

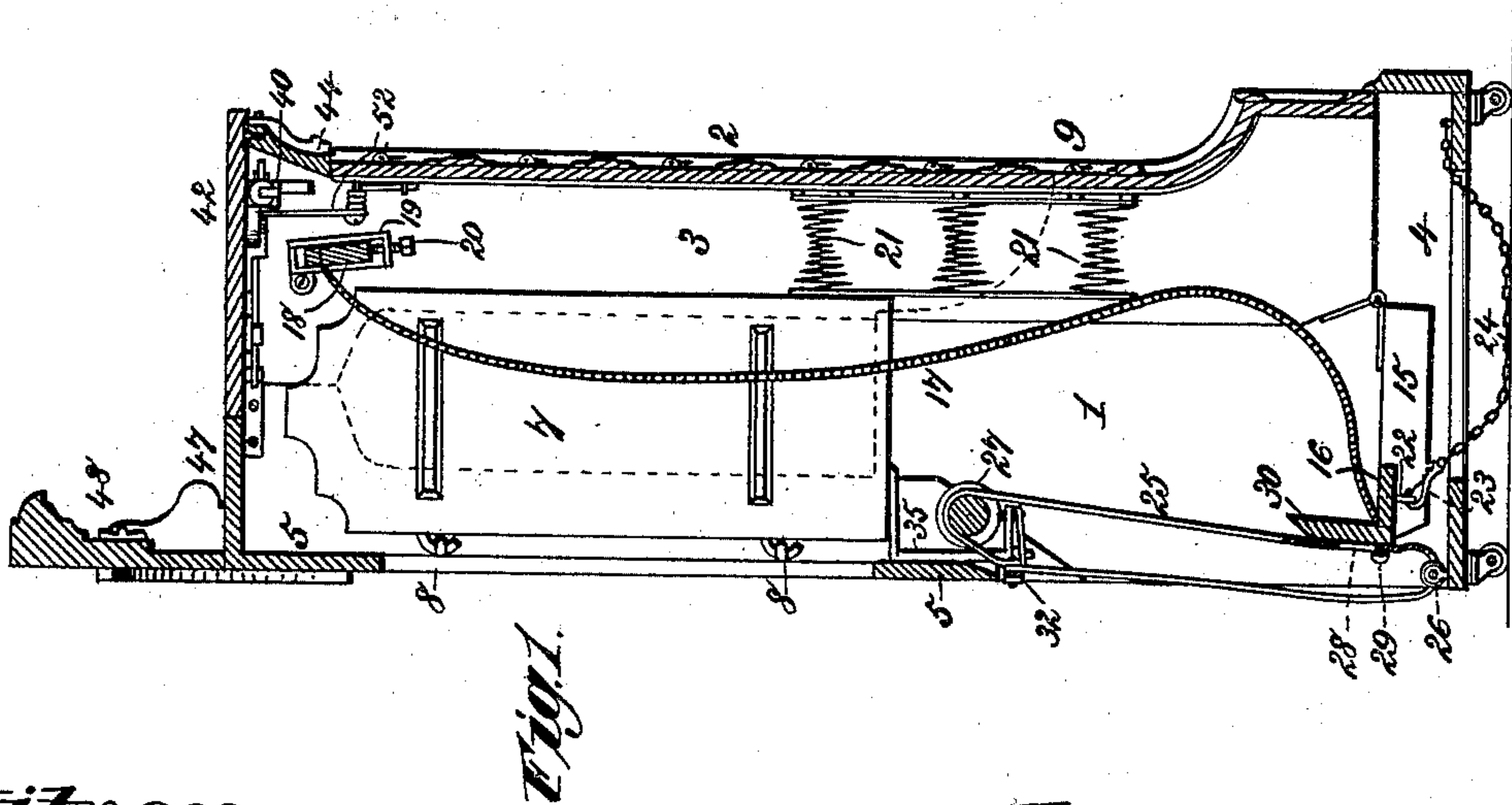
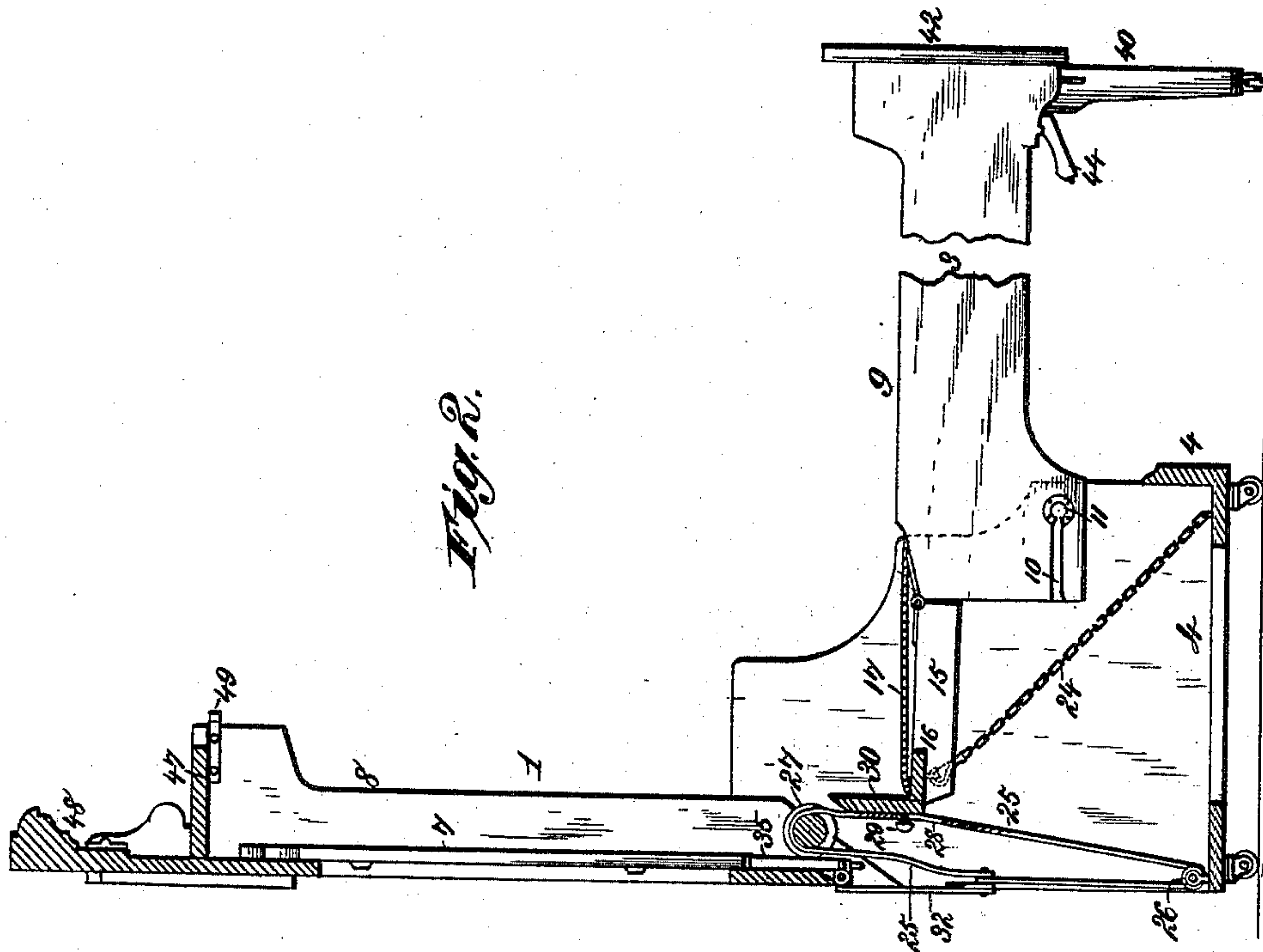
(No Model.)

