(No Model.)

3 Sheets—Sheet 1.

P. FLOWERS.

FOLDING BED.

No. 502,291. Patented Aug. 1, 1893.

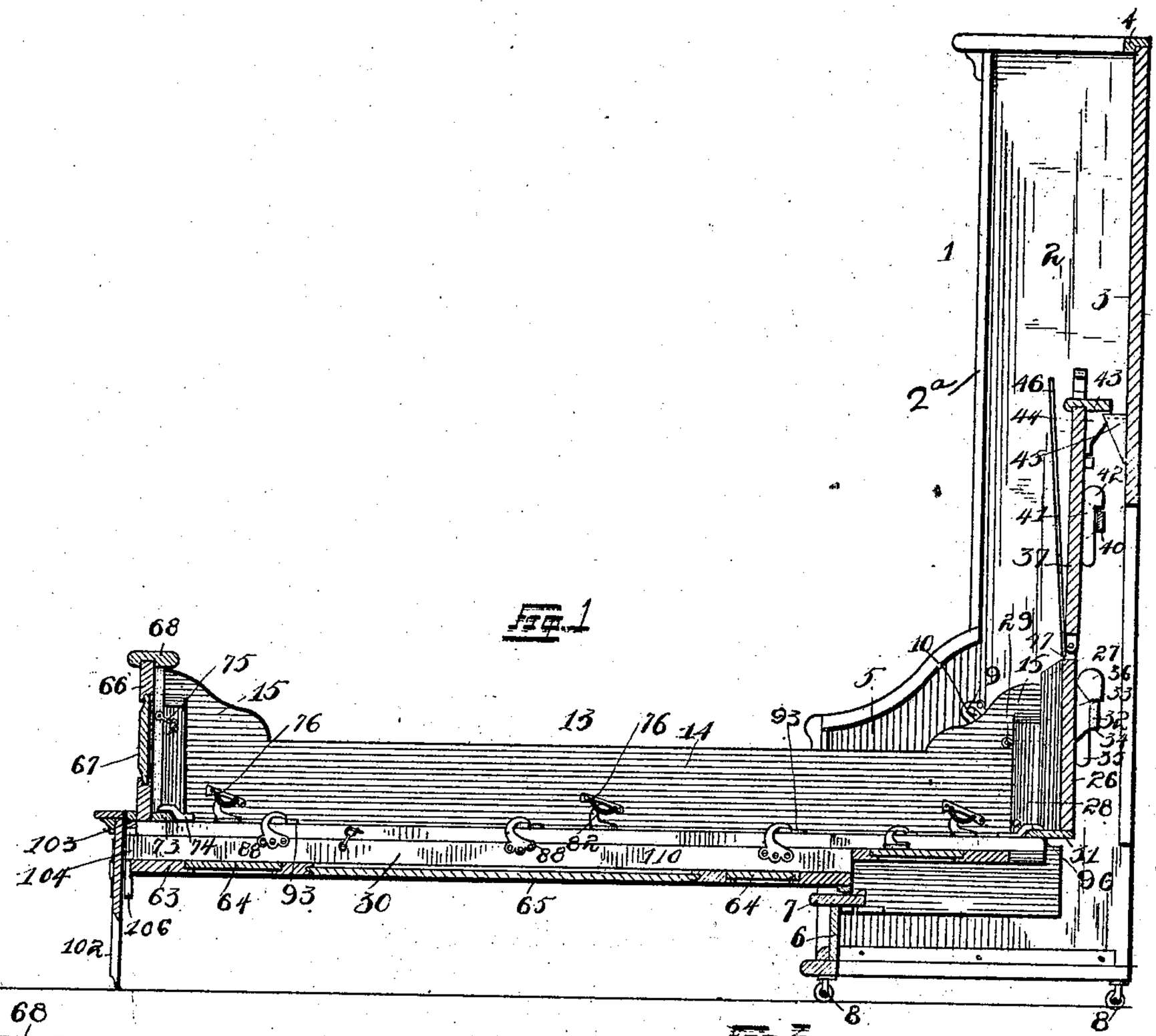

Fig. 1

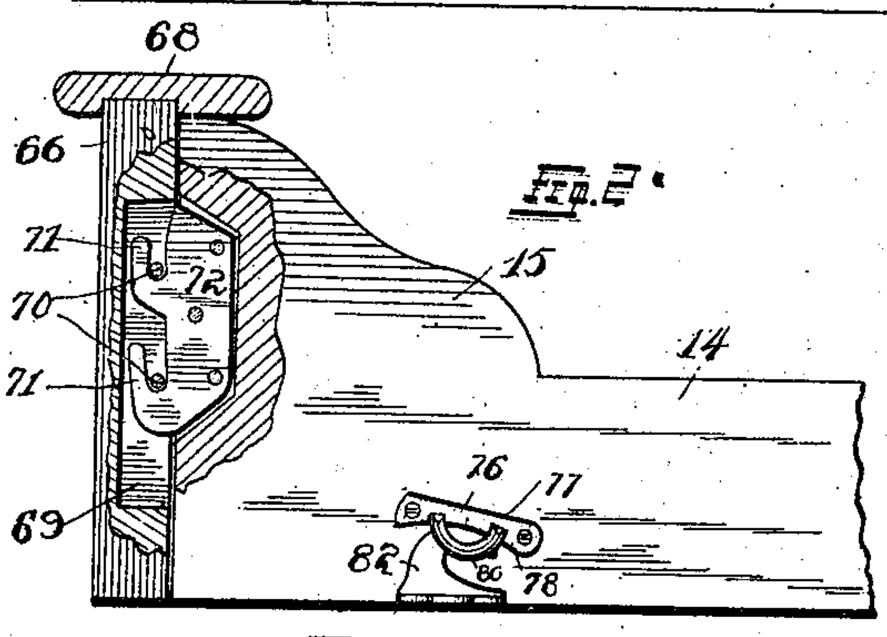

Fig. 2.

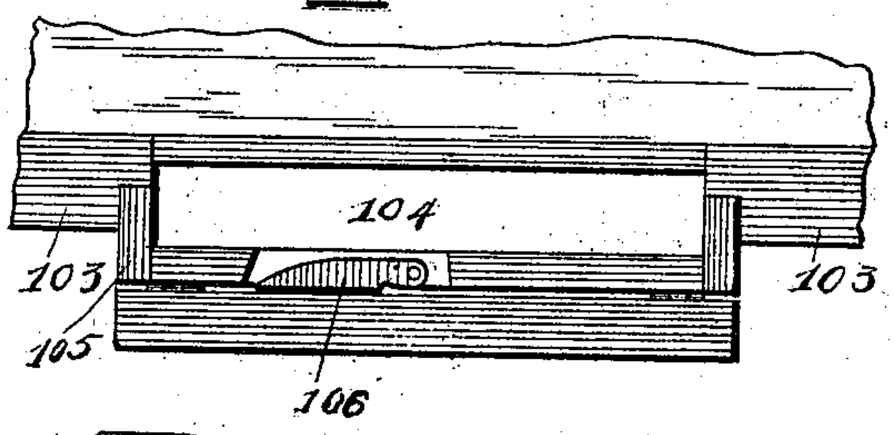

Fig. 3

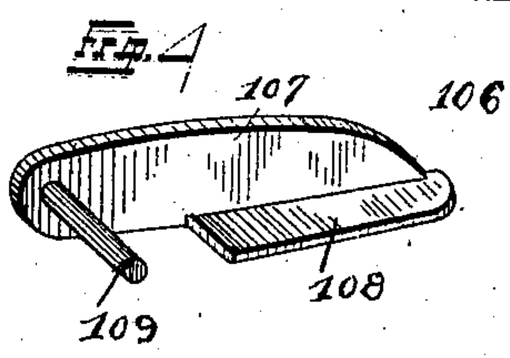

