Aug. 14, 1962 C. B. HUTT 3,048,857

BED WITH ADJUSTABLE SIDE RAIL ASSEMBLY

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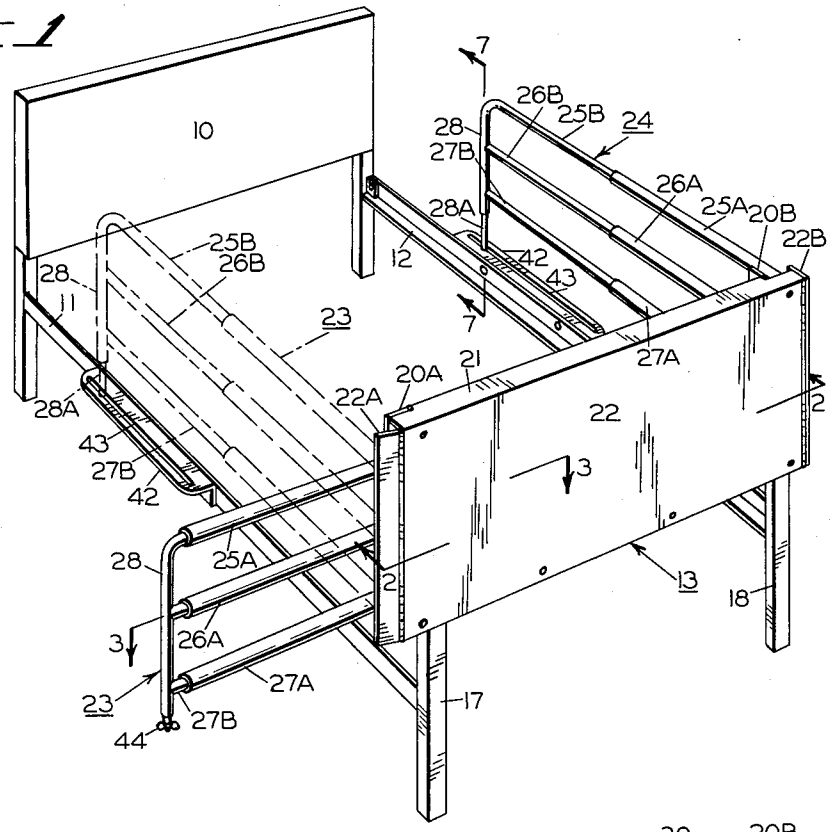
Fig. 1



