Aug. 11, 1953 R. C. CHAFFIN ET AL 2,648,075

FOLDABLE FENCE ATTACHMENT FOR HOSPITAL BEDS AND THE LIKE

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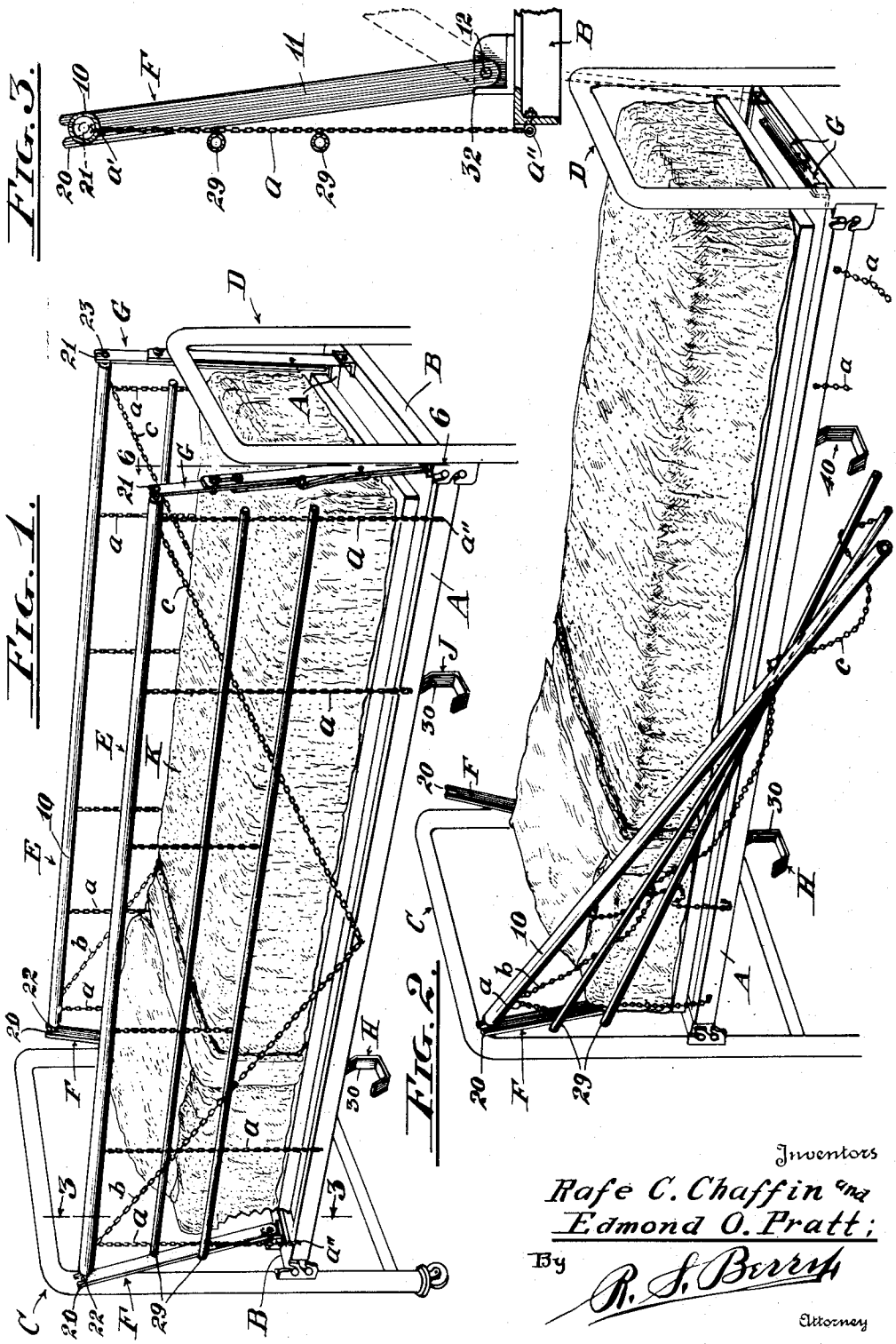


FIG. 3.

