No. 727,467. PATENTED MAY 5, 1903.

W. C. SENNETT.

INVALID BED.

APPLICATION FILED OCT. 18, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

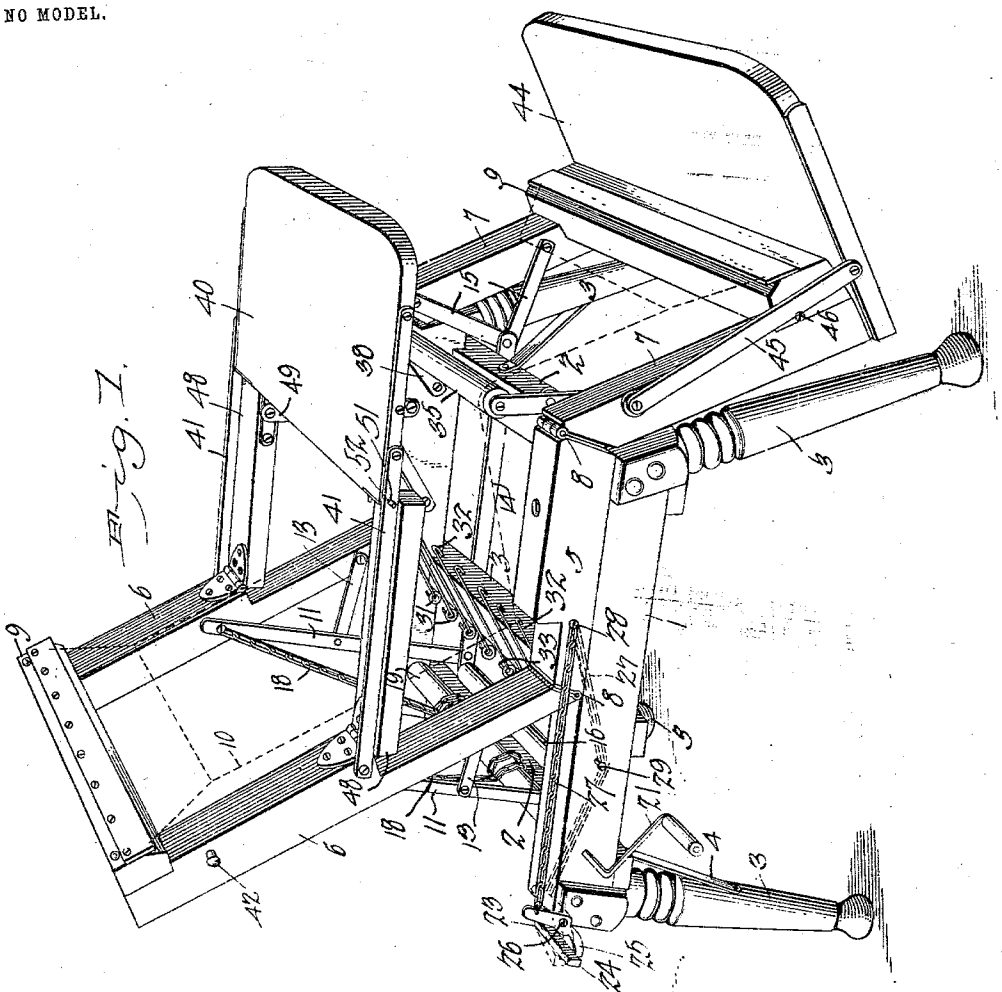
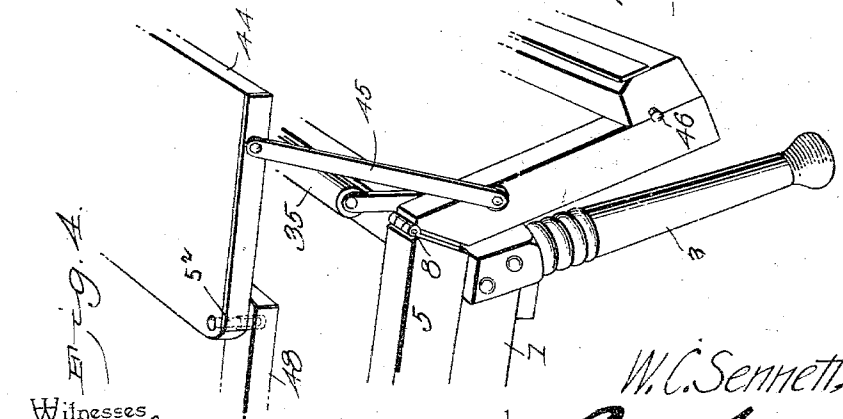


Fig. 4.



