(No Model.) 4 Sheets—Sheet 1.

A. M. ECKSTROM.

WARDROBE BEDSTEAD.

No. 460,468. Patented Sept. 29, 1891.

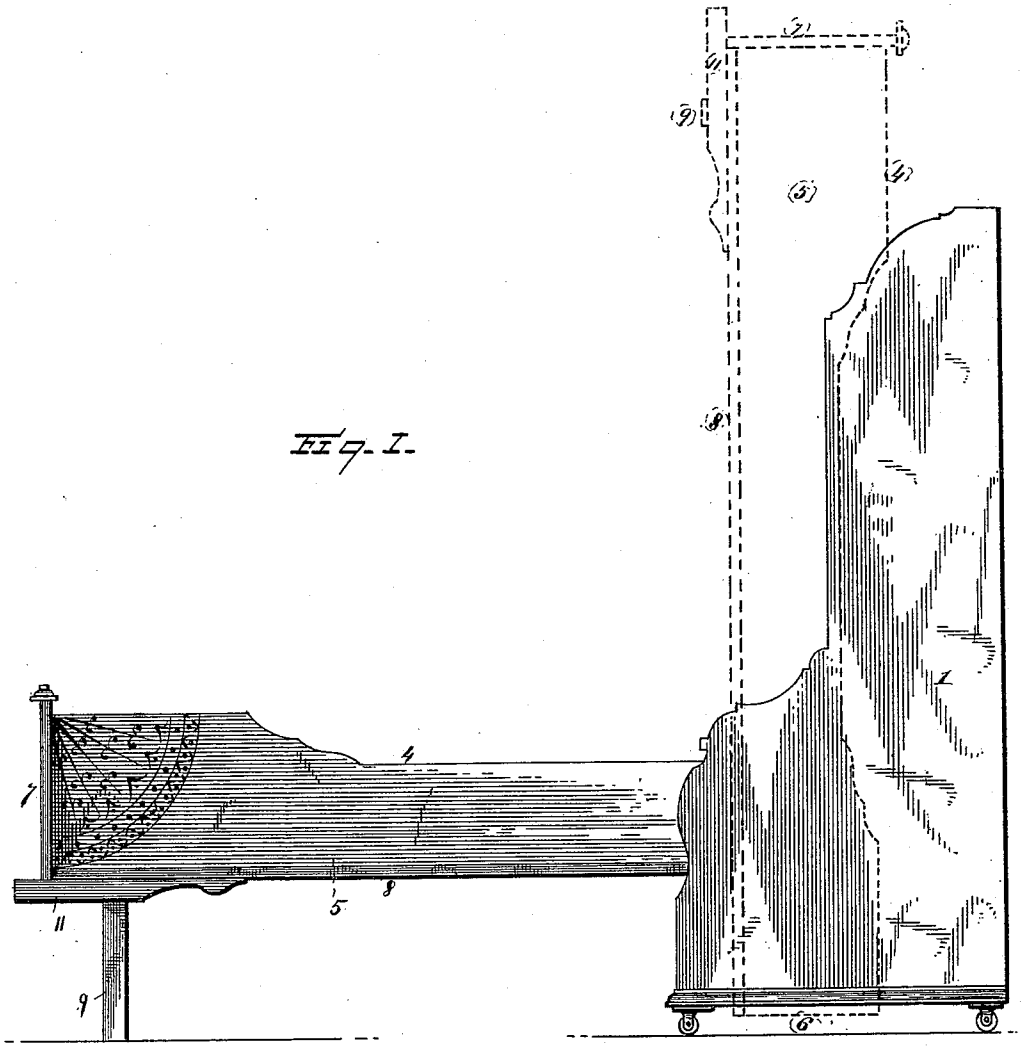

Fig. 1.

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Geo. E. Caum.

Inventor:
Andrew M. Eckstrom.
By Knight Bro's.
Atty's.

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(No Model.) 4 Sheets—Sheet 2.

A. M. ECKSTROM.

WARDROBE BEDSTEAD.

No. 460,468. Patented Sept. 29, 1891.

Fig. II.