FIG. 1.

FIG. 2.

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FIG. 7.

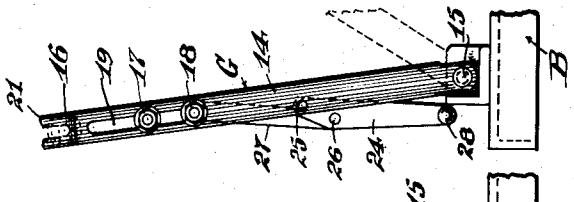


FIG. 6.

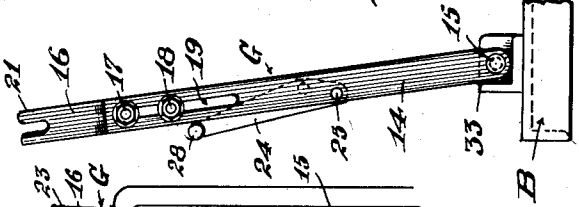


FIG. 4.

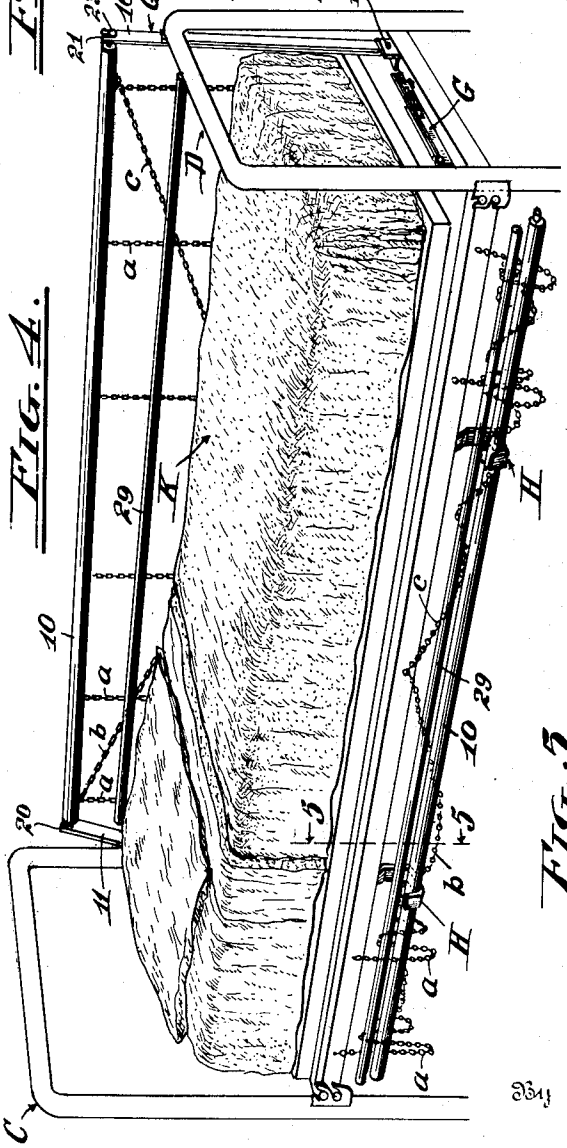


FIG. 8.

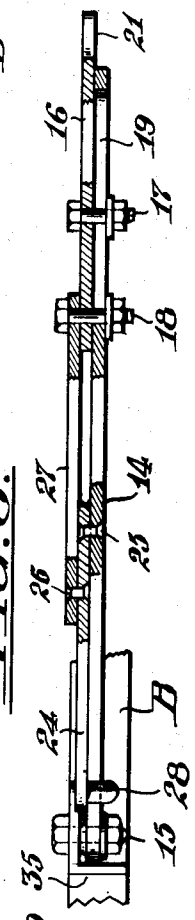
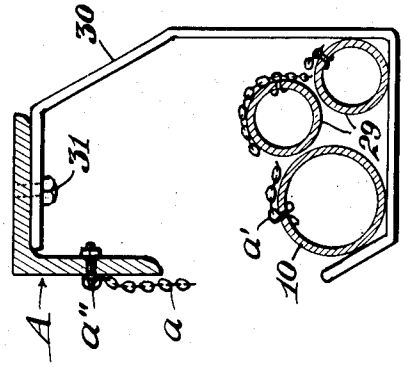


FIG. 5.