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NO MODEL. 3 SHEETS—SHEET 2.

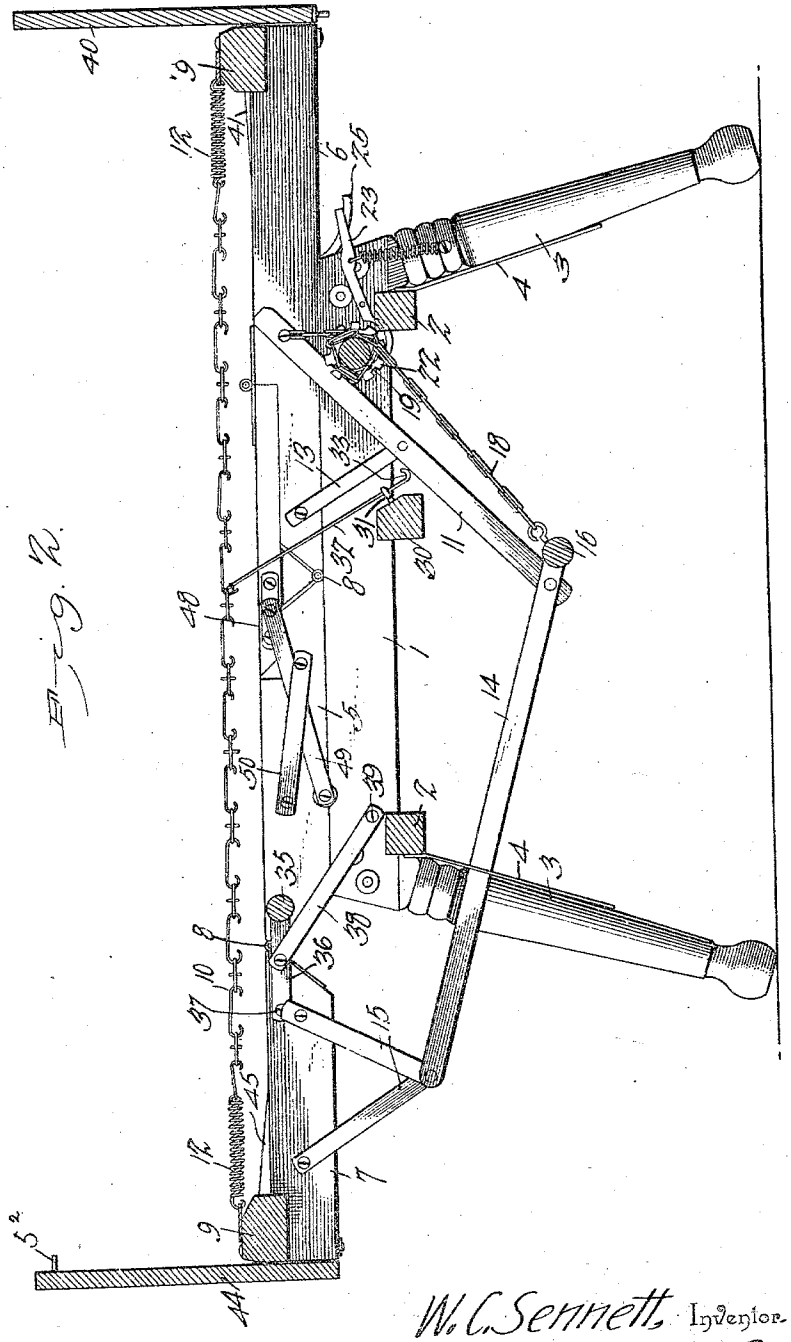


Fig. 2.