L. C. BOYINGTON.
FOLDING BEDSTEAD.

3 Sheets--Sheet 1.

No. 330,373.

Patented Nov. 17, 1885.



Witnesses.
Robert Emmett,
Jo. L. Coombs

Inventor:
Levi C. Boyington.
By *James L. Norris.*
Atty.

(No Model.)

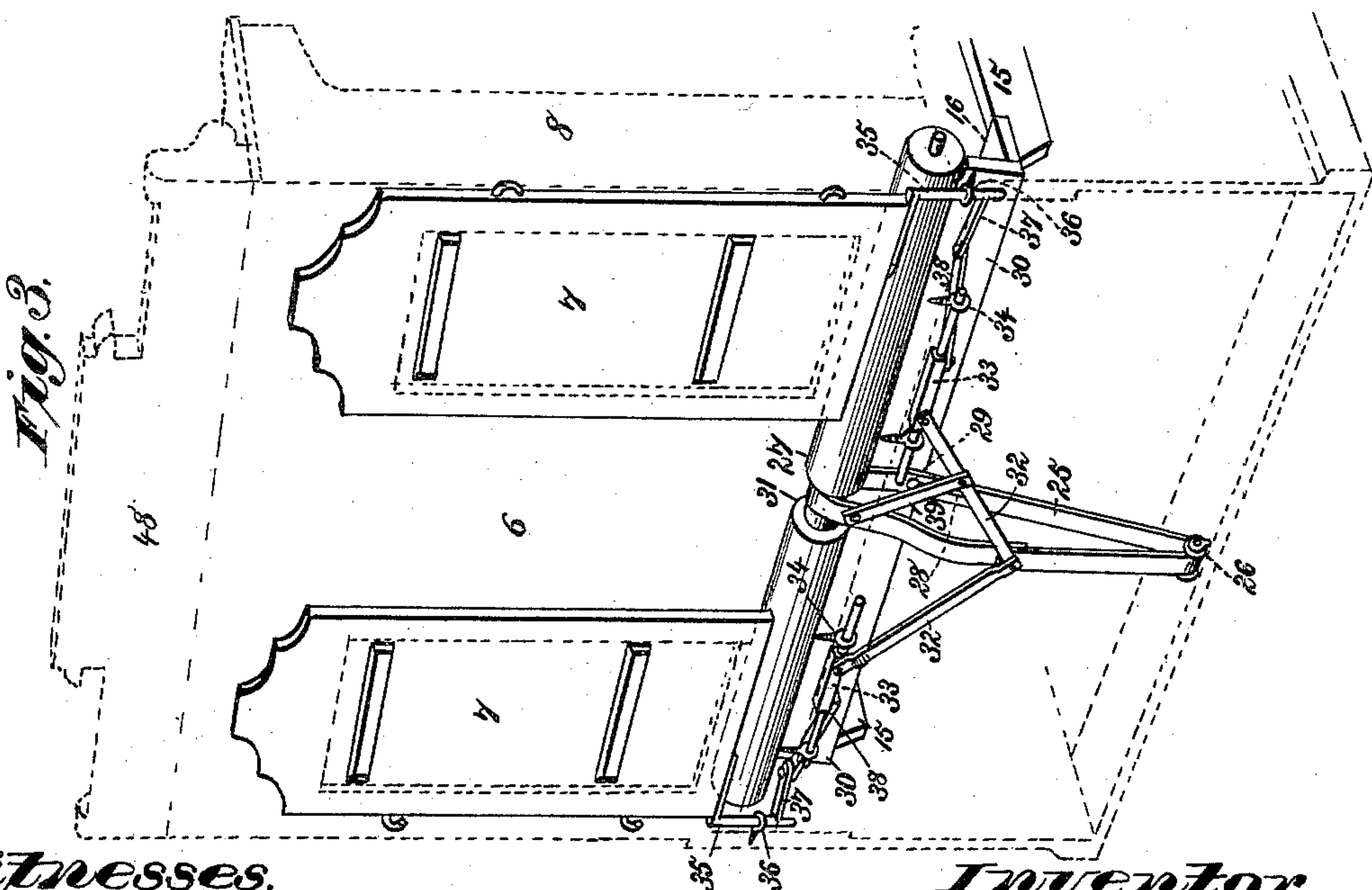
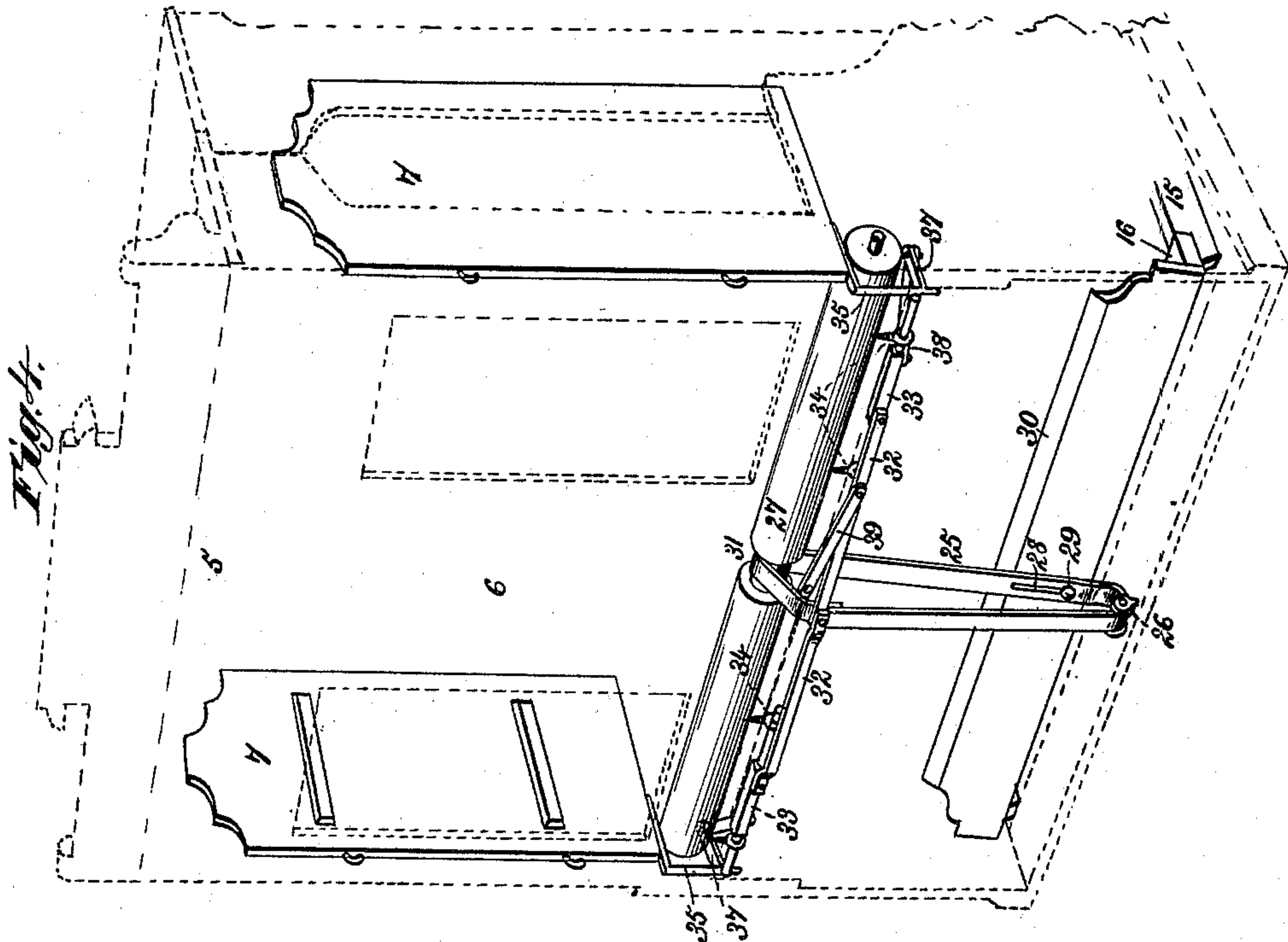
3 Sheets—Sheet 2.

L. C. BOYINGTON.

FOLDING BEDSTEAD.

No. 330,373.

Patented Nov. 17, 1885.