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FOLDABLE FENCE ATTACHMENT FOR HOSPITAL BEDS AND THE LIKE

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FIG. 10.

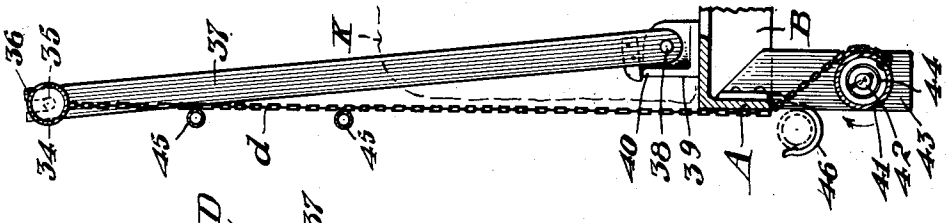
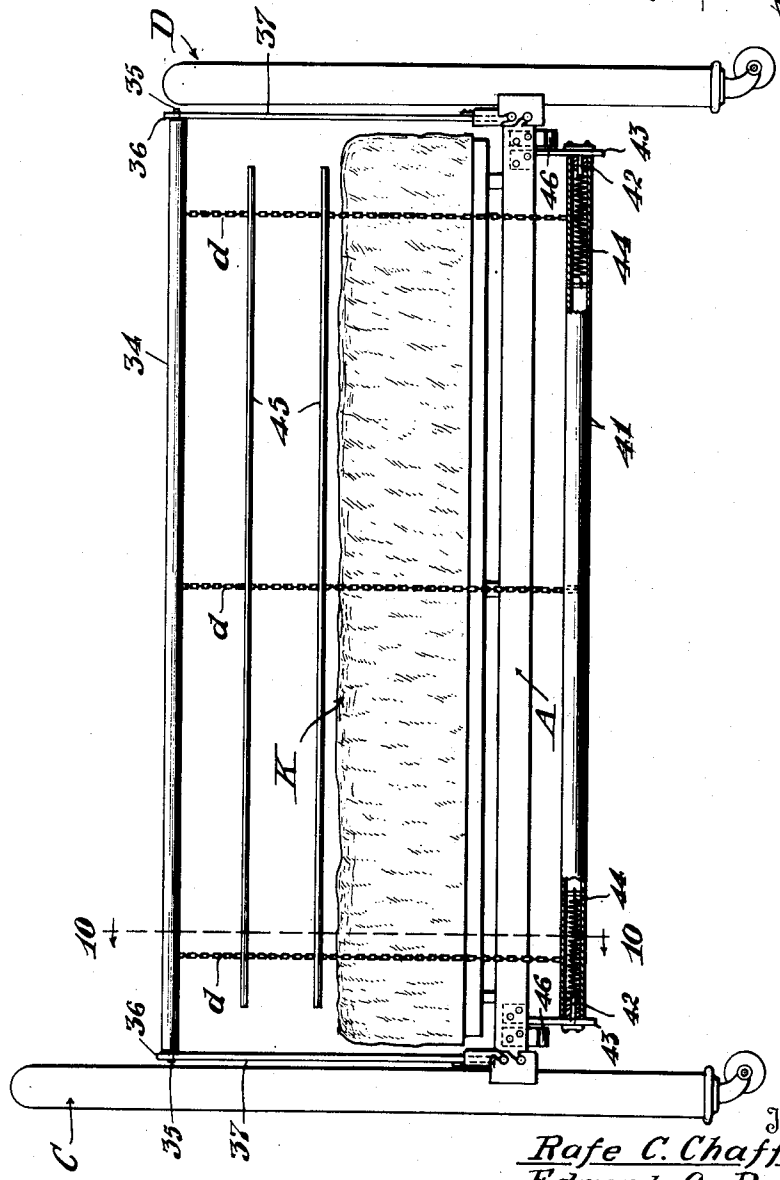


FIG. 9.



