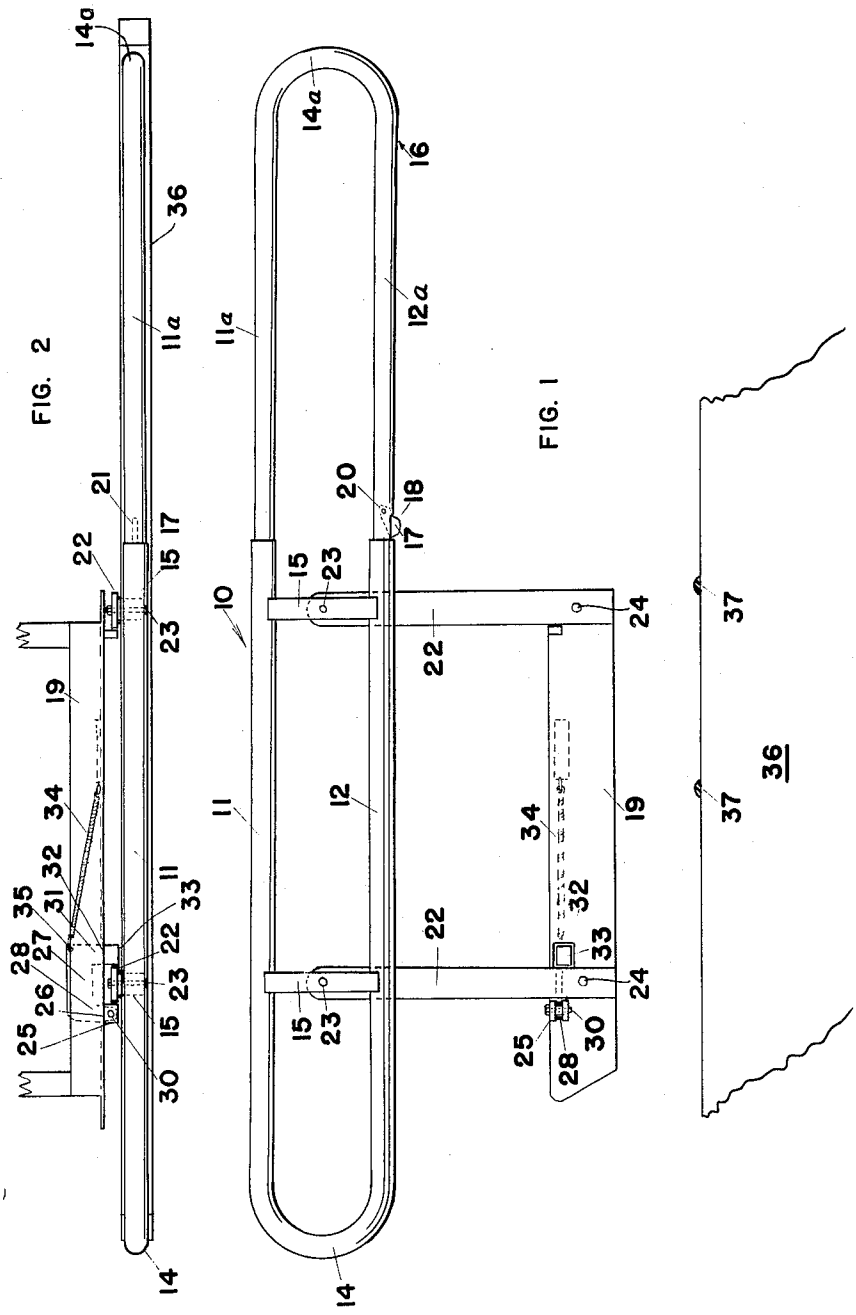
Nov. 30, 1965 T. NELSON 3,220,024

BED SIDE GUARD RAIL

Filed Aug. 2, 1963 3 Sheets-Sheet 1



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BED SIDE GUARD RAIL

Filed Aug. 2, 1963 3 Sheets-Sheet 2

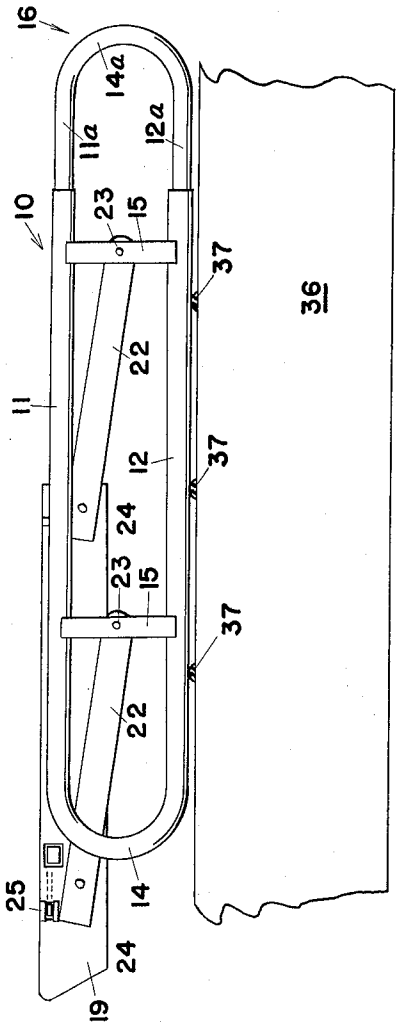

FIG. 3

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Nov. 30, 1965 T. NELSON 3,220,024

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Filed Aug. 2, 1963 3 Sheets-Sheet 3

