

June 27, 1961

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BEDFRAME WITH LEG REINFORCED CROSS RAIL AND
CONNECTION THEREOF TO A SIDE RAIL

2,989,760

Filed April 9, 1959

2 Sheets-Sheet 1

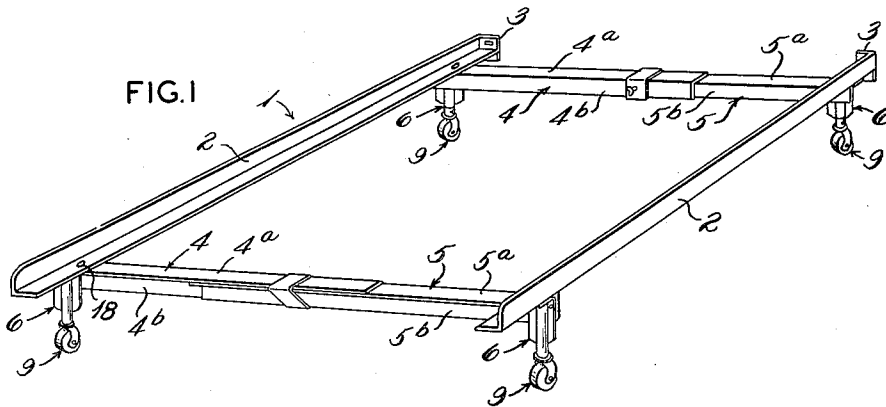
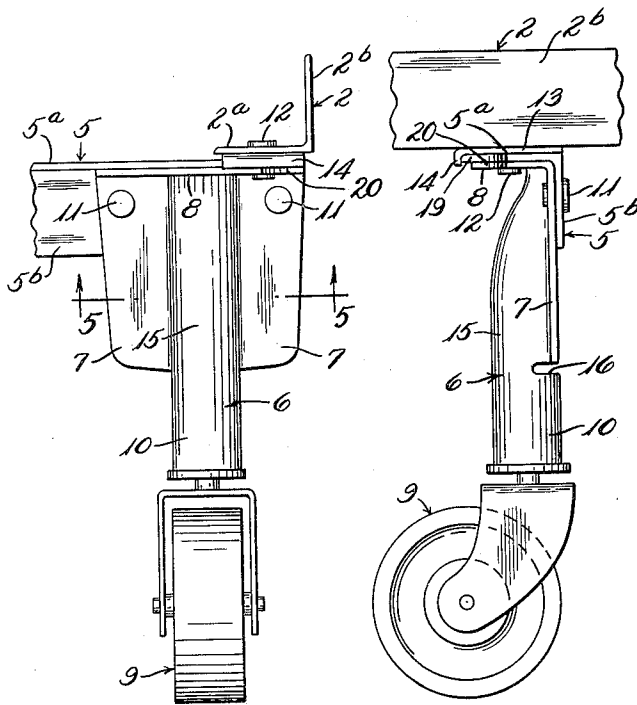


FIG. 2

FIG. 3

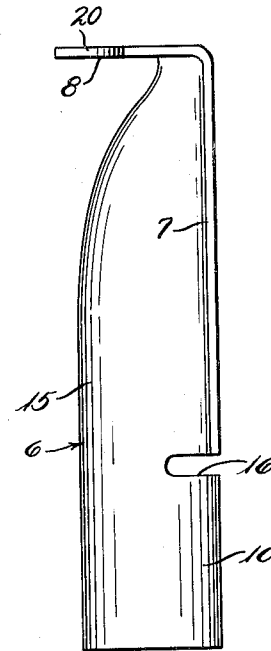


FIG. 4

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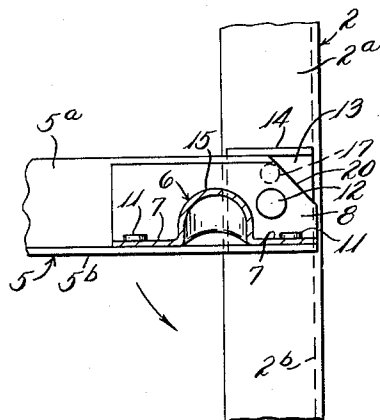


FIG. 5

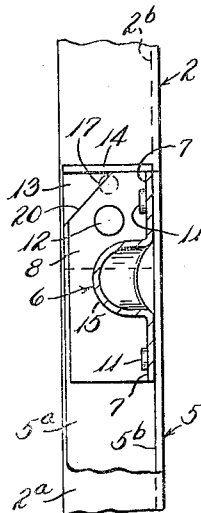


FIG. 6

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BEDFRAME WITH LEG REENFORCED CROSS RAIL AND CONNECTION THEREOF TO A SIDE RAIL

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4 Claims. (Cl. 5—176)

This invention relates to bedframes, and especially to sturdy bedframes made from metal angle side and cross rails, or equivalent means, and to a strong connection made between a cross rail and a side rail.