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FOLDABLE FENCE ATTACHMENT FOR HOSPITAL BEDS AND THE LIKE

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Application May 31, 1950, Serial No. 165,234

19 Claims. (Cl. 5—331)

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This invention relates to a fence attachment for beds and particularly pertains to an enclosure adapted to be positioned to extend along the open side of a bed as a guard against unrestricted egress from the bed.

The primary object of the invention is to provide a fence or enclosure of the above character which may be affixed to a bed so as to form a component part thereof and which is collapsible and foldable while attached to the bed, and adapted to be folded to form a compact bundle and to be disposed in an out-of-the-way yet readily accessible position on the bed when not in use.

Another object is to provide a guard rail for a bed which when installed on a bed may be easily and quickly assembled in its operative position and likewise easily and quickly knocked-down or collapsed and folded away on the bed when occasion requires.

Another object is to provide a construction and arrangement in a fence or guard rail for attachment to a bed, such that when in either its extended operative position or in its collapsed folded position may be disposed wholly within the confines of the bed so as not to interfere with passing of the bed through door-ways or other openings large enough to admit the bed.

Another object is to provide a device of the above character which embodies a series of flexibly connected fence rails, together with a support therefore attachable to a bed, in which means are provided for stretching and holding the structure taut when disposed in its operating position.

Another object is to provide a foldable side fence for beds embodying end posts and a rail assembly detachably engageable with the posts, in which the rail assembly may be folded into a space beneath the bed and the end posts folded into spaces extending between the ends of the bed mattress and the head and foot pieces of the bed.

Another object is to provide a means for supporting the bundled rail assembly in a readily accessible position beneath the bed to which it is applied.

A further object is to provide a foldable side enclosure for beds which is light in weight so as to facilitate handling thereof but which is strong and durable, and which when assembled in its operative position will be securely held against accidental collapse.

With the foregoing objects in view together with such other objects and advantages as may subsequently appear, the invention resides in the parts and in the combination, construction and arrangement of parts hereinafter described and claimed, and illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a perspective view of a bed showing a fence as applied to each side thereof and illus-

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trating the fences in their extended operative positions:

Fig. 2 is a perspective view of a fragmentary portion of a bed showing one of the side fences removed and the other side fence in a partly collapsed position:

Fig. 3 is a view in section and elevation taken on the line 3—3 of Fig. 1 as seen in the direction indicated by the arrows:

Fig. 4 is a perspective view of a bed showing one of the side fences in its operative position and depicting the other side fence as collapsed and carried beneath the bed:

Fig. 5 is an enlarged cross section taken on the line 5—5 of Fig. 4 showing the manner of supporting the collapsed or folded fence rail assembly beneath the bed side rail:

Fig. 6 is a view in elevation taken on the line 6—6 of Fig. 1 as seen in the direction indicated by the arrows showing an extendable fence post equipped with a stretcher as disposed in its extended position:

Fig. 7 is a view in elevation of the post shown in Fig. 6 showing the post and its stretcher in its retracted position: and

Fig. 8 is a plan view of the post illustrated in Fig. 7 with portions broken away, showing it in its folded position:

Fig. 9 is a view of a modified form of the invention showing the fence in its assembled operative position: and

Fig. 10 is a detail view in section and elevation as seen on the line 10—10 of Fig. 9:

The invention is here shown as applied to a conventional metallic hospital bed embodying a frame including angle iron side rails A and end rails B carried on head and foot bed frame members C and D in the usual manner. However it will be understood that the invention is adaptable for application to any other bed structure.

In carrying out the invention a side fence E is provided for either one or both sides of the bed which fence embodies a top rail 10 of a length slightly less than the distance between the adjacent faces of the bed end frames C and D and which top rail is designed to be removably mounted on end supporting members F and G carried on the bed. As here shown the supporting member F comprises a post 11 which is affixed to and projects upwardly from an end portion of the end bed rail B adjacent to the bed end frame C, the post 11 being here shown as pivotally attached to the bed rail B as by a pivot pin 12 so as to be foldable to overlie the end rail B, as indicated in Fig. 3.