Witnesses,
Robert C. Watt,
Jo. L. Coombs

Inventor,
Levi C. Boyington.
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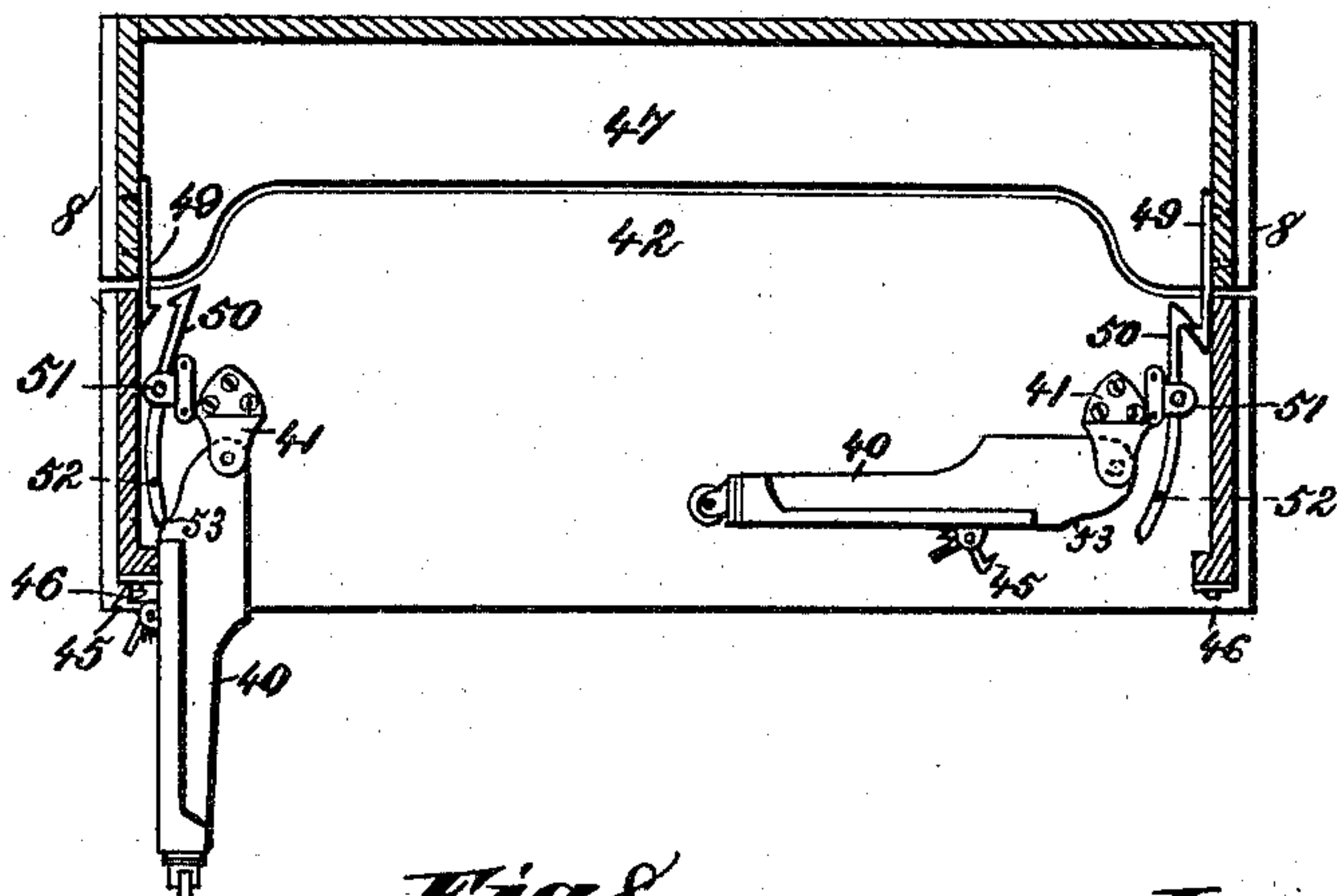
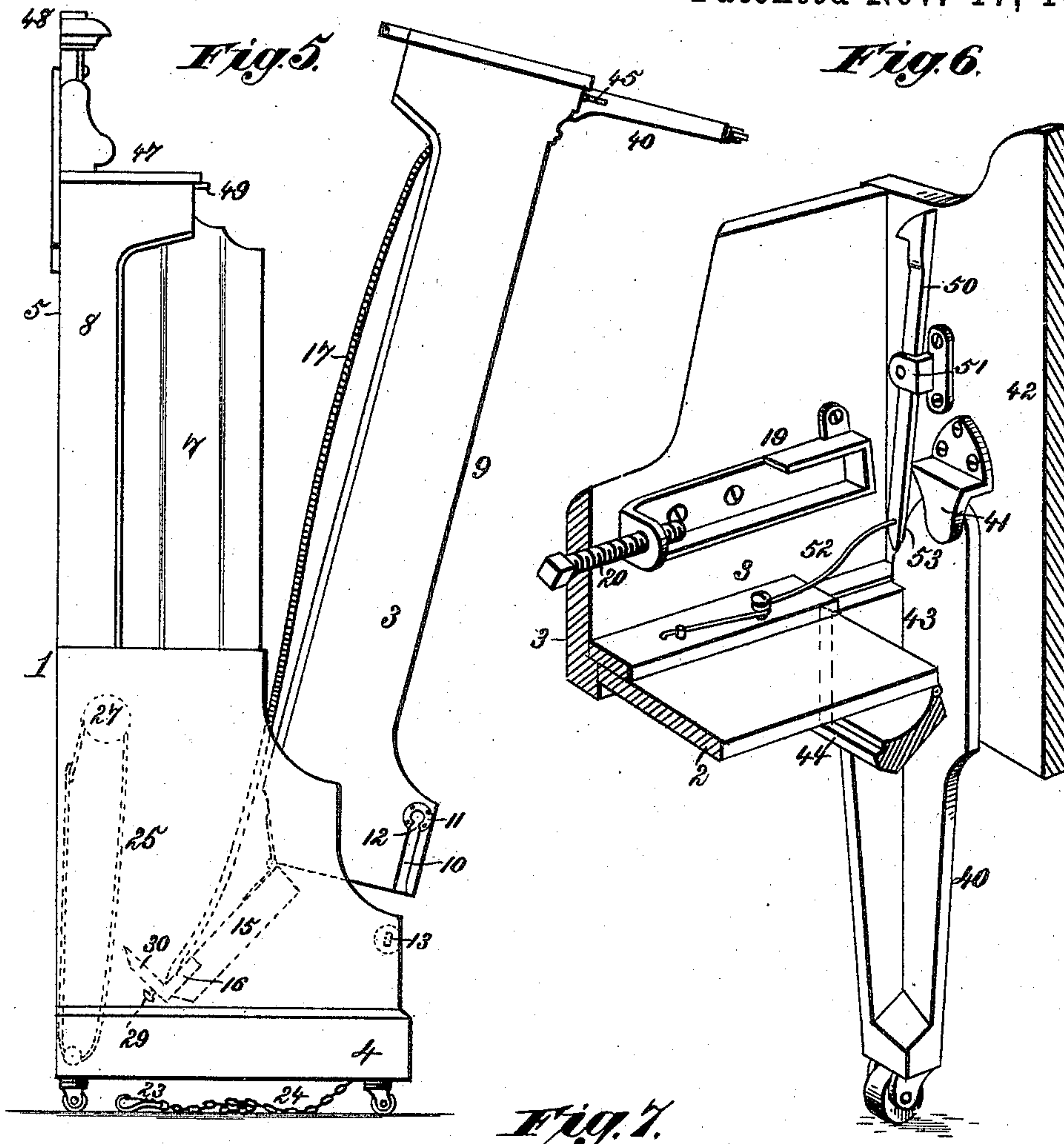
(No Model.)