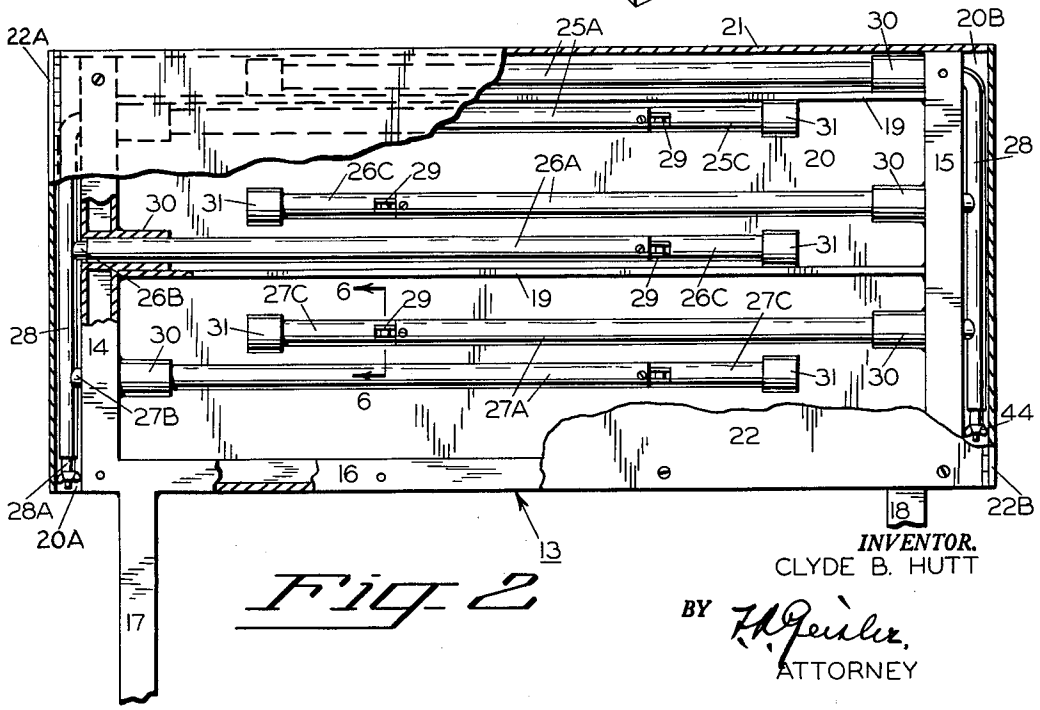


Fig. 2

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Fig 6

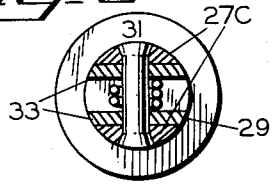


Fig 3

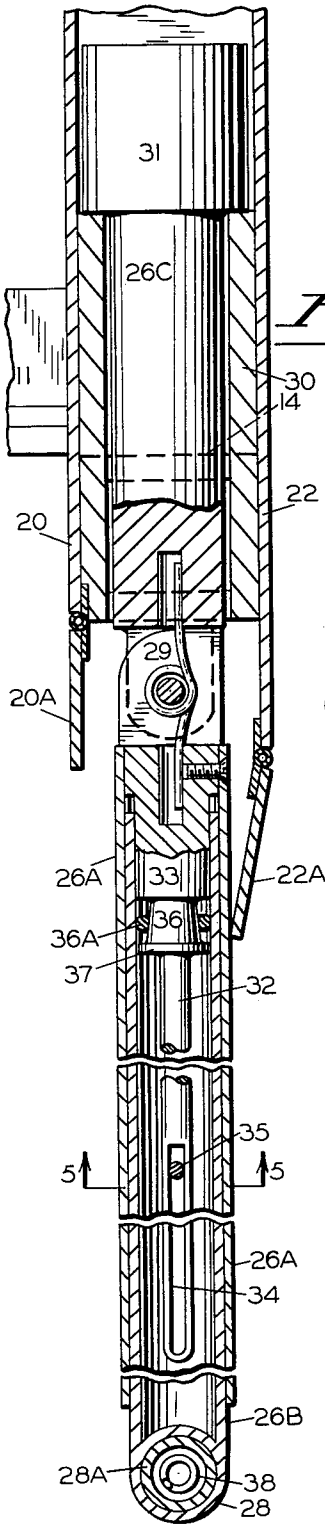
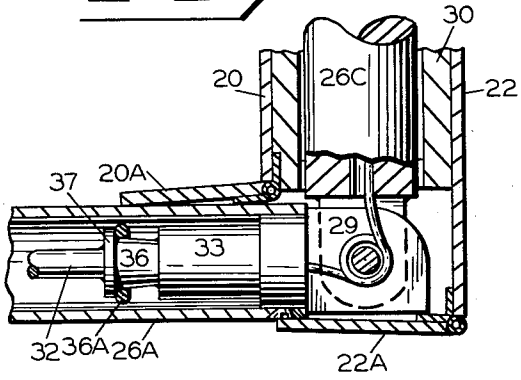