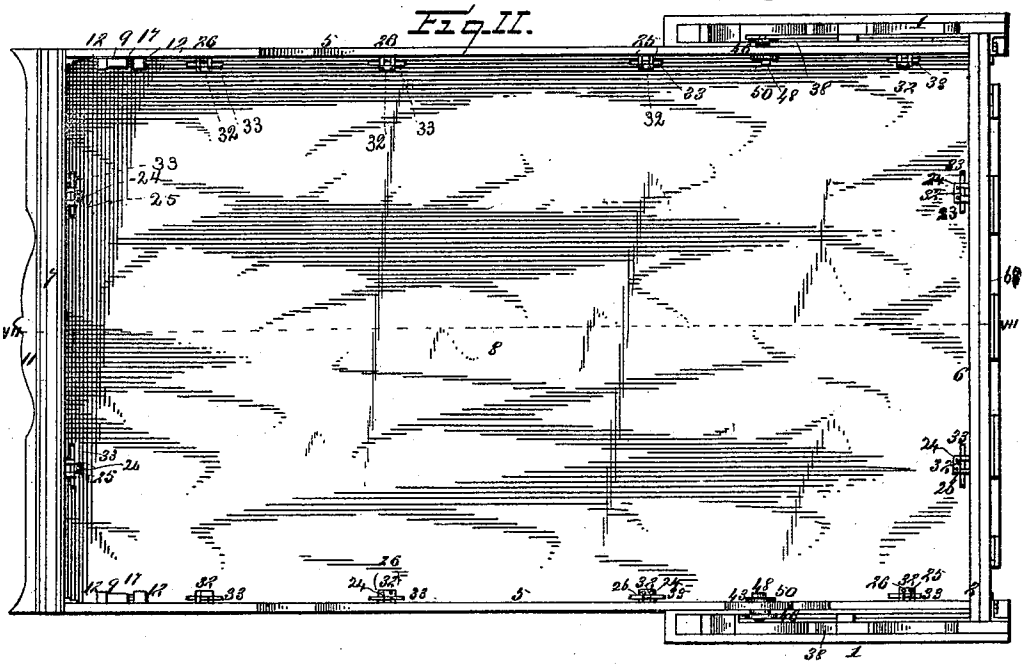


Fig. III.

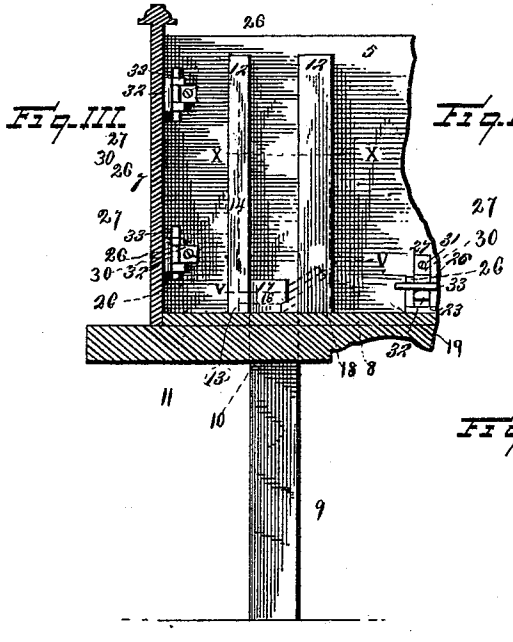


Fig. IV.

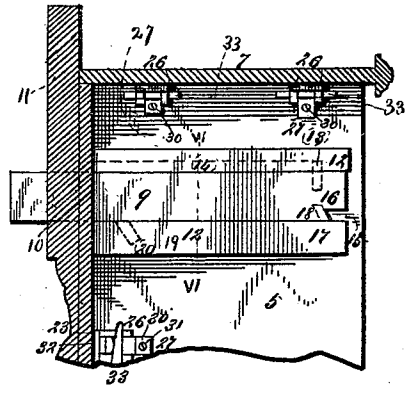


Fig. V.

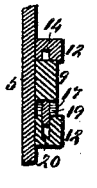
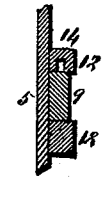


Fig. VI.



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(No Model.) 4 Sheets—Sheet 3.

A. M. ECKSTROM.

WARDROBE BEDSTEAD.

No. 460,468. Patented Sept. 29, 1891.

Fig. VIII.

