

(No Model.)

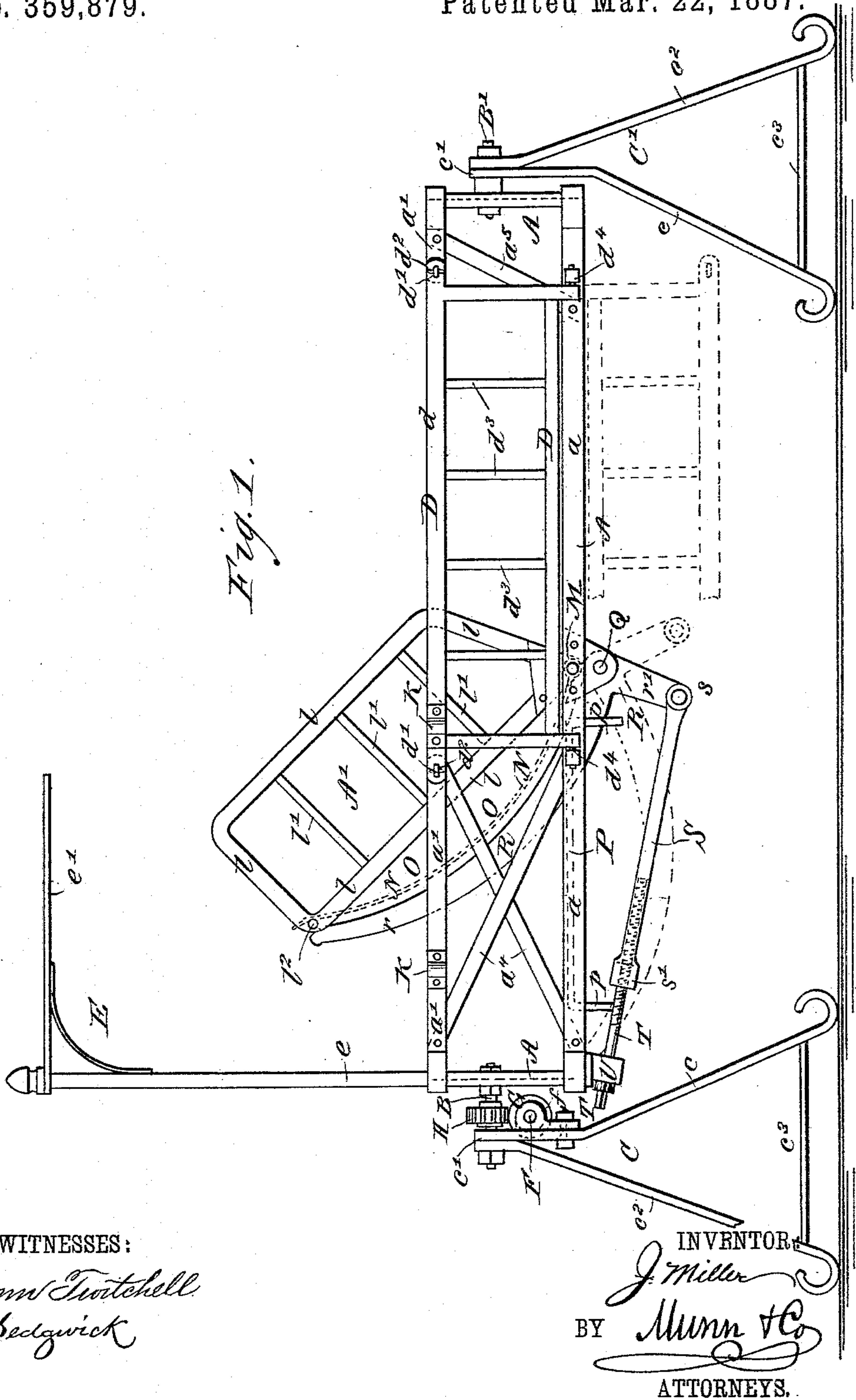
2 Sheets—Sheet 1.

J. MILLER.

ADJUSTABLE BED FOR INVALIDS.

No. 359,879.

Patented Mar. 22, 1887.



