SAFETY SIDE GUARD FOR HOSPITAL BEDS


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10 Claims

ABSTRACT OF THE DISCLOSURE

A generally rectangular safety side guard pivotally mounted upon the mattress frame of a hospital bed and movable around the pivotal mountings from an elevated guarding position to a lowered inoperative position. Stops are provided to limit movement of said guard into said positions and latch means are provided to secure the guard in elevated position.

BACKGROUND OF THE INVENTION

Hospital beds are usually provided with side guards disposed alongside the mattress of the bed to prevent a patient in the bed from falling out of the bed. The mattress supporting frame of a hospital bed usually consists of a seat section to one side of which a generally U-shaped head section is pivotally attached. A thigh section of the frame is pivotally attached to the other side of the seat section, and a generally U-shaped foot section is pivotally attached to the thigh section. These frame sections are usually angle irons which support either the so-called "spring fabric" or the "mattress platform" of the bed.

The Burst et al. Pat. 3,772,017 discloses a safety side guard that is attached to the head section of the mattress frame and is slidable vertically from an upper guarding position to a lower non-guarding position. This guard extends only from the head end of the head section of the frame to the seat section thereof.

The Pratt Pat. 2,817,855 discloses a guard frame pivotally mounted upon a frame member of a bed and movable from an upper guarding position to a lower unguarding position by rotating its supporting members around the pivotal mountings.

SUMMARY OF THE INVENTION

The present invention provides a safety side guard of the type shown in the Burst patent. The guard is mounted upon the mattress supporting frame of the bed by mounting means that includes trunnions journaled in a mounting bracket that is fixed upon the frame. The guard is movable from an elevated guarding position to a lowered inoperative position, causing rotation of said trunnions in their journals. A spring pressed latch mounted in said bracket secures the guard in elevated position and stop means limit movement of the guard both up and down.

The mounting bracket is mounted on the frame and is disposed well below the patient in the bed, hence, not readily accessible to a nurse when it is desired to lower the guard. The mounting of safety guards of the present invention on both sides of a bed does not increase the width of the bed sufficiently to prevent the bed from being moved through the door leading out of a patient's room, should it be desired to make such a move.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of a safety side guard mounted upon the right hand side mattress frame of a hospital bed and disposed in elevated guarding position; FIG. 2 is a view similar to FIG. 1, showing the guard in lowered position; FIG. 3 is a fragmentary back side elevational view drawn to an enlarged scale and showing the mounting bracket and the elements thereof with the safety side guard mounted upon the left hand side of the bed and secured in elevated position. FIG. 4 is a view similar to FIG. 3 showing the guard in the lowered position. FIG. 5 is a cross-sectional view along the line 5—5 of FIG. 3, looking in the direction of the arrows; FIG. 6 is a cross-sectional view along the line 6—6 of FIG. 3, looking in the direction of the arrows; FIG. 7 is a cross-sectional view taken along the line 7—7 of FIG. 3, looking in the direction of the arrows and drawn to an enlarged scale.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As will be seen best in FIG. 1, the side guard indicated generally at 10, consists of an upper portion 11 and a bottom portion 12, which portions are joined together by arcuate end portions 13. It will be noted that the upper and lower portions 11 and 12 are straight, and as will be seen in FIG. 5, are rectanglar in cross section.

Fixed to, and extending between portions 11 and 12, are verticle bars 14 and 15. It will be noted that bars 14 and 15 are located equidistant from the centers of portions 11 and 12.

Mounted upon the mattress frame rail 18 is a mounting bracket, indicated generally at 19. As will be seen best in FIGS. 3 and 4, the mounting bracket consists of a front member 20 and a pair of back members 21, which are shaped to form a cavity within the bracket. As will be seen best in FIG. 5, a trunnion 22 is journaled in suitable low friction bushings 23. Fixed upon the trunnion 22, and disposed in the space between front and back members 20 and 21, is a crank hub 24 to which a crank 25 is fixed. The hub may be fixed upon the shaft in convenient manner, such as by a drive pin. A latch bar 26 is pivotally connected to the crank 25 in convenient manner, such as by a pivot screw 27.