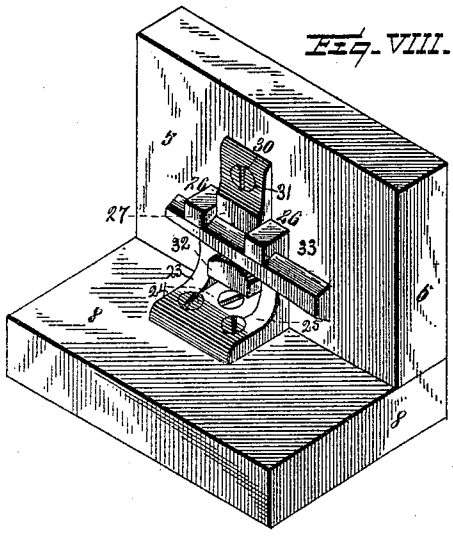


Fig. VII.

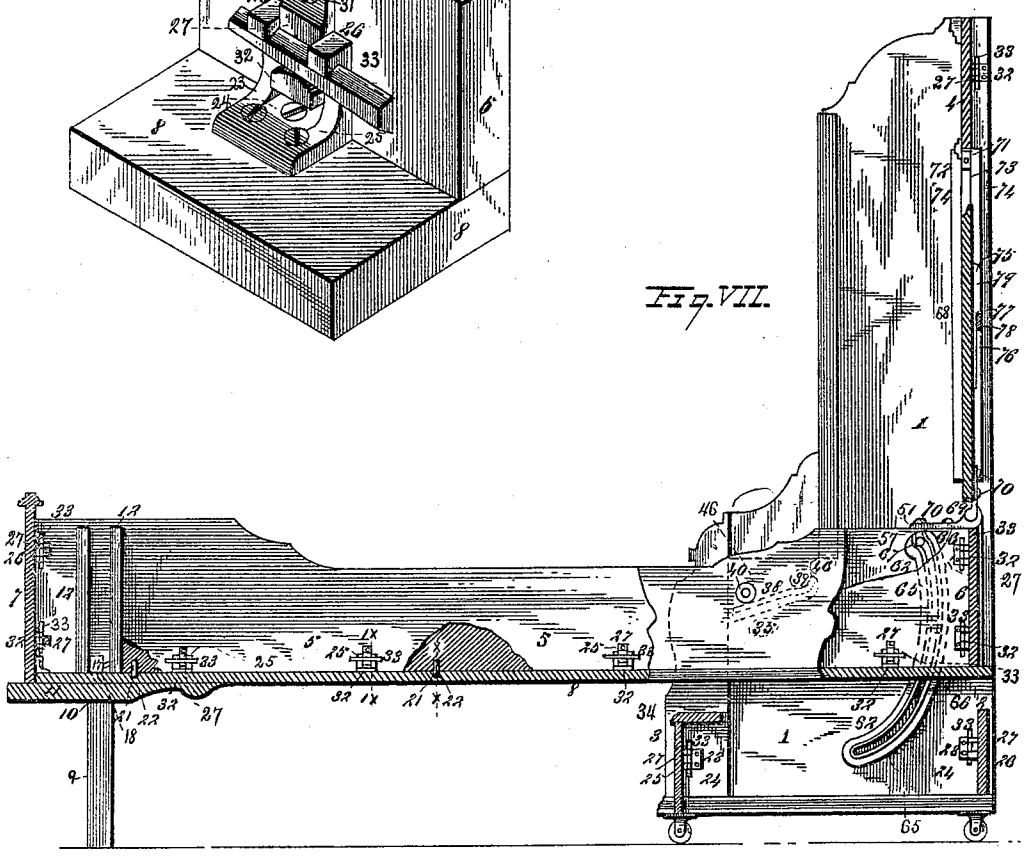


Fig. IX.

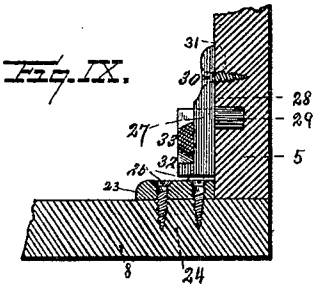
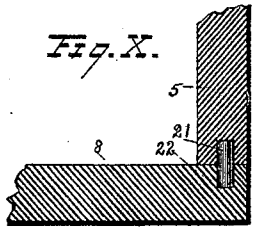


Fig. X.



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(No Model.) 4 Sheets—Sheet 4.

A. M. ECKSTROM.

WARDROBE BEDSTEAD.