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 3.

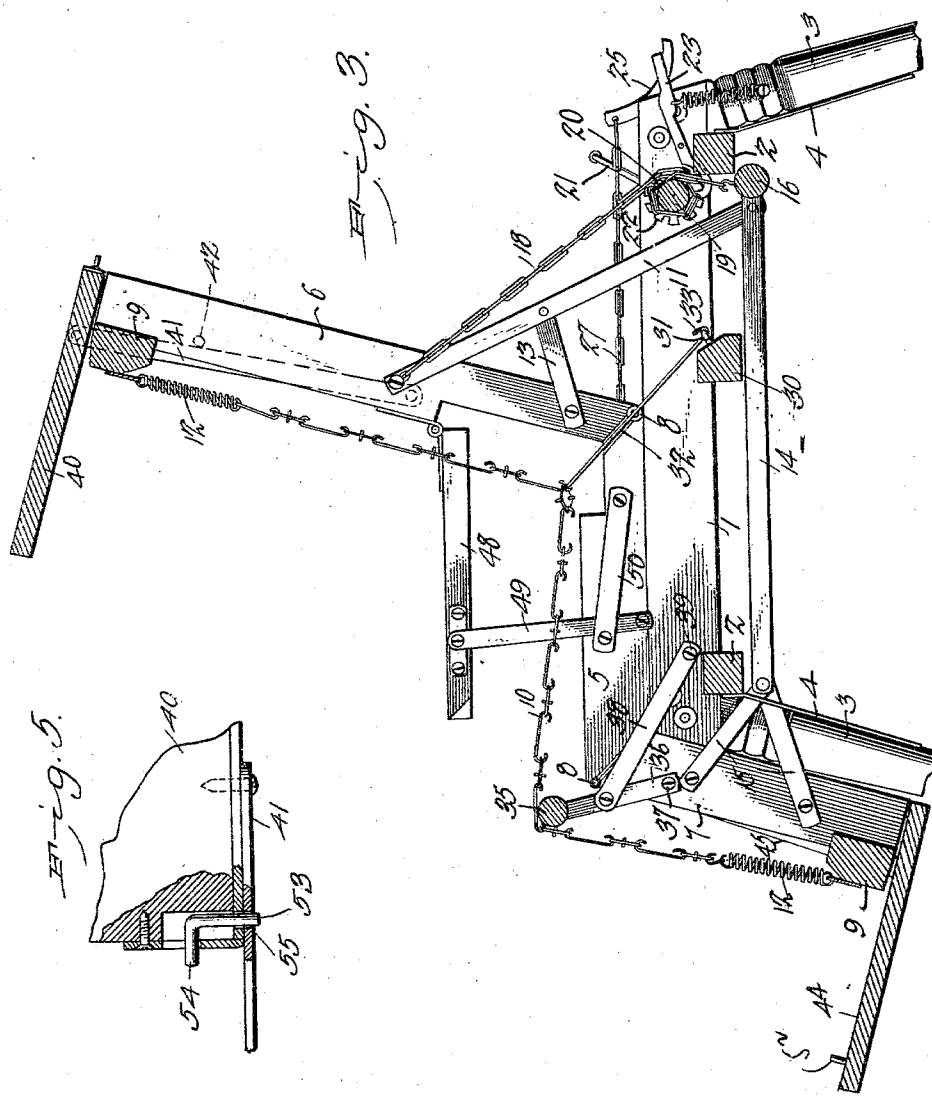


Fig. 5.

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No. 727,467. Patented May 5, 1903.

UNITED STATES PATENT OFFICE.

WALTER CLAIR SENNETT, OF PORTLAND, MAINE.

INVALID-BED.

SPECIFICATION forming part of Letters Patent No. 727,467, dated May 5, 1903.

Application filed October 18, 1902. Serial No. 127,867. (No model.)

To all whom it may concern:

Be it known that I, WALTER CLAIR SENNETT, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented a new and useful Invalid-Bed, of which the following is a specification.

The invention relates to improvements in invalid-beds, and has for its principal object to construct a novel form of bed or couch which may be adjusted to a number of positions to form either a couch or chair or a reclining-chair in which the back may be locked at any desired angle.