Fig 4



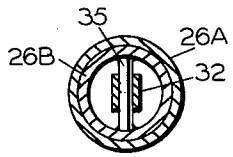


Fig 5

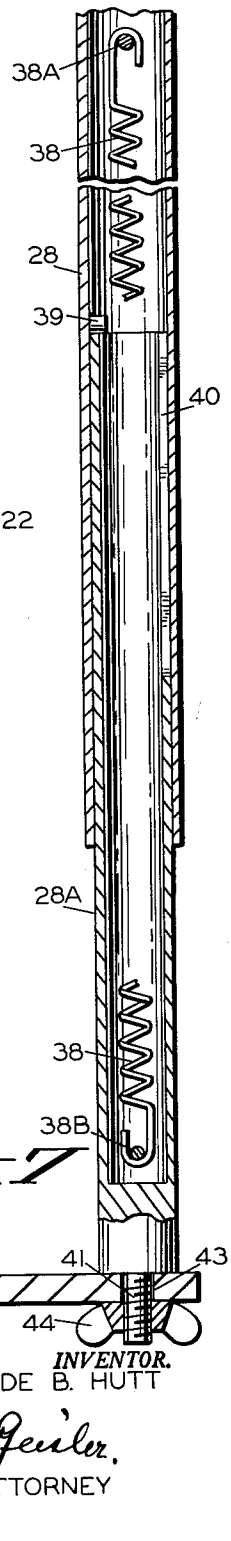
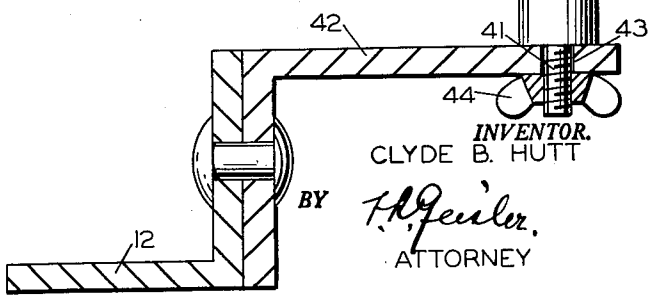


Fig 7



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BED WITH ADJUSTABLE SIDE RAIL ASSEMBLY

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8 Claims. (Cl. 5—331)

This invention relates to beds on which side guards or rails may be required from time to time, and, in particular to beds for invalids and children, where side rails extending part way along either or both sides of the bed may be desired to prevent the possibility of the patient or child from rolling off the bed.

It is very desirable, in the case of such beds equipped with side guards or rails, to have the side guards or rails so arranged and mounted as to be capable of being easily and quickly moved out of the way when not needed.

An object of the present invention is to provide a bed equipped with a pair of improved side rail assemblies, either or both of which assemblies can quickly and easily be set up in operative position, and either or both of which can just as quickly and easily be moved entirely into out-of-the-way position when not needed or desired.

Another object of the invention is to provide a bed with a pair of side rail assemblies and with a hollow headboard, with the headboard and rail assemblies so arranged that either or both of the said rail assemblies will be entirely contained within the hollow headboard when moved into out-of-the-way position, but which assemblies can conveniently be pulled out into operative position at any time, thus dispensing with the annoyance of having to take either side rail assembly entirely off the bed and to find a place for such rail assembly when it is not being used.

The extent to which it may be desired to have the side rails or guards extend along the side of the bed from the headboard towards the foot of the bed may vary under different conditions or in different situations, as, for example, in ambulatory stages of convalescence where the patient should be able to get out of bed and get back into bed by himself, but nevertheless where some side guard near the head of the bed is still desirable.

A further object of this invention accordingly is to provide a bed equipped with a side rail assembly which may be entirely contained within the headboard when not in use, or pulled out from the headboard and secured to the side of the bed frame when use of the side rail assembly is desired, but with the side rail assembly so constructed and arranged that the length to which the assembly is pulled out from the headboard and consequently the distance over which it will be caused to extend along the side of the bed can be varied and adjusted within predetermined limits.

The means by which these objects and other advantages are accomplished with the present invention, and the construction of each of the adjustable side rail assemblies together with the way in which these are housed in the special headboard and adjustably secured in place in operative positions, will be described briefly with reference to the accompanying drawings, wherein:

FIG. 1 is a perspective view of a bed frame having a hollow headboard serving as the housing for the pair of adjustable side rail assemblies, and showing one side rail assembly secured in desired operative position and the other in the process of being pulled out from inoperative position in the headboard;

FIG. 2 is an elevation of the hollow headboard with portion of the rear cover plate shown broken away, and showing both side rail assemblies in their fully retracted position, the view being taken on the line indicated at 2—2 in FIG. 1 but drawn to a larger scale;

FIG. 3 is a fragmentary section taken on line 3—3 of FIG. 1, drawn to a much larger scale;

FIG. 4 is a fragmentary section corresponding in part to FIG. 3 but with the rail assembly swung forwardly;

FIG. 5 is a section taken on the line indicated at 5—5 in FIG. 3;

FIG. 6 is a section on line 6—6 of FIG. 2, drawn to the same scale as FIG. 3; and

FIG. 7 is a section on line 7—7 of FIG. 1, drawn to the same scale as FIG. 3.