In making metal bedframes, which usually are for use with so-called Hollywood style of beds, these frames normally are made from metal cross rails and from metal side rails, or runners of right angular shape in vertical cross section. The cross rails usually are formed in sections are pivotally secured to the side rails. Obviously the cost of the bedframe to the manufacturer depends a great deal upon the gage and size of the metal angles used in forming the frame. For the frame to have desirable service properties, it is necessary that the frame means have sufficient strength to carry any reasonable normal load applied to the bedframe when in use without undue deflection, distortion or twisting of the frame rails.

It thus is a general object of the present invention to provide a new and improved type of a bedframe made from metal angles and where the bedframe is provided with maximum strength at heavily stressed zones thereof by use of a minimum number of parts and by use of light gage angle material in forming the cross rails, particularly, of the bedframe.

Another object of the invention is to provide a bedframe with improved strength cross rail units at the area thereof by which such cross rails are secured to the side rails, and to reenforce such cross rail at the principal load carrying position thereof by parts of the support legs for the bedframe.

A further object of the invention is to provide a top reenforcing flange on a support leg for the cross rail and to secure the cross rail to a side rail through such top flange.

Other objects of the invention are to provide a controlled or limited pivotal movement of the cross rails of the bedframe with relation to the side rails or runners; to use a separate lock plate or washer intermediate a cross rail and a side rail and secured in permanent engagement therewith, with the lock plate being adapted to limit pivotal movement of the cross rail assembly to a 90° arc with relation to the side rail; and to provide a vertically extending edge flange on the lock plate for positive engagement with portions of the cross rail assembly to limit movement thereof to a 90° arc.

The foregoing and other objects and advantages of the invention will be made more apparent as the specification proceeds.

For a better understanding of the present invention, attention particularly is drawn to the accompanying drawings illustrating one currently preferred embodiment of the invention, and wherein:

FIG. 1 is a perspective view of a bedframe embodying the invention;

FIG. 2 is a fragmentary enlarged right end elevation of the connection of the cross rail and side rail means of the bedframe of FIG. 1;

FIG. 3 is a fragmentary side elevation of the cross rail and side rail connection of FIG. 2;

FIG. 4 is an enlarged side view of a support leg of the bedframe;

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FIG. 5 is a fragmentary bottom view of the top left hand portion of the bedframe of FIG. 1 with the cross rail section operatively secured thereto; and

FIG. 6 is a view, similar to and of the members shown in FIG. 5, but with the bedframe components being in their inoperative form.

When referring to corresponding parts shown in the drawings and referred to in the specification, corresponding numerals are used to facilitate comparison therebetween.

The present invention, in general, relates to a bedframe comprising side rails and cross rails each having a horizontal leg and with the side rail having a vertically upwardly extending leg and the cross rail having a vertically downwardly extending leg, both of which rails are made from metal angle, a support leg having vertically extending wings on one vertical side thereof, and an integral horizontal top flange extending from said vertical side of the support over and beyond the remainder of the leg; means securing the support leg in nested relation to the cross rail at the end thereof, and means pivotally securing the unit formed of the support leg and cross rail to the side rail intermediate the end thereof by extending through nested portions of the support leg top flange and the cross rail.

In the accompanying drawings, the numeral 1 refers to a bedframe as a whole, and this bedframe 1 includes a pair of side rails 2 which usually have slotted end plates 3 secured to the head ends of these side rails. The side rails 2 each have a pair of cross rail sections 4, 4 and 5, 5 pivotally secured thereto, at longitudinally spaced portions thereof, as hereinafter described.