The supporting member G embodies a standard 14 affixed to and projecting upwardly from one end portion of the other end rail B adjacent to the other bed frame D; the standard 14 being here shown as attached to the rail B by a pivot pin 15, whereby it may be folded to overlie the rail B when not in use. The upper end of the

standard 14 terminates in a plane below the upper end of the post 11 and is fitted with a longitudinally adjustable extension 16 which is slidably carried on the upper end portion of the standard 14 by means of a pair of spaced bolts 17 and 18 carried by the extension 16; the shanks of the bolts 17—18 projecting through a longitudinal slot 19 formed in the upper end portion of the standard 14. The upper ends of the post 11 and the extension 16 on the standard 14 are formed with upwardly opening yokes 20 and 21, respectively, which yokes are designed to receive headed studs 22 and 23 projecting from the opposite ends of the fence rail 10.

Means are provided for advancing and retracting the standard extension 16 and for holding the extension in either its advanced or retracted position which is here shown as embodying a lever arm 24 fulcrumed on a pivot pin 25 carried by the standard 14 at a point intermediate the ends thereof and which lever arm 24 is pivotally connected adjacent the pivot pin 25 by a pivot 26 to one end of a link 27 the opposite end of which is pivotally connected to the bolt 18 carried by the extension 16, as shown in Fig. 6.

The outer end of the lever arm 24 is fitted with a hand hold 28 by which it may be readily grasped and manipulated to swing it on its pivot pin 25 to thereby effect raising or lowering of the extension 16 as will be more particularly described hereinafter.

Affixed to the fence rail 10 at intervals along the length thereof is a series of flexible foldable or collapsible connections *a* here shown as comprising lengths of chain, the outer ends of which are affixed to the fence top rail 10 in any suitable fashion, being here shown as connected to the fence rail 10 by wire loops *a'* extending through the outer end links of the chains and engaging the rail 10. The other ends of the chains *a* are attached to the bed side rail A as by bolts *a''* or in any other suitable fashion.

The flexible strip connections between the fence rail 10 and the bed side rail A are here shown as embodying connections *a* disposed adjacent the ends of the rails A and 10 with other of such connections equally spaced from the end connections. Obviously any suitable number of such connections may be employed as occasion may require. Diagonal flexible connectors *b* and *c* are fastened at their lower ends to the bed rail A intermediate the ends thereof and have their outer ends fastened to the bed rail 10 at the juncture of the end connections *a* therewith; the connections *b* and *c* being here shown as comprising lengths of chain which serve when the fence is in its extended operative position to stabilize the fence structure.

Supplementing the fence rail 10 is one or more intermediate fence rails 29, here shown as two in number, which rails are arranged to extend parallel with the top rail 10 in spaced relation thereto and to each other and are affixed to and carried by the flexible connections *a*, *b* and *c* as particularly shown in Fig. 1. The fence rails 10 and 29 may be formed of any suitable material but preferably comprise lengths of metal tubing.

The fence assemblage comprising the rails 10 and 29 and the recited flexible connections is adapted to be folded into a bundle as by disposing the rails 10 and 29 alongside each other. The connections *a*, *b* and *c* will then collapse and may be looped over the rails 10 and 29. As a means for holding the bundle thus formed, a pair of stirrups H–J shaped to receive the bundle are

mounted on the bed rail A; the stirrups being here shown as embodying U-shaped members 30 suspended from the rail A and rigidly connected thereto by bolts 31. When the fence is not in use, the supports F and G are swung on their pivotal connections with the bed frame end rails to a position overlying the latter; the supports then occupying spaces extending between the ends of the bed springs and mattress and the bed end frames where they are out of the way, while the collapsed side rail assembly is supported in the stirrups H–J as before described.