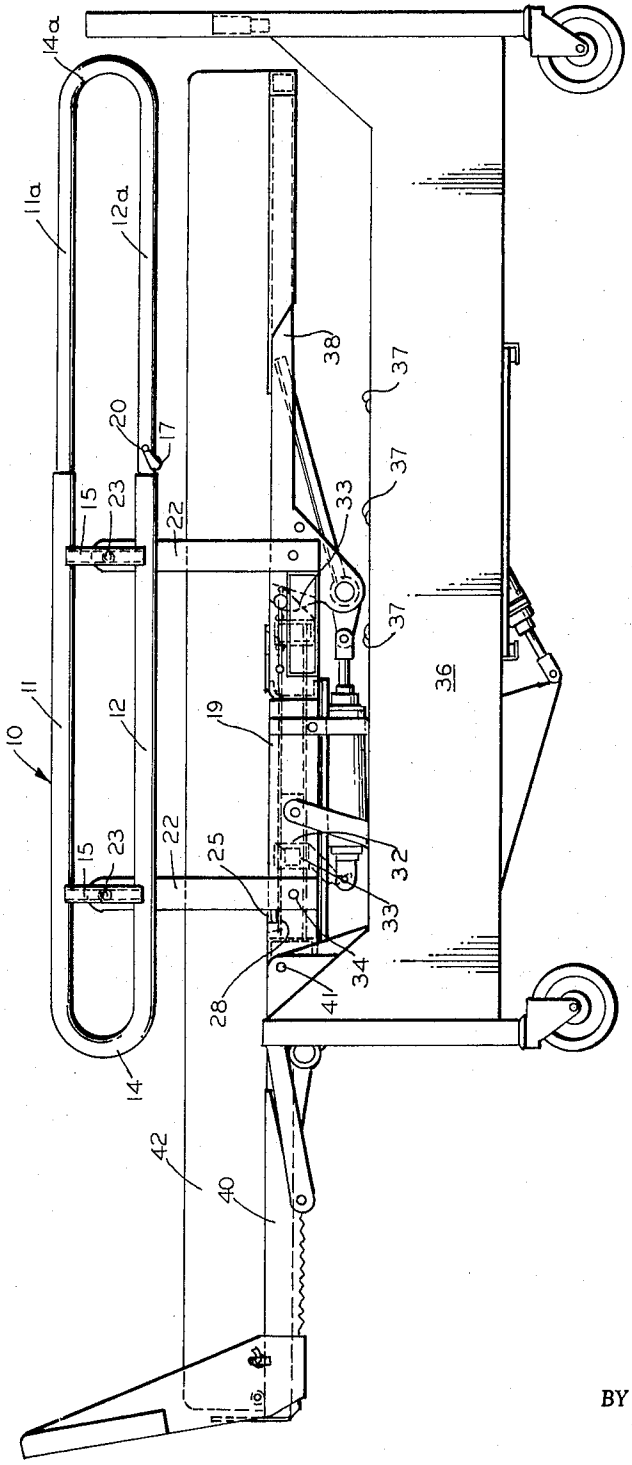

FIG_4

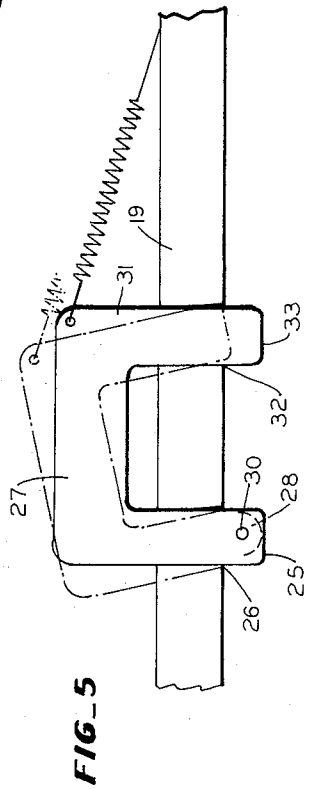

FIG_5

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BED SIDE GUARD RAIL

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6 Claims. (Cl. 5—331)

This invention relates generally to side guards for beds where such protection is needed for children or elderly people, and more specifically to a bed side guard rail construction which is strong, versatile and simple to operate.

Bed side guards are useful for many purposes and are necessary in hospitals, rest homes or the like, where it is required to prevent accidents and injuries resulting from a patient falling out of bed, and where it is necessary to provide a barrier to contain a violent patient, as for example, a paraplegic type patient who is subject to involuntary muscular spasms of a violent nature and uncontrolled kicking. However, such bed side guard rails have heretofore been bulky and difficult to operate and were designed without regard to the psychological effect upon a patient who is confined to his bed during his waking hours. Some side guard rails have been provided in the form of an accessory that can be attached to the bed frame or between the foot and head posts, when needed, which necessitated the complete removal of the side guard when its use was not required. Not only are such guard rails difficult to position in proper holding, but they require a place of storage when not in use. The consequence of this is they are not readily available when needed.

Other types of side guards in present use are raised or lowered when attached to the bed, but due to their size and construction extended beyond the width of the bed which necessitates their removal from the bed when the bed is to be moved through a doorway of standard width. In addition, the bulky and awkward side guards always seem to interfere with the convenient administering to a patient by a doctor or a nurse. Further, the manner of attachment and positioning made the making of the bed or the changing of linen a rather difficult and tedious operation. The magnitude of even this operation can be appreciated by multiplying the number of beds and the number of changes per day for each bed, by the extra effort required in the use of the present guard rails.

Therefore, it is an object of the present invention to provide a bed side guard rail construction which is strong, trustworthy, versatile and extremely simple to operate.

It is another object of the present invention to provide a bed side guard rail which is a permanent part of the bed and is easily moved between a raised and a lowered position without inconvenience or interference in any position.