No. 460,468. Patented Sept. 29, 1891.

Fig. XI.

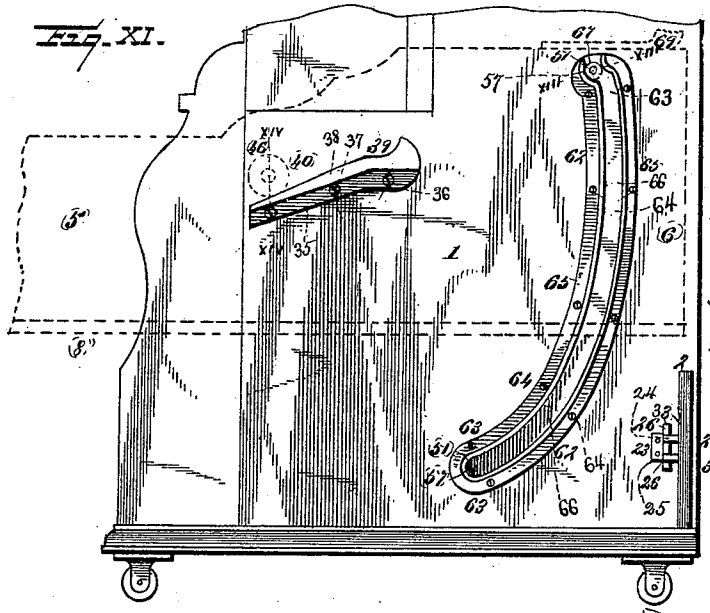


Fig. XIII.

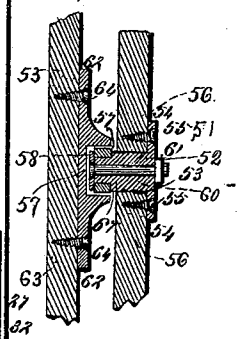


Fig. XII.

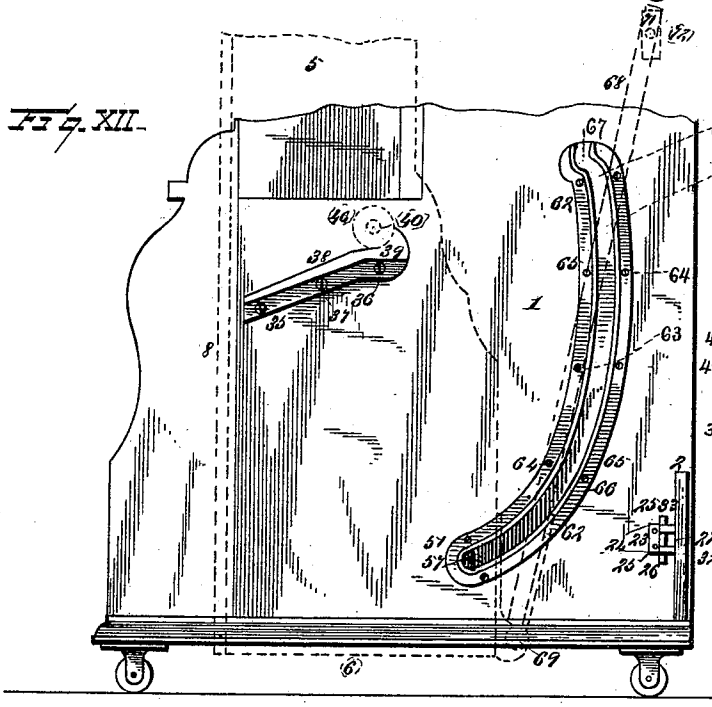
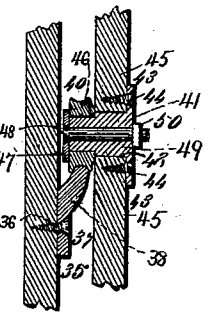


Fig. XIV.



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UNITED STATES PATENT OFFICE.

ANDREW M. ECKSTROM, OF ST. LOUIS, MISSOURI.

WARDROBE-BEDSTEAD.

SPECIFICATION forming part of Letters Patent No. 460,468, dated September 29, 1891.

Application filed February 12, 1890. Serial No. 340,092. (No model.)