In the operation of the invention, when it is desired to set up the fence in its operative position shown in Fig. 1 from its collapsed folded position shown in Fig. 3, the supports F and G are swung on their pivotal mountings to their upwardly extending positions, which movement is limited by stops 32 and 33 extending into the forward path of travel of the supports: the stops being disposed to abut the post 11 and standard 14 respectively to limit forward movement thereof to a forwardly inclined position as shown in Figs. 3 and 6. The bundle of fence rails is then removed from the supports H and J whereupon the stud 22 at one end of the top fence rail 10 is positioned in the yoke 20 on the post 11 and the stud 23 on the other end of the rail 10 is positioned in the yoke 21 on the then retracted extension 16 of the standard 14 as indicated in dotted lines in Fig. 7. The flexible connections *a*, *b* and *c* will then be slack and in order to take up this slack and to render the flexible connections taut, the lever arm 24 is elevated from the position shown in Fig. 7 to its upwardly extended position shown in Fig. 6 thereby elevating the extension 16 and the end of the top rail 10 connected thereto, and thereby stretching the flexible connections to the desired taut condition. The pivotal mounting 25 of the lever 24 and the pivotal connection 26 between the lever arm and link 27 are arranged to form a toggle so that when the lever arm 24 is in its uppermost position the axis of the pivot pin 26 will be disposed slightly rearward of the vertical plane of the axis of the pivot pin 25 so as to lock the lever arm 24 against accidentally swinging outwardly and inwardly. When the parts are thus positioned the handle 28 will abut the standard 14 as shown in Fig. 6 to thereby limit rearward swinging movement of the lever arm 24.

When it is desired to collapse the fence the arm 24 is swung outwardly and downwardly by exerting an outward pull on the handle 28 on the then upper end thereof so as to lower the extension 26 into the position shown in Fig. 7. The top rail 10 may then be lifted out of engagement with the yokes 20 and 21 and assembled with the rails 29 into the bundle form and replaced in the holders H and J, as shown in Figs. 4 and 5. In disengaging the fence top rail 10 from the yoke 21 of the support G, the free end of the top rail may be lowered to the floor, leaving the other end of the rail 10 engaged with the yoke 20 of the support F. The fence will then occupy a partly collapsed position as shown in Fig. 2 in readiness to be either restored to its operative position or to be folded in its fully collapsed condition.

In the form of the invention illustrated in Figs. 9 and 10, the fence embodies a top rail 34 fitted with studs 35 projected from the ends thereof which studs are adapted to be detachably seated in yokes 36 formed on the upper ends of standards 37 carried by the end rails B of the bed frame. The standards 37 are mounted for vertical swing-

ing movement by pivots 38 mounted on upwardly extending brackets 39 and fixed to the end rails B; the standards 37 being arranged adjacent the ends of the rails B and being positionable to extend in an upwardly and forwardly inclined operative position, as shown in Fig. 10, or to overlie the end rails B in a collapsed or folded position when not in use. When in their upwardly extending positions the standards abut the stops 40 on the brackets 39 to limit their upward swinging movement to a slight forwardly inclined position.

Mounted on the side rail A of the bed frame and extending therebeneath and longitudinally thereof is a roller 41 revolubly supported on stud shafts 42 carried by depending brackets 43 affixed to the frame side rails A adjacent the ends thereof.

A series of flexible connections *d* have their ends affixed to the rail 34 and to the roller 41 and are adapted to be wound on the latter; the roller 41 being tubular and equipped interiorly thereof adjacent each of its ends with tensioned coiled springs 44 each of which has one end thereof affixed to the roller and its other end attached to the adjacent stud shaft 42, and mounted on the connections *d* are spaced parallel bars 45 disposed in spaced parallel relation to the top bar 34.

The connections *d* lead from the roller 41 forwardly over the upper portion thereof and when in their extended positions with the top rail 34 engaged by the upper ends of the standards 37, overlie the outer face of the bed side rail A and extend substantially vertical between the bed rail A and the fence top rail 34 in angular relation to the inclined standards 37 as particularly shown in Fig. 10; the springs 44 being tensioned to exert a downward stretching pull on the connections *d* thereby holding the fence taut and at the same time exerting an outward downward pull on the standards 37 thereby holding the latter firmly against the stops 40. On detaching the top rail 34 from the standards 37 and yielding to the pull of the springs 44, the roller 41 will be rotated by the springs to wind the connections *d* thereon.