Fixed to the trunnion 22 is a link 30 which at its upper end is equipped with a boss 31 that is threaded internally. The vertical member 14 of the guard is equipped with low friction bushings 32 through which a collared bolt 33 is threaded into the boss 31. A suitable lock tight plastic 34 extends through a hole in the boss 31 and engages the threads of the bolt 33 to secure the bolt against unwanted loosening.

The trunnion 22, mounting thereof, and crank 25 arrangement just described are duplicated, as indicated at 22a and 22b to receive a link 35 that is pivotally connected to the vertical bar 15 in the just described manner.

The mounting bracket is attached to the rail 18 by a clamp 36, into which a screw 37 is threaded. A knob 38 abuts against the mounting bracket as the screw is turned to tighten the clamp upon the rail 18.

As will be seen in FIGS. 3 and 4, the latch bar 26 is pivotally connected at its opposite ends to crank 25 on the trunnion 22 and to crank 25a on trunnion 22a.

Upstanding from the bottom of the front member 20 of the mounting bracket 19 are ears 40 through which a pin 41 is extended, the pin also extending through the latch 42 to pivotally mount the latch in the bracket. A spring 43 encircles the pin 41 and engages the latch 42 to push that latch outwardly of the bracket. As will be seen in FIG. 6, the ram 45 of the latch 42 extends through an opening in the bracket member 20 and terminates in a latch end 46.

As will be seen in FIG. 3, when the side guard is in its elevated position, latch 42 registers with and extends into a keeper notch 44, located in the bottom edge of the
3. The upper edge of the latch bar is provided with a recess portion 47 in which the latch arm 45 is positioned and with the guard in uppermost position, it will be seen that the arm 45 is located near the right-hand end of the notched 47, as shown in FIG. 3. The upper edge of the latch bar is equipped with a generally U-shaped notched 48 which receives the trunnion 22' when the guard is in elevated position. The mounting bracket is equipped with shoulders 50 against which the upper edges of the latch bar 26 abut to limit the upward movement of the side guard.

When it is desired to lower the side guard, the latch is actuated inwardly against the tension of spring 43, thereby to clear it from the keeper notch 44. The guard can then be moved toward the head of the bed. This movement of the side guard toward the head end of the bed rotates trunnions 22 and 22' counterclockwise through 180°, as seen in FIGS. 5 and 4. This rotation of the trunnion moves the cranks 25 and 25' to move the latch bar 26 from the position in which it is shown in FIG. 3 to the position shown in FIG. 4. As soon as latch bar 26 has been moved far enough to move the latch notch 44 out of registration with the latch 42, the latch engages the bottom portion of the bar 26 and need not be held inwardly through the remainder of the operation. Since the latch bar moves downwardly in travelling from the position shown in FIG. 3 to the position shown in FIG. 4, the member 20 of the mounting bracket is provided with slots 51 located in its lower wall to provide necessary clearance for the bottom edge of the latch bar. When the safety side is in its lowermost position, as shown in FIG. 4, trunnion 22 is disposed in the notch 49, and latch arm 45 is located at the left-hand end of clearance notch 47. The upper edge of the latch bar 26 abuts against the shoulders 50 to limit downward movement of the safety side. Gravity will hold the safety side in its lowermost position.

As will be seen in FIGS. 1 and 2, the portions 11 and 12 of the side guard are disposed parallel to rail 18 in all positions of the guard. The crank arm and link arrangement maintains the portions parallel to the rail during movements of the guard. When the guard is in lowered position, portion 11 is approximately aligned with rail 18, and the guard does not interfere with making the bed.

As will be seen best in FIGS. 3 and 7, the upper portions of the back members 21 engage the rail 18 of the mattress frame. The upper portion of front member engages the upper portions of members 21, and is secured thereto by spot welding. The bottom portions of members 21 are welded to the flange on front member 20.

As will be seen best in FIGS. 3 and 6, the center portion of front member 20, between members 21, extends into the plane of rail engaging portions of members 21 so as to engage the rail 18. Rivets 55 stiffen the center portion of member 20 which extends upwardly and terminates in bent over portion 56 through which clamp screw 37 extends.