To all whom it may concern:

Be it known that I, ANDREW M. ECKSTROM, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Wardrobe-Bedsteads, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a wardrobe-bedstead or knockdown folding bed that self-adjusts its balance-bearing in folding and unfolding and self-locks, respectively, both its closed and open adjustments; and the invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a side view of the folding bed, shown unfolded in full lines and the bed folded in broken lines. Fig. II is a top view in its unfolded position and shows the clamping-brackets of its knockdown parts. Fig. III is an enlarged detail vertical section and shows one of the self-adjusting drop-legs at the foot of the bedstead in its self-locked operative position. Fig. IV is a like view and shows the leg retired within its housing when the bed is folded. Fig. V is a transverse section taken on the angle-line V V, Fig. III, and shows the drop-leg locked in its extended position. Fig. VI is a like view taken on line VI VI, Fig. IV, and shows the leg in its retired position. Fig. VII is a vertical section taken on line VII VII, Fig. II, and shows the bed unfolded and locked in that position by the traveler lock-pin in the forward curved locking-seat at the head of the guide-slot and the pivot-pin and traveler-wheel in its lower position at the forward end of its inclined track. It also shows the self-adjusting loaded and sliding back-board, which constitutes a counterpoise to the bed, shown in its vertical position when the bed is unfolded. Fig. VIII is an enlarged perspective view and shows two of the adjoining individual knockdown parts of the bed, &c., and the clamp-bracket that locks their attachment. Fig. IX is an enlarged detail vertical section of the knockdown side and bottom boards taken on line IX IX, Fig. VII, and shows the locked adjustment of the clamping-bracket that secures them together. Fig. X is a like enlarged detail vertical section taken on line X X, Fig. VII, and shows one of the metal dowel-pins that are fast-seated in one of the corresponding knockdown parts and are loosely seated in the registering position of its conjunctive part. Fig. XI is an enlarged detail inside view of the casing to which the folding bed is attached, the bed being shown in broken lines, with the pivot-pin of its traveler-wheel in its corresponding forward position at the lower end of the inclined track, the traveler lock-pin being shown in full lines in its then position in its curvilinear lock-seat at the head of the guide-slot. Fig. XII is a like view and shows the bed in broken lines in its folded position, the traveler-pin being now shown at the lower terminal of the guideway and the pivot-pin of the traveler-wheel shown in broken lines, now seated within its locking-recess at the upper end of the inclined track, where it locks the bed in its folded position. It also shows in broken lines the depressed angular position of the loaded counterpoise sliding back-board when the bed is folded. Fig. XIII is an enlarged detail angle-section taken on line XIII XIII, Fig. XI, and shows the journal-bearing attachment of the traveler-pin and its anti-friction roller; and Fig. XIV is an enlarged detail vertical section taken on line XIV XIV, Fig. XI, and shows the journal-bearings of the pivot-pin of the traveler-wheel on its inclined track.

Referring to the drawings, 1 represents the side boards of the casing; 2, the back-base tie-rail; 3, the front-base tie-rail, and 4 the back-head tie-rail, which rails hold said side boards together. 34 is the cap-piece that surmounts said front rail and stiffens the coupling of the casing, which casing carries the self-adjusting journal-bearings and self-locking devices of the folding bed.

5 represents the sides, 6 the head, 7 the foot, and 8 the bottom, of the folding bed.

9 represents the sliding legs at or near the foot of the bed, which legs slide through the mortises 10, that pass through the cornice-board 11 and through the bottom of the bed-frame, and when retired are slid between the cleats 12. The dowel-tenons 13, that are fast-seated in said legs near their upper ends, pro-

ject from the forward edges of said legs, and their extending ends slide in the channel-grooves 14 in the cleats along which said edges of the legs slide. The legs when sliding are thus kept from divergence from their prepared slideway between the cleats.

15 represents inset locking-recesses in the ends of the legs, from which the timber is cut in the reverse edges to that in which is located the dowel-tenons at the tops of the legs. The inner end of each of said recesses 15 is beveled inwardly to form an incline 18. 16 is a mortise at the inner side of the recess 15, into which the incline is continued for securely holding the metal slideway-block 17 on the incline.

