** can be tapped lightly along the top surface as at **15***a*, which cinches the plate **15** in place within the slot **16**. Here, it will be appreciated that the pins **20** and **21** associated with each slot **16** are not identically spaced from the inner surface **11***a* of the leg **11** (see FIG. 2). The variation usually is within the range of 0.225" to 0.45" from the surface **11***a*. It is in this environment that the hooks **18** and **19** engage the pins **20** and **21**. This frictional engagement is facilitated through the provision of parallel side edges as at **38***a* and **39***a* in the slots **38** and **39** (see FIG. 3). Also, the slot **38** is slightly downwardly flared—the width of the slot at the top being slightly greater than one inch while at the mouth of the slot **38** the width is about 5/32". The slot **39** has side walls that are more approaching in parallelism than the walls of the slot **38**, the width of the slot **39** being about 3/16".

In the fabrication of the plate **15**, there is also provided a punching operation utilizing a continuous strip. To develop the rounded edge (best seen at **15***a* in FIG. 3) and yet minimize waste material, I provide a shoulder as at **15***b* defining a square corner so that the subsequent plate from the strip can be punched without leaving the aforementioned ⅛–¼" spacing.

The next stage of manufacture contemplates inserting the plate **15** in the fashion seen in FIGS. 4 and 5, after which the lugs or projections **28** (FIGS. 3 and 6) are developed as by staking. Subsequently, in an operation not depicted, the bracekt **14** (equipped with the plate **15**) is riveted to the bedrail **12** or **13**, as the case may be.

With the inventive construction, it is now possible to position the plate **15** in contact with the leg **23** without danger of detachment so as to achieve a minimum spacing between the bedrail upstanding legs **12***b* and **13***b*. This permits the use of only three adjusting notches **26'**, yet permits an adjustment of over two inches to accommodate a variation in the distance between bed slots **16** of from about 53" to 55½".

In one embodiment of the invention, the bracket **14** has a height of about 4¾", with each of the legs **23** and **24** being about 1⅜" in width. The height of the cutout portion **25** is about 3", and the cutout portion **25** in leg **24** extends from the inside wall of the leg **23** to about ¼" of the end of leg **24**. Each notch **26'** is approximately square in cross section, measuring about ⅛" to accommodate the plate **15**. It will also be noted that the bracket **14** is symmetrical about a horizontal center line so that there is no "Left" or "Right" form—further minimizing the production procedure.

While, in the foregoing specification, an embodiment of the invention has been described in considerable detail for the purpose of explanation, many variations in the details herein given may be made by those skilled in the art without departing from the spirit and scope of the invention.

I claim:

1. A support for a box spring, or the like, wherein the box spring is supported on angle-shaped side rails extending between head and footboards, said boards having pin-equipped slots adapted to normally receive the side rail hooks, comprising, in combination:

a hook-equipped plate adapted to be received in one of said board slots, said plate having a generally rectangular outline providing two opposing edges arranged in parallel relation, a generally rectangular notch in each of said edges, said plate being equipped with hook-like projections adjacent each notch,

an angle bracket providing a pair of legs, one of said legs being equipped with means for securing said bracket to a bedrail, said bracket being equipped with a generally rectangular cutout lying substantially in the other angle leg, said cutout having a dimension between a pair of opposite sides such as to receive said plate with the notches of said plate engaging the opposite sides of said cutout, said cutout, along said opposite sides, being equipped with offset teeth, each of said teeth having a width slightly greater than the thickness of said plate, said cutout having a third side lying within said one angle leg, and

means on said third side for preventing detachment of said plate from said bracket.

2. A support for a box spring, or the like, wherein the box spring is supported on angle-shaped, hook-equipped side rails extending between head and footboards, said boards having pin-equipped slots adapted to normally receive the side rail hooks, comprising, in combination:

a hook-equipped plate adapted to be received in one of said board slots, said plate having a generally rectangular outline providing two opposing edges arranged in parallel relation, a generally rectangular notch in each of said edges, said plate being equipped with hook-like projections adjacent each notch, and

an L-shaped bracket having a first leg equipped with means for securing said bracket to a side rail, said bracket having a second leg equipped with a generally rectangular cutout, said cutout extending slightly into said first leg to provide an entry slot for said plate and having a dimension between a pair of opposite sides such as to receive said plate with the

notches of said plate engaging the opposite sides of said cutout, said cutout, along said opposite sides, being equipped with offset teeth, each of said teeth having a width slightly greater than the thickness of said plate.