3 Sheets—Sheet 3.

L. C. BOYINGTON.
FOLDING BEDSTEAD.

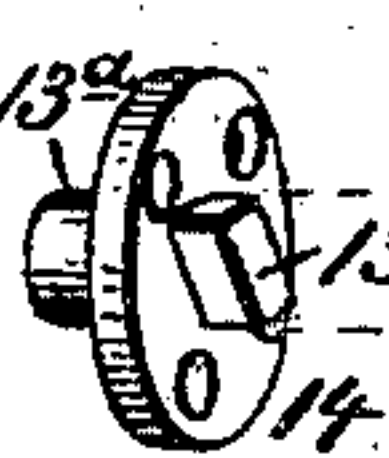
No. 330,373.

Patented Nov. 17, 1885.



Witnesses.
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Fig. 8.



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UNITED STATES PATENT OFFICE.

LEVI C. BOYINGTON, OF CHICAGO, ILLINOIS.

FOLDING BEDSTEAD.

SPECIFICATION forming part of Letters Patent No. 330,373, dated November 17, 1885.

Application filed August 18, 1885. Serial No. 174,734. (No model.)

To all whom it may concern:

Be it known that I, LEVI C. BOYINGTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Folding Beds, of which the following is a specification.

This invention relates to that class of folding bedsteads in which the side rails are pivoted at one end to the lower part of a stationary casing and connected by a false front, finished according to any suitable design, in such a manner that the folded bedstead will represent a chiffonier or other ornamental article of furniture appropriate to a parlor, as well as a sleeping-apartment. In bedsteads of this class it is preferable to form each side rail in essentially one piece of moderate length, but with a short extension-strip hinged to its pivoted end within the casing, the purpose of such construction being to enable the bedding to be folded back within the stationary casing at practically full length, thereby securing a free and complete ventilation, and at the same time permitting the height of the folded bedstead to be lessened. These bedsteads have been provided with head-boards having hinged panels adapted to be automatically swung outward in the act of folding the bedstead, and so close the spaces on each side between the folded side rails and the head-posts or standards. Folding bedsteads of this class have also been provided at the foot with legs adapted to be turned in beneath the foot-board when the bedstead is folded.

The objects of my present invention are, to provide a simple and reliable means of automatically actuating the hinged head-board panels in both directions of movement without the employment of cords or springs; to provide a means of securely locking the folded bedstead by simply turning its pivoted legs inward, thereby bringing into operation a spring locking mechanism, that is disengaged by again turning each leg outward; to provide a transverse roller at the lower edge of the head-board, for the purpose of affording a yielding support at that point capable of preventing the bedding or bed-clothing from binding and becoming disarranged in the act of folding the bed at full length, said roller being also employed as part of the panel-actuating mechanism; to provide detachable connections for the stationary casing, pivoted

bed-section, and their accessory chains and belt, whereby the bedstead can be readily separated in two or more parts; and, further, to so construct and arrange the various parts of a folding cabinet-bedstead as to effect a material reduction in weight and bulk without impairing its strength or durability, and generally to facilitate the handling of the bedstead and enhance its usefulness and ornamental appearance as an article of furniture.

With these objects in view my invention consists, first, in the combination, with a folding bedstead having a head-board provided with hinged panels adapted to swing outward and close the sides of the cabinet or casing when the bedstead is folded, of a belt detachably connected to the bed-section and passed over a transverse roller in front of the lower edge of the head-board, and also around a pulley in the bottom of the casing, said belt being connected to angle-irons on the hinged panels by means of intermediate levers and slide-bars, the parts being so arranged that the swinging panels will be simultaneously actuated by the raising or lowering of the bed-section with a steady and positive movement, and without the employment of cords or springs; second, in the combination, with a stationary casing having catches fixed to its upper part on each side, and a bed-section pivoted in the base of said casing and provided with a foot-board, of legs pivoted in the inner side of said foot-board, and locking-latches also pivoted in the inner side of the foot-board, and adapted to be engaged, under the tension of attached springs, with the catches on the stationary casing when the bedstead is folded and its legs turned inward beneath the foot-board, said pivoted locking-latches being released from their engagement with the fixed catches by the pressure of the legs when turned outward; third, in the combination, with a stationary casing or head-section, and a bed-section pivoted in the base of said casing, of a roller journaled transversely in front of the lower edge of the head-board and above the inner end of the bed-section, and adapted to close the space between the head-board and extended bed, and form a yielding support at that point to prevent the bedding and bed-clothing from binding or becoming disarranged in the act of folding or unfolding the bed at full length, said roller forming also a part of the panel-actuating mechanism, and being rotated at the proper

time by the belt that connects with the pivoted bed-section; and, finally, the invention consists in certain novel features of construction, and in combinations of parts, as hereinafter fully set forth, whereby the bedstead may be readily taken apart without the use of tools, and its operation rendered easy and certain when properly connected and arranged for use.

The invention is clearly illustrated in the annexed drawings, in which Figure 1 is a central section of the folded bedstead, taken from front to rear. Fig. 2 is a sectional side elevation of the unfolded bedstead. Fig. 3 is a rear perspective view of the panel-actuating mechanism, with bedstead in dotted lines, showing the position of the various parts when the bedstead is unfolded. Fig. 4 is a similar view, showing the position of the hinged panels and their actuating mechanism when the bedstead is folded. Fig. 5 is a side elevation of the bedstead, illustrating the manner of connecting and disconnecting the pivoted bed-section. Fig. 6 is an enlarged perspective detail of one of the lower corners of the bedstead, viewed from the inner side. Fig. 7 is a sectional under plan view of the upper part of the stationary casing with fixed catches, and the under side of the inwardly-turned foot-board with pivoted legs and spring locking-latches, the folded bedstead being shown locked on one side and unlocked on the other. Fig. 8 shows perspective views of gudgeon and gudgeon-bearing.