19 represents self-locking metal sliding bolts that are loose-seated within their inclined socket-housing 20 in the rear cleat 12, against which the legs slide. When the bed is unfolded, as hereinafter described, the legs slide downward in their housing between the cleats 12, impelled by their own gravity, the dowel-tenons 13, that project from the forward edges of said legs, running in the channel-grooves 14 in the forward cleat until the leg has reached the required limit of its descent, when the dowel-tenons are arrested by coming in contact with the lower ends of said channel-grooves, and thus prevent the farther descent and escape of the legs. Now it will be seen that when the legs have attained these operative positions the inset locking-spaces 15 become located or register with the self-locking metal inclined bolts 19, when the forward ends of said bolts slide forward into their locking-seats in said inset locking-spaces 15 on the tops of the legs, and they are thus self-locked in said operative position, and the surmounting bed is thus firmly held and supported, as shown in Figs. I, II, III, and VII. When, however, the bed is folded, the gravity of the locking-bolt withdraws it, so that, as it had previously locked itself in the leg when unfolded, so when folded it unlocks the leg, sliding back into the vacant space in the socket-housing, and the legs are then slid back into their housing by the person that elevates the bed.

I will now describe the knockdown attaching and clamping devices that secure together the parts of the folding bed, and also the parts of the casing in which said bed has its bearings.

21 represents dowel-pins that are fast secured in certain of the corresponding parts that are to be secured together and are loose-seated in registering-sockets 22 in the conjunctive parts.

23 represents the double-armed dovetail member of the conjoint clamping device that locks the knockdown parts together, respectively, both with those of the bed and also those of the casing. The said member of the bracket is secured to the part to which it is permanently attached by screws 24, that pass through screw-holes 25 in the bracket and are screw-seated in one of said parts, respectively, of the bed or casing that with its conjunctive parts are to be clamp-locked together. The projected terminals of the arms of said member of the bracket are furnished with dovetail hooks 26. 27 represents the single-arm dovetail member of said conjoint clamping device, which member is attached by its dowel integral back pin 28, that is seated in the socket 29 in the timber, and by the screw 30, that passes through the screw-hole 31 in the bracket, and is screw-seated in one of said conjunctive parts that constitute the knockdown device. The projected terminal of said member of the bracket is furnished with a dovetail hook 32, forming a curved seat for a tapering dovetail key 33, adapted to bear thereon.

When the knockdown parts are placed in their respective positions, so that the dowel-pins register into their sockets, as shown, where a portion of one face of the side board of the bed is broken away in Fig. VII, then, also, the single-arm member of the clamping-bracket fits in between the two arms of its conjoint member, and the dovetail taper key 33 is driven into its conjunctive dovetail seat that is provided by the combination of said hooks of the joint members of the clamping-lock bracket. The taper point of the dovetail key is driven foremost, and as the key is forced home in its dovetail seat the knockdown parts are tightly drawn and locked together.

I will now describe the compound self-adjusting pivot and guide-bearing of the folding device and their self-locking elements that respectively lock the fold and unfold at the extremes of their action.

35 represents the track-brackets that are respectively secured in corresponding location inside the side pieces of the casing by screws 36, that pass through screw-holes 37 in the base of said brackets and are screw-seated in said side boards. 38 represents the inwardly-projecting inclined tracks that surmount the attached base of said bracket, and 39 are the locking-recesses at the upper end of said tracks, whose functions will be hereinafter explained.

40 represents the pivot journal-pins, whose swelled bases 41 are secured in their perforate seats 42, respectively, in opposite corresponding positions in the side boards of the folding bed, and 43 is a flange-collar around said swelled base through the screw-holes 44, in which the screws 45 pass to their screw-seats in said side boards. 46 represent traveler-wheels, which are loose-mounted on the projecting journals of said pivot-pins, and the concave peripheries of said traveler-wheels run on the convex surmounting-surface of the inclined tracks 38 and locking-recesses 39. Perforated washers 47 are held by the screw-bolts 48 as retainers of the traveler-wheels on their journals, the said screw-bolts passing through said perforate washers and

through the bolt-holes 49 in the journal-pins 40, in which they are secured by the screw-nuts 50.

Now it will be seen that the advantage of the above-described inclined track and of the varying bearings it provides for the traveler-wheel is that the pivots of the folding-section are thereby enabled to be placed much farther from the head of the bed, so as to be nearer the center of gravity of said bed, and when unfolded the bed is at the same time lowered to a convenient proximity to the floor, thus overcoming the great difficulty experienced with folding beds in their unfolded position of being at too great an altitude from said floor, which, without said provision of the traveler-wheel, respectively lowering and elevating the bearing in the course of unfolding and folding, would be an almost necessary contingency; also, besides elevating said bearings, it also carries them, in folding, on the incline toward the rear of the construction, so that the folded bed is retired in consequence into much less compass, and as the utility of folding is to economize room, said utility is enhanced, and at the same time the objectionable appearance of the bed in a room also occupied through the day is more effectively overcome.