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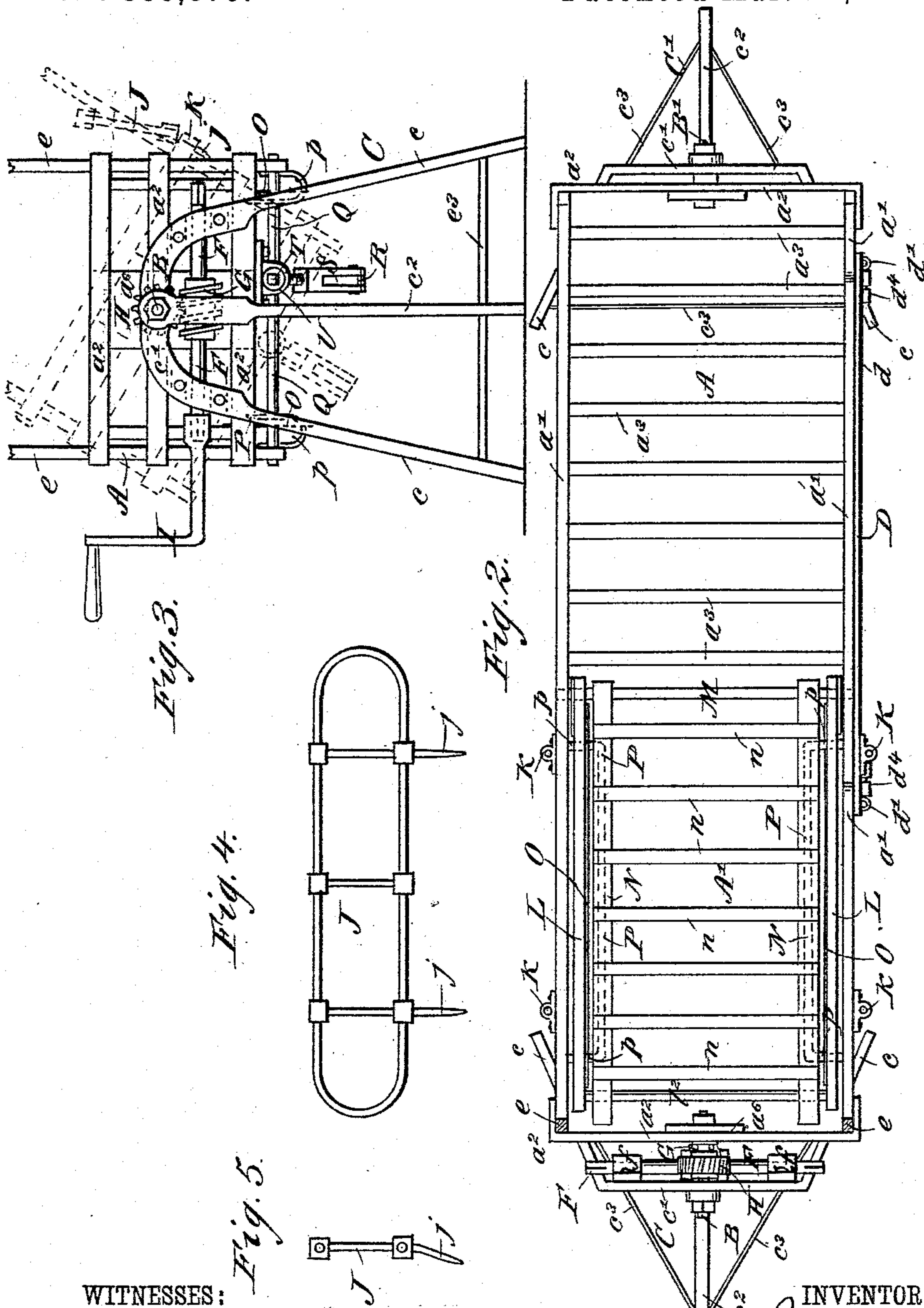
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WITNESSES:

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ADJUSTABLE BED FOR INVALIDS.

SPECIFICATION forming part of Letters Patent No. 359,879, dated March 22, 1887.

Application filed March 11, 1886. Serial No. 194,822. (No model.)

To all whom it may concern:

Be it known that I, JAMES MILLER, of Adelaide, Province of South Australia, British Empire, have invented a new and Improved Adjustable Bed for Invalids, of which the following is a full, clear, and exact description.

My invention relates to beds adapted more especially for the use of invalids, and has for its principal object to provide an inexpensive, readily adjustable, and comfortable bed, which may be swung sidewise to cause the invalid to take any desired position on either side, and also may be adjusted at its head portion to support the upper part of the patient's body in any desired position between a lying and sitting posture, and all without discommoding the patient.

The invention consists in certain novel features of construction and combinations of parts of the bed, all as hereinafter fully set forth.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my improved invalid's bedstead with the hinged head-frame raised and parts shown in dotted lines. Fig. 2 is a plan view thereof, partly broken away, and with the canopy-posts in horizontal section. Fig. 3 is an end view of the bedstead with parts broken away and with a tilted position of the bed-frame indicated in dotted lines. Fig. 4 is a side view of an extension side board or frame to the bed, and Fig. 5 is an end view thereof.