3. A bedrail support, comprising:

an angle having a flat first leg adapted to be secured to a bedrail and a flat second leg adapted to be secured to a bed end board, said angle having rounded corners and a projection on said first leg in the plane thereon, means adjacent said projection for securing said angle to a bedrail,

said second leg having a generally rectangular opening therein, said opening extending into said first leg to define upper and lower edges lying in both legs and a side edge lying only in said first leg,

a hook-equipped plate undetachably mounted in said opening parallel to said first leg for movement parallel to said second leg,

means on said upper and lower edges and said plate for positioning said plate, and

means on said side edge preventing the detachment of said plate from said angle.

4. The structure of claim 3 in which said side edge means includes a staked lug extending into said opening.

5. A support for a box spring, or the like, wherein the box spring is supported on angle-shaped side rails extending between head and footboards, said boards having pin-equipped slots adapted to normally receive the side rail hooks, comprising, in combination, a hook-equipped plate adapted to be received in one of said board slots, said plate having a generally rectangular outline providing two opposing edges arranged in parallel relation, a generally rectangular notch in each of said edges, said plate being equipped with projections adjacent each notch, and a bracket equipped with a generally rectangular cut-out, said cut-out having a dimension between a pair of opposite sides such as to receive said plate with the notches of said plate engaging the opposite sides of said cut-out, said cut-out, along said opposite sides, being equipped with teeth alternately offset in opposite directions, each of said teeth having a width slightly greater than the thickness of said plate.

6. A bed, comprising, in combination, a headboard, a footboard, each of said boards equipped with depending legs, with each leg being equipped with a vertical slot in the inner face thereof and a pair of pins positioned in each slot in general vertical alignment, a hook-equipped plate mounted in each slot in frictional engagement with the pins thereof, said plate, along its upper and lower edges, being equipped with alternately offset, rectangular-shaped notches, a bracket positionably mounted on each plate and having a cut-out portion equipped with offset teeth, said bracket being generally L-shaped, with a first leg being equipped with said cut-out portion, said teeth being in engagement with the notches of said plate, said bracket having its second leg equipped with a rail-engaging means, and a pair of side rails extending between said head and footboards on opposite sides thereof and coupled to the rail-engaging means on said second leg of each of said brackets.

7. A bed support, comprising a bracket adapted to be secured to a bedrail and a hook-equipped elongated plate positionably, undetachably coupled to said bracket and adapted to engage the hook pins of a bed endboard, said plate having a pair of longitudinally extending notches and said bracket having cut-out means, said cutout means having two spaced-apart parallel rows of teeth for positionably engaging said notches, with said plate extending partway into said cut-out means, said bracket being equipped with an integral part projecting into said cut-out means to prevent removal of said plate.

8. A bed support, comprising an elongated bracket adapted to be secured to a bedrail on the elongated end and elongated plate positionably mounted in said bracket and adapted to be secured to a bed leg, said plate being equipped with upwardly extending slots adapted to receive bed leg pins and a pair of spaced-apart, longitudinally-extending notches, said bracket being equipped with a generally rectangular cut-out portion positionably, undetachably carrying said plate, at least one side of said cut-out portion being equipped with spaced-apart teeth selectively engageable with a notch of said plate, and integral means in another side of said cut-out for preventing removal of said plate from said cut-out while permitting lateral shifting of said plate.

9. A bed support, comprising an angle bracket having a first leg adapted to be secured to a bed rail and a second leg adapted to be secured to a bed endboard when said second leg is disposed in a generally vertical plane, said second leg when so disposed having a vertically-extending, generally rectangular opening therein, at least one horizontally-extending side of said opening being equipped with a plurality of spaced-apart teeth, a generally rectangular hook plate positionably, undetachably mounted in said opening and extending in a generally vertical plane normal to said second leg when said bracket second leg is disposed in a vertical plane, at least one horizontal edge surface of said plate being equipped with a notch for coaction with said tooth-equipped side for fixing the position of said plate relative to said second leg, and an integral projection along one side of said opening for preventing the removal of said plate from said bracket.

10. A bed support, comprising a bracket adapted to be secured to a bedrail and a hook-equipped elongated plate positionably, undetachably coupled to said bracket and adapted to engage the hook pins of a bed endboard, said plate having a pair of longitudinally extending notches and said bracket having cut-out means and two spaced-apart rows of teeth for positionably engaging said notches, with said plate extending partway into said cut-out means, said bracket being equipped with an integral part projecting into said cut-out means to prevent removal of said plate.

11. A bed support, comprising a bracket adapted to be secured to a bed rail and a hook-equipped elongated plate positionably, undetachably coupled to said bracket and adapted to engage the hook pins of a bed endboard, said plate having a pair of longitudinallly-extending notches and said bracket having cutout means and two spaced-apart rows of teeth for positionably engaging said notches, with said plate extending partway into said cut-out means, said bed support being equipped with an integral part constituting lock means to prevent removal of said plate from said cutout means, said integral part being provided by staking after said plate has been inserted into said cutout means.

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