A further object of the present invention is to provide a bed side guard which does not extend beyond the limits of the width of the bed.

It is another object of the present invention to provide a bed side guard which is permanently attached to the bed and may be lowered by the press of a latch which can be operated by one's knees if the hands are full, to a position below the level of the mattress to facilitate making the bed and changing the bed linen and be completely out of the way when not in use and yet is instantly available when needed.

Yet another object of the present invention is to provide a bed side guard rail which is automatically locked in position when moved to the raised position so that it will not inadvertently become disengaged or subject to collapse by the failure to lock the same in the operative position.

A still further object of the present invention is to provide a bed side guard having extensible arm portions providing a range of lengths to accommodate various purposes and conditions.

And yet another object of the present invention is to provide a bed side guard rail that can be shortened so as to avoid an unpleasant psychological effect upon the confined patient.

It is a still further object of the present invention to provide a side guard for a bed comprised of articulated sections which are movable relative to each other and to the bed frame, wherein the side guard does not interfere with any movement of the sections and is adapted for use when the bed sections are in any of the adjusted positions.

Another important advantage is that the guard rail of the present invention is mounted on the movable mattress support, and not on the bed frame, so that it moves with the mattress support to any position which is assumed and is therefore always in the useful position.

Further objects are to provide a construction of maximum simplicity, economy and ease of assembly and disassembly, also such further objects, advantages and capabilities as will fully appear and as are inherently possessed by the device and invention described herein.

The invention further resides in the combination, construction and arrangement of parts illustrated in the accompanying drawings, and while there is shown therein a preferred embodiment thereof, it is to be understood that the same is illustrative of the invention and that the invention is capable of modification and change and comprehends other details of construction without departing from the spirit thereof or the scope of the appended claims.