Mounted on the bed side rail A adjacent the ends thereof and contiguous the hangers 43 are U-shaped brackets 46 arranged to receive the end portions of the top rails 34 as indicated in dotted lines in Fig. 10 to limit the extent of rotation of the roller 41 under the urge of the springs 44 and to support the rail 34 in a readily accessible position when the fence is wound on the roller 41 and disposed in its collapsed position.

In order that the bars 45 may be wound on the roller 41 with the connections *d* they are formed of a length shorter than the roller 41 and arranged with their ends inwardly spaced in relation to brackets 43.

The standards of the fence are of sufficient length that the upper ends thereof will project above the plane of the upper face of the bed mattress K a sufficient distance to afford a barrier along the side of a bed such as to prevent the occupant thereof from accidently rolling therefrom as well as to form an enclosure to confine the bed's occupant from easy egress from the bed.

The invention is particularly applicable for use on hospital beds as a means for enclosing the open sides of a bed to confine a patient within the bed, if need be, and yet afford ready access to the patient when required, since the recited construction of the fence admits of its being taken down and replaced with great facility. The use of the invention obviates the inconvenience and various objections to the use of non-collapsible side boards or frames commonly employed in hospitals in closing in the open sides of a bed.

While we have shown and described specific embodiments of our invention, we do not limit ourselves to the exact details of construction set forth, and the invention embraces such changes, modifications and equivalents of the parts and their formation and arrangement as come within the purview of the appended claims.

We claim:

1. In a collapsible and foldable fence for an open side of a bed having a side rail, a top fence rail positionable to extend parallel with the bed side rail, flexible foldable connections between the fence rail and the bed rail, a pair of supports on the bed for engaging and carrying the ends of the fence rail arranged to hold the latter in spaced relation to the bed side rail, and a stretcher embodied in one of said supports for rendering said flexible connections taut.

2. In a fence for an open side of a bed having a side rail, a top fence rail positionable to extend in general parallel relation to the bed rail, a series of flexible and foldable connections between said fence rail and said bed rail affixed at their ends to said rails, at least one supplemental fence rail extending between said rails and affixed to said flexible connections, a pair of supports for mounting the ends of said top rail on the bed in an elevated position, and a stretcher included in one of said supports for rendering said flexible connections taut.

3. The structure called for in claim 2 in which the flexible connections include a plurality thereof spaced apart and normally extending between the rails perpendicular thereto, and a pair of oppositely extending diagonal flexible connections leading between said bed side rail and said fence top rail and affixed thereto.

4. In a collapsible and foldable fence for an open side of a bed having a frame formed with end rails and a side rail, a pair of supports affixed to and projecting upwardly from said end rails adjacent the opposite end portions of said side rail, a fence rail adapted to be positioned to extend parallel to said side rail having end portions detachably engageable with said supports, a series of flexible connections leading between said bed side rail and said fence having their end portions affixed thereto, a stretcher embodied in one of said supports including an extension moveable longitudinally thereof with which one end of said fence rail is engageable, and means for advancing and retracting said moveable extension adapted to hold said extension either in its extended or its retracted position.

5. A fence for an open side of a bed having a frame including a side rail, comprising a plurality of fence rails positionable along side of each other in longitudinal relation, a series of flexible strip connections attached to and extending between said fence rails including lengths leading from one of said fence rails to the bed side rail and affixed to the latter, supports affixed to the bed frame adjacent to the end portions of said side rail projecting upwardly therefrom, and means for connecting the outer ends of the upper rail of said plurality of fence rails to said supports to dispose said series of fence rails and the flexible connections in an extended position.

6. The structure called for in claim 5 in which the supports are pivoted to said bed frame for swinging movement between a horizontal and an upright position.

7. The structure called for in claim 5 together with stirrups carried by said bed side rail arranged to receive the assemblage of the plurality of fence rails and their flexible connections apart from said standards.

8. The structure called for in claim 5 together with stirrups carried by said bed side rail arranged to receive the assemblage of the plurality of fence rails and their flexible connections apart from said standards; said stirrups being rigidly connected to said bed rail with a major portion thereof extending rearwardly of said bed rail.