In these drawings the reference-numeral 1 is employed to designate an upright open front casing, within which the bed folds when not in use, said casing being then closed by a false front, 2, that connects the pivoted side rails, 3, and moves therewith. This casing, with its false front, is preferably made in the form of a chiffonier, but no particular pattern or design is essential, as the folded bedstead may be made to represent a desk, book-case, or any other article of furniture. The casing or head-section 1 comprises a base, 4, mounted on rollers, and a head-board, 5, having one or more permanent central panels, 6, and two swinging panels, 7, one on each side of the central panel or panels and hinged at their outer vertical edges to the corner-posts 8 of the upright casing. In the front lower position of the upright casing or head-section 1 is pivoted the folding bed section or frame 9, which consists, essentially, of the side rails, 3, connected beneath by the false front 2, which forms the outside front of the upright casing or cabinet 1 when the bed is folded. The side rails, 3, are each provided at the pivoted end with an open-ended slot or groove, 10, that is parallel with the lower edge of the rail and extends to its end, as shown in Figs. 2 and 5. At the inner end of the slot or groove 10 is a gudgeon-bearing, 11, consisting of an annular plate having a beveled opening, 12, in one side, as shown in Fig. 8. This beveled opening 12 is in line with the slot or groove 10, and through said groove

and opening the side rail, 3, with attached bearing-plate 11, is enabled to be engaged with and disengaged from an inclined rectangular gudgeon, 13, formed on a plate, 14, Fig. 8, that is secured to the inner side of the upright casing, at or near its base. By reference to Fig. 5 it will be seen that the gudgeon 13 is so inclined as to be in line with the groove 10 only when the bed-section 9 is in nearly an erect position. It is thus apparent that whether the bedstead is folded or unfolded the engagement of the gudgeon 13 and its bearing-plate 11 will be such as to securely connect the upright casing and its folding bed-section without interfering with the necessary pivotal movement of the latter in folding and unfolding the bed. By unfolding the bed-section 9 for a space of a foot (more or less) at the top the groove 10 and diagonal gudgeon 13 will, however, be brought into line, and the bed-section may then be lifted upward and forward, and so disconnected from the upright casing after the disengagement of other parts, as hereinafter explained. The gudgeon-plate 14 may be provided on the back with a lug, 13^a, to enter a small recess in the casing, the lug serving to assist in supporting the gudgeon-plate and attached bed-section, and to relieve the attaching-screws of the gudgeon-plate from strain. At their pivoted ends the side rails, 3, are provided with extension strips or arms 15, that support a transverse connecting-bar, 16, which is mortised into the outer ends of said extension-strips. To this transverse bar 16 is attached the upper end of the woven-wire bed-bottom 17, the opposite end of which is secured to a transverse bar, 18, that is supported in metallic boxes 19 at the foot of the side rails, said bar 18 being adjustable within the boxes 19 by means of screws 20, so as to regulate the tension of the wire bed-bottom or mattress. If desired, auxiliary springs 21 may be placed beneath the central portion of the wire bottom to assist in sustaining the weight and prevent the wire fabric from sagging. The transverse bar 16, that connects the hinged rail-extensions 15, is provided on the under side, near each end, with a staple or screw-eye, 22, for engagement with a snap-hook, 23, on the end of a chain, 24, or other inelastic connection that extends to the front lower portion of the casing-base. The length of each of these chains is equal to the distance between their points of attachment on the casing-base 4 and transverse bar 16 when the bedstead is unfolded or while the side rails, 3, and hinged extension-strips 15 are lying in substantially the same horizontal plane. The chains 24 thus serve to limit the upward movement of the hinged extension-strips 15 and connecting cross-bar 16 while the bedstead remains unfolded, and in connection with a proper adjustment of the extension-bar 18 they also assist in bringing the woven-wire bed-bottom to the necessary degree of tension to insure its adequate support when in use. It will be seen that as the chains 24 have a detachable connection at one end they

is folded. In connection with the flange 30 on the cross-bar 16, the transverse roller 27 also serves to close the space that would otherwise remain between the lower edge of the head-board and the upper end of the bed-section when the bedstead is unfolded. The roller 27 is journaled in any convenient manner in the corner-posts 8 or sides of the casing, and, being located transversely in front of the lower edge of the head-board and capable of a rotary movement, is adapted to prevent the bed-clothing from coming in binding contact with the head-board in the act of folding the bedstead. This operation of the roller 27 is facilitated by the movements imparted to it by the belt 25 in actuating the hinged panels. By this means the roller is turned or moved at just the right time and in the proper direction, both in opening and in closing the bed, to free any bedding which may chance to get between said roller and the flanged cross-bar 16 on one side or the lower edge of the head-board on the other. By this construction, also, the panels 7 are caused to move simultaneously, and when the bedding is in such position as is least likely to offer an obstruction, while the roller 27 moves when the bedding is passing it. The detachable connection of the chains 24 and belt 25 with the cross-bar 16 enables these parts to be readily disconnected preparatory to removing the bed-section from the casing 1 at their gudgeon-bearings, as before mentioned. This separation of the bed-section from the casing can be easily and quickly accomplished without the use of tools, as it is only necessary to unbutton the belt 25, unclasp the snaps 23, and bring the bed-section into a vertically-inclined position, so that the groove 10 will come in line with the diagonally-placed gudgeon 13, when the bed-section can be lifted out, as shown in Fig. 5, thus facilitating the separate handling of the casing and bed-section when necessary. At their lower ends the side rails, 3, and connected bed-frame, when unfolded, are supported by legs 40, that are pivoted in ear-plates 41, attached to the inner side of the foot-board 42, an open space, 43, being left between said foot-board and the end of the false front 2, through which the legs are turned in and out. On folding the bedstead and turning the legs inward they may be concealed by a cornice, 44, that is hinged to the false front and adapted to engage the inner face of the foot-board by means of a suitable catch. The legs 40 are pivoted in such proximity to the side rails that when unfolded said legs will rest against the inner flange of said rails, in which position they are secured by spring-latches 45, mounted upon the outer part of each leg and engaging with a latch pin or catch, 46, upon the under side of the adjacent side rail, near its end. The upper edge of the foot-board 42 is shaped to conform to the front edge of an overhanging shelf or projection, 47, that extends across the upright casing, and with which the foot-board comes in contact when the bedstead is folded. The

shelf 47 and foot-board 42 thus constitute the top of the closed cabinet, above which, at the rear and attached to the back of the head-board 5, may be arranged an ornamental cornice or finial, 48, of any appropriate design.