In FIG. 1 the bed frame illustrated includes a footboard 10, the usual side frame members 11 and 12, and a headboard indicated in general by the reference character 13. The headboard (see FIG. 2) includes a rectangular housing mounted on an integral frame formed with upright end members 14 and 15, a bottom member 16, from which the legs 17 and 18 extend, and a horizontal center bar 19. A front plate 20, a top plate 21 and a rear cover plate 22 are mounted on the headboard frame.

The top plate 21 and the rear cover plate 22 extend beyond the end members 14 and 15 of the headboard frame. Hinged flaps, 20A and 20B (see also FIG. 1), attached to the ends of the front plate 20, cause the front plate to have the same overall length as the rear cover plate 22 when these end flaps extend in normal position in the same plane with the front plate. These end flaps 20A and 20B are attached to the front plate by spring hinges which normally hold them in the same plane with the front plate, and thus in the position shown by the flap 20A in FIGS. 1, 2 and 3 and by the flap 20B in FIG. 2, but these spring hinges allow them to be swung forwardly to the position shown by the flap 20B in FIG. 1.

Similar end flaps 22A and 22B are mounted on the ends of the rear cover plate 22, being attached to the rear cover plate by spring hinges which normally hold these flaps extending forwardly at right angles to the cover plate 22, as shown by the flap 22B in FIG. 1 and the flaps 22A and 22B in FIG. 2, while the hinges allow these flaps to be swung against the force of the springs as illustrated by the flap 22A in FIGS. 1 and 3. Thus the flaps 20A and 22A in one end of the headboard housing together with the flaps 20B and 22B at the other end of the housing, when in normal closed position, form end chambers beyond the upright frame members 14 and 15, as shown in FIG. 2, in which end chambers, as presently explained, the end rails for the two side rail assemblies are contained when the side rail assemblies are in entirely retracted or inoperative position.

The two side rail assemblies 23 and 24 (FIG. 1) are identical. Each assembly consists of a plurality (preferably three as illustrated) of horizontal rails and a substantially vertical outer end rail. The horizontal rails are each formed of a pair of telescoping tubular members, the larger diameter members in the assemblies being designated 25A, 26A and 27A (FIG. 1) and the corresponding related smaller diameter telescoping members being designated 25B, 26B, and 27B. The smaller diameter members in each assembly terminate in the vertical outer end rail 28 and are integral therewith.

The headboard frame is provided with a cylindrical bearing socket 30 (FIGS. 2 and 3) for each of the larger diameter tubular members of each side rail assembly. These bearing sockets 30 extend through the upright frame members 14 or 15 in the headboard frame and provide supports for the horizontal rails of the side rail assemblies while allowing the larger diameter members of the horizontal rails to slide therein.

Each of the larger diameter members of the horizontal rails has a short inner end extension designated 25C, 26C or 27C respectively with which it is connected by a spring hinge 29 (FIGS. 2, 3, 4 and 6) which spring hinge

normally holds the inner end extension in alignment with the connected large diameter member. Each of the inner end extensions 25C, 26C or 27C has the same diameter as the larger diameter member to which it is hingedly connected but terminates in an enlarged end shoulder 31 which limits the extent to which the rail member 25A, 26A or 27A can be pulled outwardly. Furthermore the length of each inner end extension 25C, 26C, or 27C is such that, when the corresponding rail member is pulled out through its bearing socket 30 to the limit permitted by the end shoulder 31, the hinge 29 will be positioned just beyond the adjacent upright frame member 14 or 15 and thus in the position illustrated in FIG. 3. When the side rails of the assembly are pulled out to this extent the assembly can then be swung forwardly to a position at right angles with respect to the headboard 13 (FIG. 4).