The side rails 2 have horizontally directed support legs 2a thereon, while they also have upwardly extending support legs 2b in the normal position of the bedframe 1. The cross rail sections 4 and 5 each have horizontally extending legs 4a and 5a thereon, and vertically downwardly extending, or dependent legs 4b and 5b thereon, so that the cross rails 4 and 5 can be swung or pivoted to lie substantially under and parallel to the side rails when the bedframe is in its collapsed, or inoperative position, such as when the bedframe is stored, or shipped.

The drawing clearly brings out in FIG. 2 that the bedframe is carried on a plurality of support legs 6, each of which has a pair of flat surfaced vertically extending wings or flanges 7, 7 on the support legs at one vertical margin thereof, as best shown in FIG. 3. As an important feature of the invention, the support legs 6 also have an integral top flange 8 that extends out over the rest of the support leg from the top margins of the wings 7, 7. This top flange 8 preferably extends beyond the remainder of the support leg, or projection thereof, to provide an effective reenforcing top flange on the support leg 6 for the reasons to be hereinafter described in more detail.

Any suitable type of a caster, glide or similar member 9 is engaged with and carried by the lower portion of each of the support legs 6 in a generally tubular section 10 at the lower end of each of the support legs 6.

FIG. 3 of the drawings best shows that the top flange 8 of the support legs 6 extends normally to the vertically extending wings 7 of the support legs. It will be seen that the top flange 8 and wings 7, 7 of the support legs 6 are of a size and shape to be nested under the cross rails and to lie against the horizontal legs of the cross rail sections, and the dependent legs of such cross rail sections respectively.

By use of means, such as rivets, 11 extending through the wings 7, 7 and dependent cross rail legs, the cross rails and support legs 6 are formed into cross rail units with the support legs positioned at the ends of the cross rail sections. By this construction, then rivets 12 can

extend through the horizontal legs 2a of the side rails, through the top flanges 8, and through the horizontal legs 4a and 5a of the cross rail sections to pivotally secure the cross rail units to the side rails. This construction requires only a minimum number of parts and provides a sturdy, well reinforced connection between the side and cross rails.

As another portion of the bedframe 1, usually a lock washer 13 is also secured intermediate the cross rail sections 4 and the side rails 2 by the rivets 12. These lock washers 13 each have a dependent flange 14 along one margin thereof. The dependent flange 14 engages the side of the horizontal leg of the cross rails in the extended, or operative position of the cross rails, and will abut against the end of the cross rail section in the collapsed or folded inoperative position of the cross rail section to limit pivotal movement of the cross rails to an exact 90° arc. The lock washer 13 has an upwardly extending protuberance 17 thereon received in a hole or aperture 18 provided in each of the side rails of the bedframe at the connections of the side rails thereto. These protuberances 17, in association with the rivets 12, retain the lock washers 13 in a locked or fixed position and prevent any possible rotary or arcuate movement thereof in the bedframe assembly.

In order to permit swinging movement of the cross frame or rail assembly with relation to the side rail, it is necessary to remove or cut off angular portions on the ends of the flange 8 and of the cross rail member 5a. Such cut off or beveled end portions are shown by the angled end 19 provided on the cross rail section 5a, and shown at 20, on the reenforcing flange 8.

It will be seen that the side rails connect to double thickness areas of the cross rail units at the ends of the cross rails. Likewise, the support legs provide very effective reenforcement of the cross rail in both the horizontal and vertically extending legs thereof at the main load carrying portion of the cross rail so that a minimum gage cross rail angle can be used in making a bedframe but yet provide very sturdy load carrying characteristics in the bedframe.

FIG. 4 of the drawings shows that the support leg 6 has a vertically extending center rib or channel 15 therein and that such rib is reduced in thickness at the upper end of the support leg and blends smoothly in with the top flange 8. The top flange 8 is flat and continuous from one lateral margin to the other of the support leg except for a recessed area at the top of the center rib 15. The support legs 6 are formed from metal sheets by suitable stamping operations so that a continuous connection is formed between the top flange 8 and the remainder of the support leg i.e. wings 7, 7 and center rib 15. Slots 16 are formed in the metal sheet to permit forming the tubular lower end 10 on the support leg.

From the foregoing, it will be seen that the bedframe of the invention has provided a very strong cross rail unit for connection to the side rail of a bedframe. Furthermore, only a minimum number of parts and connecting members are required in this bedframe to secure the components thereof together. By the double use of the support leg and the top flange thereof, an effective low weight, but sturdy bedframe is provided. The bedframe 1 is made from standard components that can be readily secured together by conventional means. Thus it is thought that the objects of the invention have been achieved.