Attached to the inner side of each corner-post 8, beneath the shelf or top 47, is a catch, 49, for engaging a locking-latch, 50, that is pivoted in an ear-plate, 51, attached to the under side of the inwardly-turned foot-board, said latch 50 being thrown into engagement with its catch 49 by means of a spring, 52, when the bedstead is folded and its legs are turned inward, as shown on the right-hand side of Fig. 7. The springs 52 are each supported on the inner sides of the side rails, 3, and false front 2, as shown in Figs. 1 and 6, and have one end attached to the adjacent pivoted latch 50, so as to actuate the same and throw it into engagement with its catch 49 after the bedstead is folded, as soon as said latch 50 is relieved of the pressure exerted upon it by the outwardly-extending leg. This pressure is removed by turning the legs inwardly. The tension of the springs 52 will then cause the pivoted latches 50 to engage their respective catches 49, and thereby securely lock the folded bedstead against any possibility of accidental disengagement. It will be observed, therefore, that the bed-section 9, when folded to an upright position, may be locked by simply turning its pivoted legs inward, so that there can be no possible danger of its falling down. The pivoted end of each leg 40 is provided on its outer edge with a cam-surface, 53, that enables it to turn freely in either direction in contact with the reverse end of the pivoted locking-latch 50 and against the tension of its spring. When the legs are turned outward, the pressure of the springs 52 will be overcome, and the vertical outer edge of the extended leg, by bearing firmly against the reverse end of the pivoted latch 50, where said leg is held by the engagement of the spring-catch 45 with its latch-pin 46, will keep the catch 49 and latch 50 disengaged, as shown on the left-hand side of Fig. 7, thereby unlocking the bedstead, and enabling it to be unfolded or extended at full length, and with its lower legs firmly secured.

The operation of the bedstead in its several parts and the manner of preparing it for use and folding and locking it when no longer required will be apparent from the foregoing description, and need not be further explained.

What I claim is—

1. In a folding bedstead, the combination of a stationary casing or head-section, a pivoted bed-section, swinging panels, a roller journaled transversely in front of the lower edge of the head-board, a belt passed over said roller and over a pulley in the lower part of the bed-casing and connected to the pivoted bed-section, and levers for connecting said belt and swinging panels, substantially as described.

2. In a folding bedstead, the combination, with a stationary casing or head-section hav-

can be readily disconnected when it is desired to detach the bed-section from the upright casing, as before referred to.

In folding bedsteads of this class, in which
 5 hinged panels 7 are so arranged as to form part of the head-board in the unfolded bedstead and adapted to close the spaces at the sides that would otherwise mar the appearance of the folded bedstead, it is desirable to provide a
 10 simple, durable, and unfailing means of automatically actuating said hinged panels at the proper time with a quick and positive movement, both in folding and unfolding the bedstead. It is also desirable to provide some
 15 means for preventing the bed-clothing from coming in binding contact with the lower edge of the head-board while the bedstead is being folded or unfolded, as well as to avoid any interference with the proper working of the
 20 hinged panels. These objects I accomplish in the simple, efficient, and inexpensive manner as presently described, without the employment of springs and cords, which are so liable to become worn, cut, and disarranged. The
 25 hinged panels 7 are actuated from the extension rails or arms 15 and connecting cross-bar 16 through a belt, 25, that is passed beneath a pulley, 26, at the rear lower part of the upright casing, and over a roller, 27, located
 30 transversely in front of the lower edge of the head-board. This belt 25 has in its front portion a longitudinal slot or elongated button-hole, 28, that is adapted to be detachably engaged with a button or headed stud, 29, on the
 35 rear of the cross-bar 16. By reference to Figs. 3 and 4 it will be seen that the pulley 26 is located centrally in the rear lower part of the casing 1, and that the button 29 is placed centrally on the cross-bar 16 or on a vertical
 40 flange, 30, attached thereto. It will also be seen that the central portion of the roller 27 is grooved circumferentially at 31 to form a guide and bearing for the belt 25. The two ends of this belt are brought together and loosely
 45 riveted to the lower or inner ends of extension-levers 32, that pivot on the connecting-rivet. The outer or upper ends of these levers 32 are pivoted to slide-bars 33, supported, one on each side, in screw-eyes 34, attached
 50 to the lower edge of the head-board. It will be observed that the central portion or body of each slide-bar 33 is rectangular, to afford a proper bearing for the levers pivoted thereto, while the ends of said bars are cylindrical, to facilitate their support and movement
 55 in the screw-eyes. To the lower edge of each swinging panel 7, at its hinged side, is attached an angle-iron, 35, which is pivotally supported in a screw-eye, 36, secured to one of the corner-posts. Each angle-iron is provided
 60 at the lower part with an arm, 37, to which is pivoted one end of a horizontally-movable extension-lever, 38, the opposite end of which is pivoted to the under side of the adjacent slide-bar. To either or both of the vertically and
 65 laterally movable levers 32 may be pivoted a brace, 39, the upper end of which is pivoted