9. In a fence for the open side of a bed having a side rail, a series of flexible strips affixed to said side rail in spaced relation to each other along the length of the rail, a plurality of fence rails affixed to and carried by said strips in spaced relation to said side rail and to each other, said fence rails including a top rail, supporting members on said bed detachably engageable with the ends of said top rail adapted to position the latter with said flexible strips extended, and a stretcher included in one of said supporting members for advancing an end portion of the top rail engaged thereby relative to said bed rail to tighten said flexible strips.

10. The structure called for in claim 9 together with oppositely extending diagonal flexible strips attached to said bed rail and to said top rail.

11. In a fence for the open side of a bed having a side rail, a series of flexible strips affixed to said side rail in spaced relation to each other along the length of the rail, a plurality of fence rails affixed to and carried by said strips in spaced relation to said side rail and to each other, said fence rail including a top rail, supporting members on said bed detachably engageable with the ends of said top rail adapted to position the latter with said flexible strips extended, said fence rails being adapted to be assembled with said flexible strips to form a compact bundle, and stirrups on said bed rail for receiving and supporting the bundle so formed.

12. In a fence attachment for a bed having a side rail, a series of flexible strips having end portions affixed to the bed side rail including a strip connected to the rail adjacent each end thereof and strips connected to the side rail intermediate the ends of the rail, a plurality of fence rails affixed to and carried by said flexible strips in spaced relation to each other and to said bed side rail and including a top rail, diagonal strips leading upwardly and outwardly from the bed side rail and affixed thereto intermediate the ends of the side rail and connecting with the top fence rail adjacent the ends thereof; said fence rails and strips being adapted to be assembled into a bundle, stirrups on said bed side rail for supporting said bundle therebeneath; said fence rails and said flexible strips being adapted to be positioned to extend upwardly from said bed side rail, supporting members on the bed for holding said fence rails and flexible strips in an extended position, and cooperative detachably engageable means for connecting the ends of said top fence rail to said supporting members.

13. In a bed, a side rail, a series of lengths of flexible foldable strips having inner and outer end portions, connections between the inner end portions of said strips and said side rail, a fence top rail, connections between the outer end portions of said strips and said fence top rail, a post on said bed adjacent one end of the side rail, a standard on said bed adjacent the other end of said side rail, said post and said standard having yokes on the outer ends of said post and standard detachably engageable with the ends of said fence top rail.

14. The structure called for in claim 13 in which the post and standard are pivotally attached to the bed to swing vertically, an end frame forming part of the bed limiting downward movement of said post and standard, and stops on the bed limiting upward swinging movement of the post and standard.

15. A collapsible fence for beds having a frame including end rails and side rails, standards on said frame, a fence top rail, means for detachably connecting the upper ends of said standards and the ends of said top rail, a roller carried by the side rails of said bed frame, flexible connections fastened to said roller and to said rail adapted to be wound on said roller, and spring means for turning said roller to wind said connections on said roller and adapted to hold said connections taut when said rail is connected to said standards.

16. The structure called for in claim 15 in which the standards are foldable to overlie the bed frame end rails.

17. In a fence for a bed having end rails and a side rail, a series of lengths of flexible members having inner and outer end portions, means on the side rail to which the inner end portions of said members are attached, a fence top rail to which the outer ends of said members are attached, standards on said end rails, means for detachably connecting the upper ends of said standards and the ends of said top rail, and means on the side rail for supporting said top rail when disconnected from said standards.

18. The structure called for in claim 17 in which the standards are pivotally connected to the end rail to swing vertically thereon; said standards being positionable to overlie the end rail when said top rail is disconnected therefrom and to extend upwardly from the end rail for connection with said top rail.

19. In a bed embodying a frame including a side rail; a series of lengths of collapsible strips having inner and outer end portions, connections between the inner end portions of said strips and said side rail, a fence top rail, connections between said fence top rail and the outer end portions of said strips, said fence top rail and said collapsible strips being adapted to be collectively positioned to extend upwardly from said bed side rail, and supporting members on the bed for releasably holding said fence rail in an elevated position relative to the bed side rail.

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