A further object of the invention is to construct a device of this character in which the patient may adjust the bed to any desired position without assistance and automatically lock the same after adjustment.

A still further object of the invention is to provide a device of this character in which the supporting spring or springs, while extending continuously from the headboard to the footboard, may be properly bent without injury when the device is adjusted to position for use as a chair.

A still further object of the invention is to so construct and arrange the device as to permit of the adjustment of both the headboard and the footboard to position for use as a table or reading-desk, as required.

With these and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a perspective view of an invalid-bed constructed in accordance with my invention, the device being illustrated as adjusted to position for use as a reclining-chair. Fig. 2 is a longitudinal sectional elevation of the same when adjusted to position for use as a bed or couch and illustrating the arrangement of the connecting-levers between the head and foot sections. Fig. 3 is a view similar to Fig. 2, illustrating the position of the parts when adapted to position for use as a chair. Fig. 4 is a detail view of the footboard-section when adjusted to position for use as a desk or table. Fig. 5 is a sectional plan view of a portion of the headboard, illustrating the locking-bolt for holding the same in horizontal position.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The main supporting-frame comprises opposite horizontally-disposed bars 1, connected by cross-bars 2 and provided with suitable supporting-legs 3, the structure being strengthened by diagonal braces 4 extending between the cross-bars and the legs. Each of the side portions of the bed is formed of three members, comprising a central section 5, a head or back section 6, and a foot-section 7, the central member being firmly secured to the cross-bars 1 and the other members being pivotally connected to said central member by hinges 8 or other suitable connecting devices. The outer ends of the head members 6 and the corresponding ends of the foot members 7 are connected by end rails 9, to which are secured the opposite ends of a supporting-spring 10, which in the present instance comprises a plurality of connected links, forming a flexible fabric, the opposite ends of the link fabric being connected to the end rails by tension-springs 12. When adjusted to position for use as a bed, as illustrated in Figs. 1 and 2, the fabric is stretched taut in the horizontal manner between the end rails with no cross-bar or connection under the same to prevent free yielding movement under the weight of the occupant, the mattress being as comfortable and freely yielding as the spring-mattresses in general use on beds or couches of ordinary construction.

To each of the head-sections 6 is secured a depending bar 11, connected to a bracing-bar 13, which extends also to the head-section in order to hold the depending bar rigid, and the lower ends of the bars 11 are pivotally connected by links 14 to a pair of bars 15, rigidly secured to the foot members 7 and arranged in truss-like form, as illustrated more clearly in Figs. 3 and 4. At a point near the connection with the rigid bars 11 the links

14 are connected by a cross-bar 16, from which extend winding chains or cords 18 to a roller or drum 19, having end spindles or gudgeons mounted in pivotal bearings in the members 1 of the rigid supporting-frame, the chains being turned around the drum some three or four times and their opposite ends being connected to the inner sides of the head member 6, while to prevent slipping of the chain an intermediate portion may be secured to the drum by a pin or screw 20. One end of the drum-spindle extends to the outside of the frame 1 and is provided with a handled operating-crank 21 within convenient reach of the patient and which may be turned to wind one portion of the chain or cord on the drum and unwind the opposite portion to move the head and foot sections in opposite directions, and the operation may be facilitated by the patient shifting his weight from the back to the foot section, or vice versa, in accordance with the position to which the bed is to be adjusted.

In order to lock the bed in its adjusted position, a notched locking-disk 22 is secured to one end of the drum, and at a point adjacent to the disk is pivoted a spring-pressed locking-pawl 23, adapted to engage the disk-notches and hold the drum from revolving in either direction. At the outer end of the pawl is an arm 24, extended laterally to a point beyond the side of the frame and adapted to be engaged by one end of a lever 25, pivoted on a stud 26, projecting from the rigid portion of the supporting-frame. The opposite end of the lever 26 is connected to a flexible chain or cord 27, which extends to a fixed pin 28, the cord or chain being arranged within convenient reach of the right hand of the patient in either sitting or reclining position. When the cord or chain 27 is extended in a straight line between the lever and the pin 28, the spring of the locking-pawl is free to move into locking engagement with the notched disk 22; but when it is desired to release the pawl the intermediate portion of the chain is depressed and forced under a pin or stud 29, projecting from the side of the frame, thus shortening the distance between the fixed pin 28 and the lever and moving the pawl 23 to releasing position, so that the bed may be adjusted.