In the drawings:

FIGURE 1 is a side view showing the side guard rail in the raised position with the telescopically held tube section fully extended toward the head and locked in position;

FIGURE 2 is a top plan view of the bed side guard rail shown in FIGURE 1;

FIGURE 3 is a side view showing the bed side guard rail in the lowered position with the telescopically held tube section returned to the retracted position;

FIGURE 4 is a side elevational view of a bed showing the longitudinal side rails and a separate mattress support having a head section, seat section and foot section mounted on said side rails and between the same for movement within the confines of the side rails; and

FIGURE 5 is a plan view in detail and on a larger scale of the locking and release means for the side rails.

Referring now more particularly to the drawings in which like reference numerals indicate like parts in the several views, there is indicated generally at **10** a guard rail, one for each side of the hospital bed, comprising a tubular elongated U-shaped body having upper and lower portions **11** and **12** and closed with a semicircular end **14** connecting the sides at the foot end. A tubular elongated portion **16** having a slightly smaller diameter upper and lower longitudinally portions **11***a* and **12***a* respectively with a semicircular closed end **14***a* connecting the two, is mounted slidably within the tubular members **11** and **12**. When the tubular portion **16** is in the fully extended position as shown in FIGURE 1, the guard rail is in the position normally employed during the night hours. During the daytime, unless there is a special need, the guards are retracted to the position shown in FIGURE 3.

With reference to FIGURE 4 it will be observed that the bed frame includes side rails **36** which have a thickness as shown in FIGURE 2. When the side rails are made of metal the thickness is represented by inwardly directed flanges at the top and bottom of each, and the outer face

in any event is substantially indicative of the maximum width of the bed. FIGURE 4 also shows a mattress support comprising a plurality of sections pivotally movable with respect to each other and which as a unit are supported on the side rails **36** and between them on pivots **41** for movement within the confines between the two. The separate mattress support has a head section **38**, a middle or seat section **19** and a foot section **40**. The mattress is indicated as **42**. For a clearer understanding of the action of these sections, reference is made to Patent No. 3,149, 349 which issued September 22, 1964.

The lock **17** prevents the member **16** from being inadvertently returned to the retracted position shown in FIGURE 3. The lock **17** is a blade member having a cam surface **18** at one end and pivotally mounted within the tube **12***a* by the pivot pin **20** at the other end. A slot **21** is provided in the bottom of tube **12***a* so that the blade will fall therethrough by gravity and provide a stop against the member **16** being pushed in inadvertently. It is released by pressing the blade **17** upward with a finger and pushing member **16** inwardly.

The guard rail **10** is made into a rigid sturdy unit by identical spacer members **15** secured between the upper and lower tubular portions **11** and **12**. The spacer members are slightly wider than the diameter of the tubing in order to give clearance for the pivotal movement with respect to the parallel vertical supports **22**.

Each guard rail **10** is pivotally mounted on two identical supports **22** by pivot pins **23** which pass through the spacer members **15**. The two support members **22** are in turn pivotally mounted on the movable middle or seat section **19** of the mattress support, by pivot pins **24** so the structure maintains a parallelogram attitude as it is pivotally raised and lowered in a vertical plane about the four pivot pins **23** and **24**. The support members **22** are positioned on the inside of the guard rails **10** so that they will swing within the space between the mattress support **19** and the inner face of the side rails **36**. It will be observed that the guard rail structure **10** being pivotally mounted on and incorporating the middle or seat section **19** of a movable mattress support as a part of the movable parallelogram, always moves with it regardless of the attitude of the seat section **19** or the position of the guard rail.