The safety guard shown in FIGS. 3 and 4 is located on the left side of a patient in the bed. It will be noted that the center of the bracket 19 is open between the back members 21, and to prevent the boltholes from coming into contact with the mechanisms in the bracket, a cover 57 is attached to the bracket by screws threaded into members 21. It will also be noted that when the guard is in upper position, the cranks 25 and 25' extend from the trunnions 22 and 22', towards the head end of the bed. The keeper notch 44 in the latch bar is offset from the center of the latch bar towards the foot end of the bed a distance equal to the distance between the centers of the trunnions and the pivotal connections of the latch bar thereto.

The length of the clearance notch 47 is slightly greater than the width of latch arm 45, and is centered on the center of the latch bar 26. The arm is positioned in the notch adjacent the foot end thereof when the guard is in elevated position and adjacent the head end thereof when the guard is in lowered position.

The safety side of the present invention is provided in a right-hand guard, as shown in FIG. 1, and a lefthand guard, as shown in FIGS. 3 and 4. In both instances the cranks 25 and 25' extend towards the direction that the guard is to move from elevated to lowered position. Guards mounted upon the head section of the mattress frame are moved towards the head end of the bed when moved from elevated to lowered position. A view of a right-hand guard similar to the view of the left-hand guard shown in FIG. 3 would have cranks 25 and 25' extending to the right of the trunnions and the latch bar would be turned end to end from the position shown in FIG. 3.

In certain instances guards are installed at the foot end of a bed as well as at the head end thereof. Foot end guards are moved towards the foot end of the bed to lower the guard from elevated to lowered position.

The side guard 10 may be made of anodized aluminum or chrome plated steel, if desired, and the links and mounting bracket finished by painting or plating, as desired. A bed with right and left side guards installed with sufficient spacing to permit the bed to be moved through the door leading out of the patient's room or ward should such movement become necessary.

What is claimed is:

1. A safety side guard for hospital beds comprising:
   (1) a generally rectangular side guard having straight upper and lower portions joined together by arcuate end portions;
   (2) vertical bars fixed to and extending between said straight portions;
   (3) a mounting bracket clamped upon a rail of the mattress supporting frame of the bed;
   (4) a pair of trunnions journalinned in said bracket;
   (5) a link fixed upon each trunnion and pivotally connected to one of said vertical bars;
   (6) a crank fixed upon each trunnion;
   (7) a latch bar pivotally connected to and extending between said cranks;
   (8) shoulder means on said bracket engaged by said latch bar limit upward and downward movements of said side guard;
   (9) a keeper notch in the lower edge of said latch bar;
   (10) and a spring pressed latch mounted in said bracket to engage said keeper notch to secure the guard in its uppermost position.

2. A safety side as specified in claim 1 in which the vertical bars are located equidistant from the centers of the upper and lower straight portions.

3. A safety side as specified in claim 1 in which the mounting bracket consists of a front member and a pair of back members fixed thereto adjacent the ends of the front member.

4. A safety side as specified in claim 3 in which the back members are shorter than one half the length of the front member to provide a space between said back members.

5. A safety side as specified in claim 4 in which each member has a lower portion spaced away from the front member to provide a cavity within the bracket.

6. A safety side as specified in claim 5 in which there are aligned holes in the lower portions of the front and back members in each of which holes low friction bushings are disposed to journal the trunnions in the bracket.

7. A safety side as specified in claim 6 in which each trunnion carries a crank hub fixed thereto in the cavity in the bracket to which hub the crank is fixed to receive the end of the latch bar pivotally connected thereto.

8. A safety side as specified in claim 1 in which the keeper notch in the latch bar is offset from the center of
the bar toward the foot end of the bed a distance equal to
the distance between the centers of the trunnions and the
pivotal connections of the bar to the cranks.

9. A safety side as specified in claim 1 in which the latch
includes a latch arm that extends through an opening in
the front member and terminates in a latch ear accessible
to an attendant to operate the latch.

10. A safety side as specified in claim 9 in which the
latch bar includes a clearance notch that is twice as long
as the width of the latch and is centered on the center
of the bar.