51 represents traveler journal-pins, whose swelled bases 52 are secured in their perforate seats 53, respectively, in opposite corresponding positions near the upper rear corners of the side boards of the folding bed, and 54 are flange-collars around said swelled bases, through the screw-holes 55, in which the screws 56 pass to their screw-seats in said side boards.

57 represents traveler anti-friction wheels, which are loose-mounted on the projecting journal-pins and are retained in their seats by the perforate washers 58, which washers are held to their work by the screw-bolts 59, which pass through said perforate washers and through the bolt-holes 60 in said journal-pins 51, in which they are secured by the screw-nuts 61.

62 represents curvilinear brackets, which are secured, respectively, to the inside of each of the side boards of the casing near the rear edge of said side boards by the screws 63, that pass through perforations 64 in the attachment flanges 65 of said brackets, to their screw-seats in the side boards.

The traveler anti-friction wheels 57 on the above-described journal-pins 51, that project outwardly from the side boards of the folding bed, travel longitudinally along the elongated curvilinear channel-groove 66 of the bracket 62 as the bed is either folding or unfolding—that is, as the bed fulcrums on the traveler-wheel 46 of its pivot journal-pin 40, working on its inclined track 38, the traveler journal-pins 51, on which the traveler anti-friction wheels 57 are mounted, follow down or up, as the case may be, along and within said curvilinear channel-groove 66, which both guides and steadies the action of the folding bed.

As the traveler-wheels 46, when they enter their recessed locking-seats 39 at the head of their inclined tracks, lock the bed in its folded position, so also are there provided recessed locking-seats 67 at the heads of the curvilinear brackets 62, which, as the traveler-wheels 57 run into said recesses and simultaneously the feet of the unfolded bed reach the floor, the said bed is locked in its unfolded position.

68 represents a surmounting self-adjusting head-board, which, with its laden weight, constitutes a counterpoise to balance the folding bed. The said surmounting head-board, when the bed is unfolded, maintains a position directly over the head-board of the folding bed itself, and is coupled to and pivotally sustained by its hinged separable connection to the side boards at the head of the folding bed. The hinges 69, that form said connection, are secured below to said side boards and above to said surmounting head-board by screws 70, that are seated in said hinges and are screw-seated, respectively, in said side boards and surmounting head-board.

71 represents sliding blocks that are pivotally connected to the outer edges and near the top of said surmounting swinging head-board by the pivot pins or bolts 72, that as the board swings from the position shown in Fig. VII, when the bed is unfolded, to that shown in broken lines in Fig. XII, when the bed is folded, allow said block to retain its vertical position as it slides in its channel-grooves 73 between the cleats 74, while the surmounting head-board assumes in the latter case a necessarily inclined position in consequence of the rotary movement of the bed in folding.

75 represents a metal balance-weight, whose tongue 76 beneath slides into the slot 77 provided by the aperture between the projected cleat 78, secured to the back of the surmounting back-board and said back-board itself, while its swelled head 79 retains said balance-weight in its seat.

The operative functions of the various elements of this invention have been mostly pointed out in the description of said parts; but its operation may be briefly summarized as follows: When the bed is folded, the traveler-wheels run up the inclined tracks 38, elevating the bed and carrying it toward the rear just as fast as the rotary movement of the head of the bed retiring from the back of the casing will allow. So, also, as its bearings are elevated there is provided thereby sufficient room for the rotation of the head of the folded bed between said bearings and the floor, and the bed, being at the said time carried along the inclined tracks toward the rear of the construction, is more compactly folded. When folded, the traveler-wheels, as shown in Fig. XII, are run into their locking recessed seats at the head of the incline tracks, thereby locking said bed in its folded position. Conjunctively with the movement of

said traveler-wheels on their inclined tracks, carrying their pivot bearings to both a higher level and nearer approach to the rear, so as by the means stated to both facilitate and compact the fold, simultaneously therewith the traveler-pins 51, with anti-friction-wheels mounted thereon, are dismounted from their recessed locking-seats 67 (in which previously they had locked the position of the bed in its unfolded state) and travel down the channel-grooves of the brackets 62, and thereby steady the folding adjustment of the bed.