On reference to Figs. 2 and 3 it will be seen that the side bars 1 are connected by a cross-bar 30, to which are secured a number of eye-bolts or similar guides 31. These guides are adapted for the reception of small rods 32, the upper ends of which are pivotally connected to the spring-mattress at a point where the mattress should bend to form distinct seat and back portions when the device is adjusted to position for use as a chair. The lower ends of the rods 32 terminate in hooks 33, so that during the adjustment to chair position the gradually-increasing distance of the upper ends of the rods from the cross-bar 30 will bring the hooks 33 into engagement with the guides 31, and further movement of the connected portion of the mattress will be prevented. When the mattress is in horizontal position, the rods are free to slide and do not in any manner interfere with free movement of the mattress under the weight of the occupant.

When adjusting the bed to position for use as a chair, it is further necessary to provide for the bending of the mattress at the juncture of the seat and foot sections and to provide for taking up the slack which results from the approach of the end rails toward each other during this adjustment. In the present instance this is provided for by a cross-bar 35, extending between links 36, which are pivoted at one end to pins 37 on the inner side of the foot member 7 of the bed, and the central portions of these levers are connected by links 38 to pivot-studs 39, carried by the rigid frame 1. The effect of the adjustment of the bed to position for use as a chair is to elevate the cross-bar 35 from the position shown in Fig. 3 to that illustrated in Fig. 4, forming a distinct bend in the mattress and separating the seat-section from the foot-section and at the same time forming a necessary support for the front end of the seat. When adjusted to normal position for use as a bed, the bar 35 assumes a position a sufficient distance below the mattress to prevent contact with the latter under any ordinary weight.

The headboard 40 has its outer or upper surface suitably finished to form a table or desk and is connected by side links 41 to the members 6 of the head-section, said links resting on pins 42 when the headboard is in position, and the pivotal connection between the links and the sides of the headboard being about midway of the vertical height of the members 6 and the connected end rail, so that when adjusted to position the headboard will be firmly held in place.

The footboard 44 is a construction similar to that of the headboard and is connected by links 45 to the foot-sections 7, the links normally resting on pins 46, extending from the sides of said foot-sections.

The device is provided with strips 48, pivoted at one end to the members 6 and at the opposite end connected by links 49 to the stationary portion of the frame, lateral play of the links being prevented by guard-strips 50, secured to the frame and engaging the inner faces of the links. The strips 48 when the device is adjusted to position for use as a bed are seated in alining recess formed in the seat-sections 5 and the head-sections 6 and serve to cover the space necessarily formed at the juncture of the members 5 and 6, preserving the continuity of the side rails of the bed and tending in a measure to hold the same rigid. When adjusted to position for use as a chair, the links 49 force the strips up to a position above and parallel with the central or seat members 5 and form side arms for the chair, as illustrated in Figs. 1 and 3, and near the outer ends of said side arms are openings 51 for the reception of pins 52, projecting from

the footboard, the latter being swung up to horizontal position and the pins entered in the openings, so that the footboard may be used as a table or reading-desk.

Under ordinary circumstances the footboard may be retained in position at the end of the bed to form a foot-rest for the patient when in sitting position; but in some cases it may be necessary to use the footboard as a table or desk, and the latter is constructed as described in order that such use may be permitted.

Each side of the headboard is provided with a suitable guide for a bolt 53, having an operating handle or knob 54, by which it may be moved through a locking-opening 55, one of such openings being provided in each of the supporting-links 41. When so locked, the headboard is held rigidly in the plane of the links, and when the links are moved to the position shown in Fig. 4 and rest on the side arms 48 the headboard will be properly supported in position for use as a table or desk.