While one complete embodiment of the invention has been disclosed herein, it will be appreciated that modification of this particular embodiment of the invention may be resorted to without departing from the scope of the invention as defined in the appended claims.

What is claimed is:

1. In a bedframe, a side rail of angular shape in section and having a horizontal leg, a cross rail of angular

shape in section and having a vertical and a horizontal leg, a flat lock plate with a vertically extending edge flange thereon, means pivotally securing the horizontal legs of said cross rail and side rail together for relative movement therebetween in a horizontal plane with said lock plate being positioned therebetween, said lock plate being of substantially the same width as the horizontal leg of said cross rail and forming a flat bearing plate between said side rail and cross rail, inter-engaging means on said lock plate and side rail to prevent relative arcuate movement therebetween, said edge flange extending normal to the longitudinal axis of said side rail and extending down into the plane of said horizontal leg of said cross rail, the end of said cross rail abutting against said edge flange to limit relative movement therebetween in one direction but having an end corner removed to permit arcuate movement of said cross rail with relation to said side rail in one direction, a side portion of said cross rail abutting against said edge flange to limit relative pivotal movement of said cross rail with relation to said side rail in the opposite direction, said side rail and cross rail being superimposed at one limit of relative movement therebetween, and a support leg secured to said cross rail at the end thereof, said support leg having a flat vertically extending portion thereon and a top flange thereon nested in under and respectively engaging said vertical and horizontal legs of said cross rail to reenforce it.

2. In a bedframe, a side rail of angular shape in section and having a horizontal leg, a cross rail of angular shape in section and having a horizontal leg, a flat lock plate with a vertically extending edge flange thereon, means pivotally securing the horizontal legs of said cross rail and side rail together for relative movement therebetween in a horizontal plane with said lock plate being positioned therebetween, said lock plate being of substantially the same width as the horizontal leg of said cross rail and forming a flat bearing plate between said side rail and cross rail, interengaging means on said lock plate and side rail to prevent relative arcuate movement therebetween, said edge flange extending normal to the longitudinal axis of said side rail and extending into the plane of said horizontal leg of said cross rail, the end of said cross rail abutting against said edge flange to limit relative movement therebetween in one direction but having an end corner removed to permit arcuate movement of said cross rail with relation to said side rail in one direction, a side portion of said cross rail abutting against said edge flange to limit relative pivotal movement of said cross rail with relation to said side rail in the opposite direction, said side rail and cross rail being superimposed at one limit of relative movement therebetween, and a support leg including reenforcing means nested under and secured to each of said cross rails at the end thereof, said reenforcing means engaging said horizontal legs of said cross rails and extending to said side rails and being secured thereto by said pivotal securing means to reenforce the connection of said side and cross rails.

3. In a bedframe, a side rail of angular shape in section and having a horizontal leg, a cross rail of angular shape in section and having a horizontal leg and a vertical leg, a flat lock plate with a vertically extending edge flange thereon, means pivotally securing the horizontal legs of said cross rail and side rail together for relative movement therebetween in a horizontal plane with said lock plate being positioned therebetween, said lock plate being of substantially the same width as the horizontal leg of said cross rail and forming a flat bearing plate between said side rail and cross rail, and inter-engaging means on said lock plate and side rail to prevent relative arcuate movement therebetween, said edge flange extending normal to the longitudinal axis of said side rail and extending into the plane of said horizontal leg of said cross rail, the end of said cross rail abutting against said edge flange to limit relative movement therebetween in one direction but having an end corner removed to permit arcuate movement of said cross rail with relation to

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said side rail in one direction, a side portion of said cross rail abutting against said edge flange to limit relative pivotal movement of said cross rail with relation to said side rail in the opposite direction, said side rail and cross rail being superimposed at one limit of relative movement therebetween.

4. A bedframe as in claim 3 where a support leg having a vertical flange connected to the vertical leg of said cross rail and a horizontal flange in reenforcing contact with the lower surface of the horizontal leg of said cross

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rail is provided, said support leg forming a unit with said cross rail.

References Cited in the file of this patent

UNITED STATES PATENTS

2,607,051	Jackson	Aug. 19, 1952
2,772,424	Roche et al.	Dec. 4, 1956
2,784,421	Fredman	Mar. 12, 1957
2,882,535	Sands	Apr. 21, 1959