The bed-frame proper A, in which the invalid rests, and which is fitted at its head portion with a hinged section or frame, A', to be presently described, is pivoted on trunnions or short shafts B B' at its head and foot, respectively, to the tops of leg-frames C C' of convenient height. As shown, the frame A is made of metal, with lower side bars, a, and upper side bars, a', connected by cross-bars a² at the opposite ends of the bed. Cross-slats a³, fixed to the opposite lower side bars, a, support the bedding at the foot portion of the bed, the bedding being supported at the head of the bed on the hinged frame A', as presently explained.

Diagonal braces a⁴ strengthen the head por-

tion of the frame A at the sides against the strain resulting from the raising or lowering of the hinged frame A', and also strengthen the frame A at the head against the strains of swinging the bed to either side on its end trunnions, and for the latter purpose the braces a⁵ are provided at the foot of the bed. A plate, a⁶, fixed to the head cross-bars a² of the bed-frame, braces the frame strongly where the power is applied to tilt the bed.

To enable the invalid to get into and out of the bed more conveniently, I make a portion, D, of one side of the frame A to swing down on hinges d¹, of any approved construction, as in dotted lines in Fig. 1, and when the hinged part or gate D is swung upward, slots in its top bar, d, pass over eyes d', fixed to the top bar, a', of the frame A, whereby cotter-pins d², passed through the eyes d', outside of the gate D, will hold it firmly in place when closed. I show the gate formed of an outer metal frame with cross-bars d³, but it may have any approved construction. The upper side bar, a', of frame A, next the gate D, is cut away for the length of the gate. (See Figs. 1 and 2.)

The bed-frame may be fitted with a canopy-frame, E, consisting of posts e and a top, e', and held to the bed in any approved way.

The leg-frames C C' are made alike, each with two side legs, c c, which are the opposite ends of a bar bent over to form an arched portion at c', which is made flat, as in Fig. 3, and with an outwardly-bent leg, c², secured to the center of the arch c', and through which and the arch c' the bed-frame trunnion passes. Between the bed-frame the legs c are bent inward, and the three legs c c c² are connected near their lower ends by a light triangular metal frame, c³, bolted to them.

To provide for swinging the bed-frame A on its trunnions B B', either to the right or left side, I journal a shaft, F, in bearings ff, fixed to the flattened arched part c' of the leg-frame C, and to this shaft is fixed a worm, G, which engages a worm-wheel, H, fixed to the trunnion or shaft B of the bed-frame.

The shaft F is squared at opposite ends, so it may receive a crank, I, at either end to tilt the bed sidewise, and the crank will be applied to the end of the shaft at that side of the bed from which the bed swings; in other words, when the bed is swung to the right side, as in-

indicated in dotted lines in Fig. 3, the crank will be applied to the left-hand end of the shaft, and when the bed is to be swung down to the left side the crank will be applied to the right-hand end of the shaft. The crank thus will have room to turn without striking the bed-frame.

To prevent the invalid from falling from the bed should the frame A be tilted considerably to one side, I have provided an auxiliary or extension side or frame, J, which has pins *j j*, adapted to be set into socket-pieces K K, fixed to the sides of the top part of the bed-frame, and the pins *j j* are inclined inward from the plane of the side piece, J, to tilt the latter inward the better to serve its purpose.

The side piece or frame, J, may be applied to either side of the bed-frame so as to incline inward over the frame, and as indicated in dotted lines at the right-hand side of the tilted bed in Fig. 3. I show the side piece, J, made of metal rods or bars; but it may be made of any suitable material provided with the inclined pins *j j*, as described.

The hinged section A' of the bed-frame consists of opposite side parts, L L, made, as shown, each of a bent metal bar, *l*, having cross-bars *l'* connecting its top and bottom parts. The side parts, L L, are connected at their lower corners next the head of the bed by a cross-bar, *l''*, and at their opposite ends and lower corners are pivoted on or connected to a cross-bar, M, which is fitted in the opposite lower side bars, *a a*, of the bed-frame A.

To the bar M are held by eyes formed at their one ends the spring-metal bars or plates N N, which range lengthwise of the bed and rest at their other ends loosely upon the cross-bar *l''*, and extend beyond this bar, so as not to slip from it when the hinged section A' is raised on its pivot. The elastic plates N N are connected by cross bars or slats *n*, on which the bedding is supported.

To the opposite side parts, L L, and between their lower bars and the elastic plates N N, are fixed opposite thin metal guard-plates O O, which are curved outward at their lower edges, which thus always stand below the plane of the elastic plates N N, and whereby the guard-plates will prevent catching of the bedclothes between the plates N N and the lower edges of the side parts, L L, of the hinged section A' of the bed-frame when the said section is raised or brought to horizontal position again after having been raised to give a back-support to the invalid.