To be certain of the vertical or operative position of the guard rail **10**, a stop **25** is provided. The stop **25** consists of two spaced pieces secured to the side member of the seat section **19**. These spaced pieces project outwardly a sufficient distance to prevent further counter-clockwise movement of the support **22** beyond the vertical, but not far enough to interfere with the free movement as it is moved from operative to inoperative position or vice versa. Between the two spaced stop pieces **25** is a slot **26** through the side member of the seat section **19**. A C-shaped lock **27** is provided to hold the side rail assembly in the vertical position shown in FIGURE 1. One end **28** of C-shaped lock **27** reaches through the slot **26** provided therefore in the middle section **19** of a movable mattress support, is pivotally mounted in the space between the two stop members **25** by pivot pin **30**. The other arm **31** of lock **27** reaches through a suitable opening **32** provided therefor in the middle section of a movable mattress support **19**. The arm **31** extends through the member **19** and projects outwardly approximately the same distance as the stop **25**. The arm **31** has a turned down tab portion **33** which acts as a release button. The arm **31** is so spaced from the stop **25** that together they hold member **22** firmly and positively in an upright position therebetween. In order to make the locking assembly releasable and to provide clearance for pivotal movement of the guard rail **10**, a spring **34** is attached to the middle section of the movable mattress support **19** on the inner side thereof, with the other end attached to lock **27**, offset as at **35**. The spring is biased to maintain the lock in the operative position at all times and provides a tangential component of tension to securely maintain support **22** in the upright position until intentionally released and held open.

All of which is shown in detail in FIGURE 5 where the locked position is shown in full lines and the momentary release position is shown in broken lines.

The guard rail can be easily unlocked and placed in the inoperative position shown in FIGURE 3, by depressing the face **33** of arm **31** with a finger, or even a knee, and pivotally moving the guard rail **10** clockwise, whereby guard rail **10** is moved to the inoperative position so that tubular member **12** comes to rest upon bumpers **37** mounted on the top flanges of side rails **36** of the bed, all as shown in FIGURE 3 and lie flush in substantially the same vertical plane. Since the upper tubular portion **11** of guard rail **10** is well below the top edge of the seat section **19**, (as shown in FIGURE 3) it is therefore clear of the mattress which rests thereon. It is to be further observed that even when the bed side guard rail **10** is in the down position, it follows the motion of the middle section of the mattress support and is ready for use regardless of the attitude of the middle section of the mattress support.

It will be observed that the objectives all are accomplished by the structure disclosed.

I claim:

1. Bed side guard rails, a bed having a pair of side rails with inwardly directed top flanges, said side rails defining substantially the maximum width of the bed, a separate mattress support of movable sections including a movable seat section, all of said sections being supported as a unit on said side rails and movable within the limits of said side rails, a pair of side guard rails one at either side of the bed and each of said guard rails comprising a first tubular U-shaped member, a second tubular U-shaped portion of slightly smaller diameter slidably mounted within the legs of the first U-shaped member at the open ends thereof, parallel spacer members secured between the legs of said first U-shaped member to form a rigid structure, spaced mounting supports the top end of each being pivotally mounted on the spacer members of said guard and the lower other end of each being permanently and pivotally mounted on the movable mattress support, said mounting supports moving in a vertical plane between said mattress support and said side rails so that the side guard rails do not extend beyond the width of the bed at any time and releasable locking means on said movable mattress support for retaining the bed side guard rails in the vertical operative position.

2. The combination of claim **1** wherein the bed side guard rails are pivotally mounted at either side on the movable mattress support and are movable therewith regardless of the attitude of the mattress support or the position of the guard rail.

3. A combination of claim **1** wherein the bed side guard rail is pivotally mounted as a parallelogram with respect to the movable mattress support and moves therewith in a vertical plane regardless of attitude.

4. Bed side guard rails for a hospital bed or the like comprising a bed having a pair of side rails with inwardly directed top flanges, said side rails defining substantially the maximum width of the bed, a separate mattress support of movable sections including a movable seat or middle section, all of said sections being supported as a unit on said side rails and movable within the limits of said side rails, a pair of side guards positioned one at either side of said bed each comprising a first U-shaped tubular member with a second U-shaped tubular member of slightly smaller diameter slidably mounted within the legs of the first U-shaped member at the open ends thereof for longitudinal adjustment, parallel vertical spacer members secured between the legs of said first U-shaped member to form a rigid structure, a pair of mounting supports for each side guard the upper end of each being pivotally mounted to said spacer members and

the lower end of each permanently and pivotally mounted on the middle seat section of the movable mattress support, said mounting supports moving in a vertical plane between said mattress support and said side rails so that the guard rails do not extend beyond the width of said bed at any time and releasable locking means for retaining said guard rail in the vertical operative position.

5. The bed side guard rail of claim 4 wherein it is pivotally mounted on the movable middle section of the mattress support, as a parallelogram for movement in a vertical plane.

6. The bed side guard of claim 4 pivotally mounted as a parallelogram on the movable middle section of a movable mattress support and movable therewith regardless of position at all attitudes.

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