to the rear of the head-board, to compel the levers and slide-bars to move in unison. It will be observed that the lower connected ends
 70 of the levers 32 form a knuckle-joint, and both being pivotally connected to the belt 25 at the same point, the panels 7 will be actuated simultaneously with a positive movement, as the belt is moved up or down, by the short hinged
 75 extension of the folding bed-section. When the bed is open or unfolded, the levers 32 form a letter V directly under the head-board, as shown in Fig. 3, and when the bedstead is closed, as shown in Fig. 4, said levers occupy
 80 a position parallel with and alongside of the slide-bars. On opening the bedstead, when the pivoted bed section 9 in its downward movement reaches a point where it begins to
 85 raise the short extension-arms 15 and cross-bar 16, the elongated button-hole or slot 28 permits the button or stud 29 to rise some little distance before engaging the upper end of said slot or button-hole, thus allowing time
 90 for the bedding to pass from between the hinged panels 7 before they commence to swing toward the head-board. When the upward movement of the cross-bar 16 causes the stud or button 29 to engage the upper end of the
 95 elongated slot 28, the belt 25 is thereby moved upward and backward, rotating the roller 27 in the same direction, and carrying down the knuckle-joint at the lower or inner ends of the levers 32, thus causing the upper or outer
 100 ends of said levers to draw the slide-bars 33 inward. The inward movement of these slide-bars, by drawing on the horizontally-movable levers 38, causes a simultaneous movement of both angle-irons 35 and attached panels 7, whereby the latter are swung inward and back
 105 against the head-board with a steady positive movement. In closing the bedstead these movements are reversed, the stud 29 being caused, in this instance, to engage the lower end of the slot 28 in season to actuate the
 110 hinged panels 7, through the belt and intermediate connections, before the bedding has approached sufficiently near to obstruct the outward swinging movement of said panels. By this mechanism the panels 7, whether swung
 115 back against the head board or outward to close the spaces at the sides of the folded bedstead, will be held more firmly in either position than is possible when they are arranged to be operated by either cords or springs.
 120 The annoyances resulting from the frequent cutting of cords where they run diagonally over the flanges of pulleys and of the cords stretching so as to be rendered incapable of properly performing their functions, as well
 125 as the unsightly appearance of the cord when slack, are avoided by my construction and arrangement of panel-actuating devices. It will be observed that the belt 25 and roller 27 not only form part of the panel-actuating mechanism, but also serve to support the short
 130 hinged extension 15 16 of the bed-frame and keep it from coming in contact with the floor or bottom of the bed-casing when the bedstead

ing hinged panels adapted to close the sides of the folded bedstead and forming part of the head-board in the unfolded bedstead, of a bed-section pivoted in the base of said section and connected to said hinged panels by a belt passed over a roller above and a pulley below, and levers pivoted to said belt and connected with the swinging panels, substantially as described.

3. In a folding bedstead, the combination, with a casing, a head-board, and swinging panels hinged thereto and adapted to swing outward and close the sides of the casing when the bedstead is folded, and to swing back and form part of the head-board in the unfolded bedstead, of a bed-section pivoted in the base of the casing and having a hinged extension, a roller journaled at the lower edge of the head-board, a belt connected to said hinged extension of the bed-section and passed over said roller, and means for connecting said belt and swinging panels, substantially as described.

4. In a folding bedstead, the combination, with a casing, a bedstead pivoted therein, and hinged panels adapted to swing back against the head-board when the bedstead is unfolded, and swing outward to each side when the bedstead is closed, of a roller journaled transversely in said casing, a belt connected to the bed-section and passed over said roller above and a pulley below, angle irons attached to the swinging panels, and levers and slide-bars for connecting said belt and angle-irons, whereby the swinging panels are actuated automatically in both directions, substantially as described.

5. In a folding bedstead, the combination, with a stationary casing or head-section and catches fixed to its upper part, of a bed section pivoted in the base of said casing and provided with a foot-board, legs pivoted to the inner side of said foot-board, and locking levers or latches also pivoted to the inner side of the foot-board, and adapted to be engaged with the catches on the stationary casing when the bedstead is folded and its legs turned inward, and to become disengaged when the legs are turned outward, substantially as described.

6. In a folding bedstead, the combination, with a stationary casing having catches fixed to its upper part beneath an overhanging top, of a bed-section pivoted in the base of said casing and provided with a foot-board, and with legs pivoted to the inner side thereof, said legs being provided at their pivoted ends with cam-surfaces, locking-catches pivoted to the inner side of the foot-board, at the outer side of the pivoted legs and in proximity thereto, and springs connected to said locking-latches, whereby the folded bedstead will be locked by turning its pivoted legs inward to allow the locking-latches to engage their catches, substantially as described.

7. In a folding bedstead, the combination,

with a stationary casing or head-section and a bed-section pivoted in the base of said casing, of a roller journaled transversely in front of the lower edge of the head-board and above the inner end of the bed-section, and adapted to close the space between the head-board and extended bed and form a yielding support to prevent the bedding and bed-clothing from coming in binding contact with the head-board in the act of folding or unfolding the bed, substantially as described.

8. In a folding bedstead, the combination of the casing 1, having base 4 and head-board 5, the swinging panels 7, provided with angle-irons 35, having arms 37, the bed-section 9, having side rails, 3, pivoted in the base of the casing, and provided with hinged extension-strips 15 and cross-bar 16, having button 29, the roller 27, pulley 26, belt 25, having elongated slot 28, the levers 32, slide-bars 33, and levers 38, substantially as described.

9. In a folding bedstead, the combination of the upright casing 1, having top 47 and catches 49, the pivoted bed-section 9, having foot-board 42, the legs 40, and locking-latches 50, pivoted on the inner side of said foot-board, and the springs 52, attached to said locking-latches, whereby said latches are operated by turning the legs in or out, substantially as described.

10. In a folding bedstead, the combination of the upright casing 1, having head-board 5, the pivoted bed-section 9, and the transverse roller 27, journaled in front of the lower edge of the head-board, substantially as described.

11. The combination, in a folding bed, of a casing, a bed-section comprising side rails having slots open at one end and closed and enlarged at the other end, and plates attached to the case and provided with inclined rectangular gudgeons, substantially as described.

12. In a folding bedstead, the combination of the upright casing 1, the bed-section 9, detachably pivoted in said casing, and having a short hinged extension, 15 16, the roller 27, hinged panels 7, belt 25, for connecting said bed-section and roller, and means for connecting the belt and hinged panels, substantially as described.

13. In a folding bedstead, the combination of the casing 1, bed-section 9, detachably pivoted in said casing, and having a short hinged extension, 15 16, the roller 27, hinged panels 7, belt 25, passed around said roller and beneath a pulley, 26, said belt being detachably buttoned to the hinged extension of the bed-section, means for connecting said belt and hinged panels, and the detachable chains 24, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LEVI C. BOYINGTON.

Witnesses:

FRANK H. WATERBURY,
W. A. MORRISON.