In order to restrict the distance to which each smaller diameter telescoping member 25B, 26B or 27B may be pulled outwardly in the respective larger diameter member of the rail, a bar 32 (FIG. 3) has its inner end attached to the hinge block 33 on which the inner end of the large diameter member for each rail is secured. This bar 32 has a slot 34, and a pin 35, secured in the smaller diameter member (see also FIG. 5), extending diametrically across in the smaller diameter member, extends through the slot 34. Thus the engagement of the pin 35 with the outer end of the slot 34 limits the extent to which the smaller diameter member in each rail can be pulled outwardly in the larger diameter member and prevents the possibility of a smaller diameter member being pulled entirely out from its larger diameter member. The engagement of the pin 35 with the slot in the bar 32 also prevents any rotation of the larger diameter member or its inner end extension with respect to the smaller diameter member.

The attached inner end of the limit bar 32 (FIG. 3) has a portion 36 formed with an outwardly increasing diameter, which portion terminates in a shoulder 37. An O-ring 36A is carried on the portion 36. When the smaller diameter member is pulled outwardly with respect to the surrounding larger diameter member and consequently pulled outwardly with respect to the bar 32 and the portion 36, the O-ring 36A becomes squeezed between the inside wall of the smaller diameter member and the portion 36. Consequently an outward pull on the smaller diameter member will cause an outward pull on the surrounding larger diameter member. The purpose of this is to cause the larger diameter members of the rails of the side assemblies first to be drawn out to the limit, when the assembly is pulled outwardly from the headboard housing, before the outward movement of the smaller diameter members from the respective larger diameter members takes place.

When a side rail assembly is not required to be used it is kept in inoperative position entirely within the headboard housing, as illustrated by both side rail assemblies in FIG. 2. In this position the upright end rail 28 of the assembly will be contained within the chamber enclosed by the end flap 20A or 20B of the front wall 20 and by the end side flap 22A or 22B on the rear plate 22 of the housing. When a side rail assembly is required to be used, for example the side rail assembly 23 as shown in FIG. 1, the operator opens the flap 22A, grasps the end rail 28 of that assembly, and pulls the assembly outwardly, causing the larger diameter members of the horizontal rails to move outwardly in their bearing sockets 30 until the engagement of the enlarged end shoulders 31 with the inner ends of the sockets 30 prevents further outward movement of the larger diameter members. The rail assembly is then swung forwardly to a position substantially at right angles to the headboard housing, causing the flap 20A to swing to open position and permitting the flap 22A to close. Now a continued forward pull by the operator on the end rail 28 will cause the smaller diameter members 25B, 26B and 27B to be drawn forwardly from their respective larger diameter members.

The end rail 28 of each rail assembly carries a spring-controlled telescoping member 28A. A coil spring 38 (FIG. 7), having its upper end secured within the rail 28 near the top at 38A and having its lower end secured at 38B within the bottom portion of the telescoping member 28A, and held under a slight tension at all times, normally keeps the member 28A in withdrawn raised position. When a side rail assembly is to be used and is moved out from the headboard housing, the member 28A is pulled downwardly in the end rail 28. The end rail 28 is provided with a stationary holding lug 39 on the inside and the member 28A is provided with a vertical slot 40 extending down from the top end, to enable the member 28A to move past the holding lug 39 when in raised position. When the member 28A is pulled down beyond the lug 39 the member 28A is then given a partial rotation so as to bring the top end of the member 28A into engagement with the holding lug 39 and thus maintain the member 28A in the lower position.

The bottom end of the member 28A carries a threaded stem 41. An anchoring support for the outer end of each rail assembly, when the assembly is in operative position, consists of a bar 42 in the form of an angle iron secured to the side rail 11 or 12 of the bed frame (FIGS. 1 and 7). Each anchoring bar 42 is provided with a longitudinal slot 43 for receiving the threaded stem 41 on the bottom of the member 28A of the end rail 28. The threaded stem 41 of the rail assembly is inserted through the slot 43, and, when the side rail assembly is in the position desired, a bottom wing nut 44 clamps the member 28A to the anchoring bar 42 and thereby secures the outer end of the rail assembly in place. As apparent from FIG. 1, the distance to which the side rail assembly can be made to extend along the side of the bed from the headboard can be adjusted within the limits provided in the horizontal rails and provided by the slot in the anchoring bar 42.