The construction is such that the patient with but slight exertion may grasp the chain or cord 27 and move the locking-pawl to releasing position and then by slightly shifting his weight and at the same time turning the crank-handle 21 adjust the device to any desired position.

Having thus described my invention, what I claim is—

1. In a device of the class specified, a sectional frame comprising a plurality of members hinged together to form a seat, head and foot sections, a rigid frame connected to the foot-section, a second frame connected to the head-section, links pivotally connecting the two sections for imparting movement of one to the other, a cross-bar connecting said links, a winding-drum, flexible connections secured at one end to the cross-bar and at the opposite end to the head-section, means for securing an intermediate portion of the flexible connections to the winding-drum, an operating-crank connected to the winding-drum, a drum-locking mechanism, and a chain or cord extending along the side of the frame and having an operative connection with said locking means.

2. In a device of the class specified, a sectional frame comprising a plurality of hinged members adjustable into alinement with each other to form a bed-frame and into angular relation to form a chair-frame, a flexible mattress secured at its opposite ends to the end members of the frame, a transversely-disposed bar having an operative connection with two of said members and movable to mattress-engaging position to thereby form a bending-line in the mattress, and means independent of said members for engaging a second portion of the mattress to form a transverse bending-line when the device is adjusted to position for use as a chair.

3. In a device of the class specified, a sectional frame comprising a plurality of hinged members adjustable into alinement with each other to form a bed-frame and into angular relation to form a chair-frame, a flexible mattress having its opposite ends connected to the end members of the frame, a cross-bar occupying a position below the horizontal plane of the mattress, and means operable by the movement of the members to force said bar upwardly against the mattress and thereby form a bending-point in the length of the mattress when the parts are moved to chair-forming position.

4. In a device of the class specified, a sectional frame comprising a plurality of hinged members adjustable into alinement with each other to form a bed-frame and into angular relation to form a chair-frame, a flexible mattress having its opposite ends connected to the end members of the frame, a cross-bar occupying a position below the horizontal plane of the mattress, links pivoted to the end member of the frame and carrying said cross-bar, and auxiliary links connecting the bar-carrying link to a central portion of the frame and adapted to force said bar upwardly into mattress-engaging position when the device is adjusted into position for use as a chair.

5. In a device of the class specified, a sectional frame comprising a plurality of hinged members, including a central stationary member and movable head and foot members, recesses in the adjacent ends of the frames forming the central and head members, arms hinged to the head member and adapted to fit within said recesses when the device is adjusted to position for use as a bed, links pivotally connecting the outer ends of said arms to the central or stationary member, guards engaging said links and serving to prevent lateral play, and means for simultaneously adjusting the movable members to position.

6. In a device of the class specified, a sectional frame comprising a plurality of hinged members adjustable into alinement with each other to form a bed-frame and into angular relation to form a chair-frame, a flexible mattress carried by the sectional frame, a system of levers connecting the end members of the frame for mutual movement, a winding-drum, flexible connections between the winding-drum and the system of levers, a notched disk on said winding-drum, a spring-pressed locking-pawl for engagement with said disk, and an operating chain or cord having one end secured to a portion of the frame, a pivoted pawl-engaging lever to which the opposite end of said chain or cord is secured, and a holding means for engaging an intermediate portion of the chain or cord to thereby retain the pawl in released position.

7. In a device of the class specified, a sectional frame comprising a plurality of hinged members adjustable into alinement with each other to form a bed-frame and into an-

gular relation to form a chair-frame, movable arms connected to two of said members, a headboard movable into parallel relation with the arms, locking-bolts carried by said headboard, links pivotally connecting said headboard to one of the frame members, and bolt-receiving openings arranged in said links, substantially as specified.

8. In a device of the class specified, a sectional frame comprising a plurality of hinged members adjustable into alinement with each other to form a bed-frame and into angular relation to form a chair-frame, movable arms connected to two of said members and each provided with a pin-receiving opening, a footboard, links connecting the footboard to one of the end members of the frame, and pins carried by said footboard and adapted to the openings in said arms.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WALTER CLAIR SENNETT.

Witnesses:

LINWOOD F. CROCKETT,

CHARLOTTE M. WINSLOW