The operation of unfolding is the exact reverse of that above described. Thus as the bed is unfolded the traveler-journal bearer-wheels 46 are run out of their locking-recesses 39 at the head of the inclined tracks 38 and run down and along said inclines as rapidly as its revolving head in its escape from the floor-level will allow, and at the same time carrying it along the tracks, so that said head of the bed turns up free from any obstruction from the back of the casing, the said unfold resulting in placing the bed at a lower and much more convenient level than would otherwise be effected, the locking traveler-pin 51 again entering its locking-recess at the head of the channel-groove bracket 66 and locking the bed in its unfolded position, out of which the said locking traveler-pin cannot be dislodged until the foot of the bed is again elevated to effect the fold.

Now it will be seen by said locks that the danger of accidental folding or unfolding of the bed at any time is absolutely prevented, and thus, for instance, the accidental movement of the occupants of the balanced bed cannot start it on its folding movement, and this adverse feature in folding beds is thus entirely avoided by locking it in both its folded and unfolded positions.

I claim as my invention—

1. The combination of a folding bed having a mortise 10, the cleat 12, having the channel 14, and the cleat 12, having the socket 20, the sliding leg 9, having the recess 15 and the tenon 13, and the bolt 19, located in the socket and adapted to engage in the recess, substantially as described.

2. The combination of the folding bed having the mortise 10, the cleat 12, having channel 14, and the cleat 12, having the socket 20, the sliding leg 9, having the recess 15, formed with the beveled inner end, with the mortise 16 at the inner side of the recess, and with the tenon 13, the block 17 in the recess and fitting in the mortise, and the bolt 19, located in the socket and adapted to engage in the recess, substantially as described.

3. The combination of the casing having side pieces provided with the inclined brackets 35 and the inclined rounded tracks 38, mounted on the brackets, having the locking-recesses 39 at their upper ends, the bed-frame having the pivot journal-pins 40, formed with the swelled portions 41, the collar 43, and the bolt-hole 49, the wheels 46, having the concave peripheries, the washer 47, the bolt 48, and the nut 50, substantially as described.

4. The combination of the casing having the side pieces provided with the inclined tracks 38, having the locking-recesses 39, and the curvilinear brackets 62, having the grooves 66 and locking-recesses 67, and the bed-frame having the pivot journal-pins 40 and the journal-pins 51, substantially as described.

5. The combination of the casing having the side pieces provided with the inclined tracks 38, having the locking-recesses 39, and the curvilinear brackets 62, having the grooves 66 and provided with the locking-recesses 67, the bed-frame having the pivot journal-pins 40, provided with the wheels 46, and the journal-pins 51, having the wheels 57, substantially as described.

6. The combination of the casing having the side pieces provided with the inclined tracks 38, having the locking-recesses 39, and the curvilinear brackets 62, having the grooves 66 and provided with the locking-recesses 67, the bed-frame having the pivot journal-pins 40 and the journal-pins 51, formed with the swell portions 52, with the collars 54, and with bolt-holes 60, the wheels 57, the washers 58, the bolts 59, and the nuts 61, substantially as described.

7. The combination of the casing having the side pieces provided with the inclined tracks 38, having the locking-recesses 39, the cleats 74, the curvilinear brackets 62, having the grooves 66 and provided with the locking-recesses 67, the bed-frame having the pivot journal-pins 40, the journal-pins 51, the head-board 68, the separable hinges 69, connecting the bed-frame and the head-board, and the blocks 71, hinged to the head-board and sliding between the cleats, substantially as described.

8. The combination of the casing having the side pieces provided with the inclined tracks 38, having the locking-recesses 39, the cleats 74, the curvilinear brackets 62, having the grooves 66 and provided with the locking-recesses 67, the bed-frame having the pivot journal-pins 40, the journal-pins 51, the head-board 68, the hinges 69, connecting the bed-frame and the head-board, having cleat 78 and slots 77, the blocks 71, hinged to the head-board and sliding between the cleats, and the counterbalance-weights 75, having tongues 76 occupying the slots, substantially as described.

ANDREW M. ECKSTROM.

In presence of—

BENJN. A. KNIGHT,

SAML. KNIGHT.