Thus with the present invention either or both side rail assemblies will be entirely out-of-the-way and even out-of-sight when not required for use. Since they are never completely removed from the bed frame they are always conveniently at hand for immediate use. Very little effort and time are required for pulling a side rail assembly out into position for use and for securing it in such operative position, and its operative position is adjustable. Finally the removal of the side rail assembly from the side of the bed and the placing of it back in the headboard housing similarly requires very little time and effort.

Minor modifications in some of the parts of the assemblies and in the bed frame construction would of course be possible without departing from the principle of the invention, and it is not my intention to limit the invention otherwise than as set forth in the claims.

I claim:

1. In combination with a bed frame having a footboard portion and side rails, a hollow headboard, a side rail assembly adapted to be housed in said headboard, horizontal rails in said assembly, bearing sockets mounted in the end of said hollow headboard for said horizontal rails, inner end extensions hinged on said horizontal rails and slidable also in said sockets, an upright end rail connected with said horizontal rails, and cooperating means on a side rail of the bed frame and on said end rail for removably securing said end rail to said side rail of the bed frame.

2. In combination with a bed frame having a footboard portion and side rails, a hollow headboard, a side rail assembly adapted to be housed in said headboard, horizontal rails in said assembly, each of said horizontal rails including a larger diameter tubular member and a smaller diameter member telescopically received in said

larger member, bearing sockets mounted in the side end of said hollow headboard for the larger diameter members of said horizontal rails, inner end extensions hinged on said larger diameter members of said horizontal rails and slidable also in said sockets, limit means on said inner end extensions limiting the extent to which said extensions can be pulled outwardly in said sockets, an upright end rail connected with said smaller diameter members of said assembly, and cooperating means on a side rail of the bed frame and on said end rail for removably securing said end rail to said side rail of the bed frame.

3. In combination with a bed frame having a footboard portion and side rails, a hollow headboard, a side rail assembly adapted to be housed in said headboard, horizontal rails in said assembly, each of said horizontal rails including a larger diameter tubular member and a smaller diameter member telescopically received in said larger member, means in said horizontal rails limiting the extent to which said smaller members can be pulled outwardly in the respective larger members, bearing sockets mounted in the side end of said hollow headboard for the larger diameter members of said horizontal rails, inner end extensions hinged on said larger diameter members of said horizontal rails by spring hinges and slidable also in said sockets, limit means on said inner end extensions limiting the extent to which said extensions can be pulled outwardly in said sockets, an upright end rail connected with said smaller diameter members of said assembly, and cooperating means on a side rail of the bed frame and on said end rail for removably and adjustably securing said end rail to said side rail of the bed frame.

4. In combination with a bed frame having a footboard portion and side rails, a hollow headboard, a side rail assembly adapted to be housed in said headboard, horizontal rails in said assembly, each of said horizontal rails including a larger diameter tubular member and a smaller diameter member telescopically received in said larger member, means in said horizontal rails limiting the extent to which said smaller members can be pulled outwardly in the respective larger members, bearing sockets mounted in the side end of said hollow headboard for the larger diameter members of said longitudinal rails, inner end extensions hinged on said larger diameter members of said horizontal rails and slidable also in said sockets, limit means on said inner end extensions limiting the extent to which said extensions can be pulled outwardly in said sockets, an upright end rail connected with said horizontal rails of the assembly, cooperating means on the side rail of the bed frame and on said end rail for removably and adjustably securing said end rail to said side rail of the bed frame, and a chamber on the side end of said headboard beyond said sockets for receiving said end rail of said assembly when the assembly is pushed back into inoperative position in said headboard.