It is obvious that as the hinged bed-frame section A' is raised more or less to any angle between the horizontal and vertical positions, as the necessities or comfort of the invalid may require, the elastic plates N and their cross-slats *n* will yield in a gentle curve to the weight or pressure of the invalid, while the loose ends of the plates N slip over the cross-bar *l''*, and as the section A' is again lowered to a horizontal position, as in Fig. 2, the plates N will tend to straighten out flat.

To insure the straightening of the plates N flatwise when the section A' is lowered, I have provided rods or bars P P, one at each side of the main frame A of the bed, and on which bars P the plates N rest. The ends of the bars P are bent downward in U form, as at *p*, and their extremities are fastened to the lower side bars, *a*, of the bed-frame A. The bend of bars P at *p* gives room for the lowering of the guard-plates O within the bends as the bed-section A' reaches the horizontal position, and as said section A' is being lowered the plates N will be flattened from the cross-bar M toward their loose ends, and the invalid may be lowered to horizontal position quickly and easily without jar or noise.

A preferred arrangement of mechanism for raising and lowering the bed-frame section A' consists of a lever, R, which is pivoted on a cross-bar, Q, held to the frame A below the cross-bar M, and extends by its long arm *r* beneath the cross-bar *l'* of said section A', and to the short arm *r'* of lever R is pivotally connected, at *s*, a forked link-bar, S, the head *s'* of which forms a nut, into which the screw T is threaded. The screw T is held by suitable collars and shoulders in a bearing, U, fixed to the main bed-frame A, and so that the screw may revolve freely but have no endwise movement, and the outer end of the screw is squared to receive the crank I.

It is evident that by turning the screw T in one direction by the crank the arm *r* of the lever R will be raised to swing the hinged bed-frame A' upward more or less on the rod M as a pivot, and by turning the screw the other way the frame A' will be lowered.

The sides of the main and auxiliary bed-frames A A' may be filled in with any suitable cross-bar or lattice-work or wire-cloth, or said sides may be padded in any approved way, and the mattress of the bed will preferably be made in two parts, one part covering the slats *a'* of bed-frame A and the other part covering the slats *n* of the hinged frame A', and whereby the up and down swinging movements of the hinged section A' will not be interfered with and the occupant of the bed will not be made uncomfortable when the head of the bed is raised or lowered.

The construction of the bed may vary somewhat to suit the materials of which it is to be made, the drawings representing a bed whose frame is made wholly of metal bars; but it is obvious that wood or other material may be employed very largely in making the bed without departing from the general principles of construction herein shown and described.

I am aware that a bed has had a head-section hinged at the lower end thereof and resting on the free end of a lever connected at its lower end to a traveling nut or slide operated by a screw-shaft; also, that such a head-section has been operated by a lever connected to a transverse shaft having a segmental gear engaged by a worm on a transverse shaft, the free end of the lever resting against the under

side of said section. The main bed-frame was provided at its ends with pivots having bearings in the end supports and was capable of turning on said pivots by means of a shaft 5 having a worm engaging a segment on one of the pivots. I do not claim the above as of my invention.

Having thus fully described my invention, I claim as new and desire to secure by Letters 10 Patent—

1. The combination, with the end supports and the main bed-frame having end trunnions journaled in said supports, of a head-section pivotally connected at its forward end to the 15 frame to swing vertically; a longitudinally-extending lever pivoted to the main frame below its head-section, the long arm of the lever extending rearward and bearing at its free end against the head-section at the rear or free 20 end thereof, a connecting-rod pivoted at its forward end to the short arm of said lever and having a nut on its rear end, and an operating screw-rod swiveled in bearings in the main frame and engaging said nut, substan- 25 tially as set forth.

2. The combination, with the main bed-frame having a pivoted head-section, of yielding or elastic longitudinal plates secured at one end to the head-section and supported at

their free ends on the opposite end of the said 30 head-section, substantially as set forth.

3. The combination, with the main bed-frame, of a pivoted head-section provided at one end with a bottom or support formed of yielding or elastic plates free at one end and 35 having transverse connecting-slats, substantially as set forth.

4. The combination, with the pivoted head-section A' of the bed and its flexible bottom plates, N, of the bars P, substantially as speci- 40 fied, whereby the plates will be straightened and supported as the section A' is lowered to horizontal position, as set forth.

5. The combination, with the pivoted head-section A' of the bed and its flexible bottom 45 plates, N, of the side guard-plates, O, substantially as and for the purpose set forth.

6. In an invalid's bed, the combination, with the main bed-frame A, arranged to swing side- 50 wise on trunnions, substantially as specified, of an auxiliary side frame, as at J, provided with pins j, inclined to the plane of the frame J, substantially as and for the purpose set forth.

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Witnesses:

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