5. In combination with a bed frame having a footboard portion and side rails, a hollow headboard, a side rail assembly adapted to be housed in said headboard, horizontal rails in said assembly, each of said horizontal rails including a larger diameter tubular member and a smaller diameter member telescopically received in said larger member, means in said horizontal rails limiting the extent to which said smaller members can be pulled outwardly in the respective larger members, engageable friction elements in said means to prevent said smaller members from being pulled outwardly too freely in their respective larger members, bearing sockets mounted in the end of said hollow headboard for the larger diameter members of said horizontal rails, inner end extensions hinged on said larger diameter members of said horizontal rails by spring hinges and slidable also in said sockets, limit means on said inner end extensions limiting the extent to which said extensions can be pulled outwardly in said sockets, an upright end rail connected with said smaller diameter members of said assembly, a telescoping member in said end rail adapted to be pulled downwardly in said end rail, and cooperating means on the bottom of said last mentioned member and on the side rail of the bed frame for removably and adjustably securing said last mentioned member and therewith said end rail and said assembly in place on the side of the bed frame.

6. In combination with a bed frame having a footboard portion and side rails, a hollow headboard having spaced front and rear walls mounted on a headboard frame, a pair of identical side rail assemblies adapted to be housed in said headboard, horizontal rails in each of said assemblies, bearing sockets mounted in the side ends of said hollow headboard respectively for the horizontal rails of said respective assemblies, inner end extensions hinged on said horizontal rails and slidable also in said sockets, limit means on said inner end extensions limiting the extent to which said extensions can be pulled outwardly in said sockets, an upright end rail in each assembly connected with said horizontal rails of the assembly, cooperating means on the side rails of the bed frame and on the respective end rails of said assemblies for removably securing said end rails to the respective side rails of the bed frame, and a chamber on each side end of said headboard beyond said sockets for receiving the end rails of said assemblies when the assemblies are pushed back into inoperative position in said headboard, the front and side walls of each chamber formed by hinged flaps attached to the front and rear walls respectively of said hollow headboard.

7. In combination with a bed frame having a footboard portion and side rails, a hollow headboard, a pair of identical side rail assemblies adapted to be housed in said headboard, horizontal rails in each of said assemblies, each of said horizontal rails including a larger diameter tubular member and a smaller diameter member telescopically received in said larger member, means in said horizontal rails limiting the extent to which said smaller members can be pulled outwardly in the respective larger members, bearing sockets mounted in the side ends of said hollow headboard respectively for the larger diameter members of said horizontal rails of said side rail assemblies, inner end extensions hinged on said larger diameter members of said horizontal rails and slidable also in said sockets, limit means on said inner end extensions limiting the extent to which said extensions can be pulled outwardly in said sockets, an upright end rail in each assembly connected with said smaller diameter members of the assembly, and cooperating means on the side rails of the bed frame and on the respective end rails of said assemblies for removably and adjustably securing the end rails to the respective side rails of the bed frame.

8. In combination with a bed frame having a footboard portion and side rails, a hollow headboard, a pair of identical side rail assemblies adapted to be housed in said headboard, horizontal rails in each of said assemblies, each of said horizontal rails including a larger diameter tubular member and a smaller diameter member telescopically received in said larger member, means in said horizontal rails limiting the extent to which said smaller members can be pulled outwardly in the respective larger members, engageable friction elements in said means to prevent said smaller members from being pulled outwardly too freely in their respective larger members, bearing sockets mounted in the side ends of said hollow headboard respectively for the larger diameter members of said horizontal rails of said side rail assemblies, inner end extensions hinged on said larger diameter members of said horizontal rails by spring hinges and slidable also in said sockets, limit means on said inner end extensions limiting the extent to which said extensions can be pulled

outwardly in said sockets, an upright end rail in each asesmbly connected with said smaller diameter members of the assembly, a telescoping member in each of said end rails adapted to be pulled downwardly in the end rail, springs normally holding said latter mentioned telescoping members in raised position in said end rails, and cooperating means on the bottom of said last mentioned members and the corresponding side rails of the bed frame for removably and adjustably securing said last mentioned

members and therewith said end rails and said assemblies in place on the sides of the bed frame.

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