Fig. 4

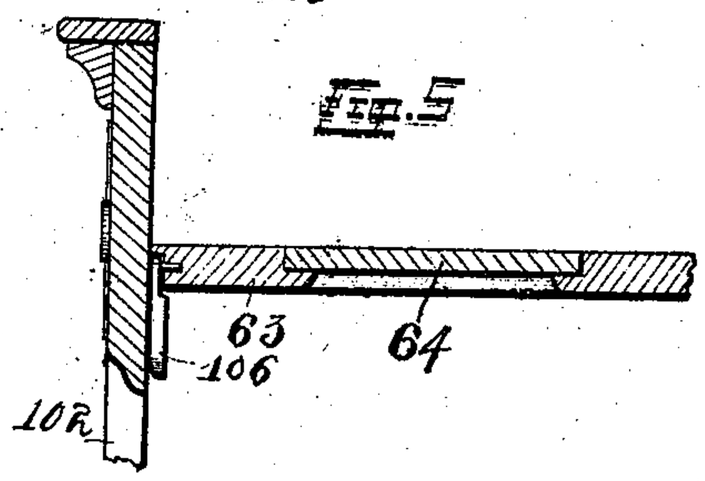

Fig. 5

Witnesses

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(No Model.)

3 Sheets—Sheet 2.

P. FLOWERS.

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No. 502,291. Patented Aug. 1, 1893.

Fig. 5

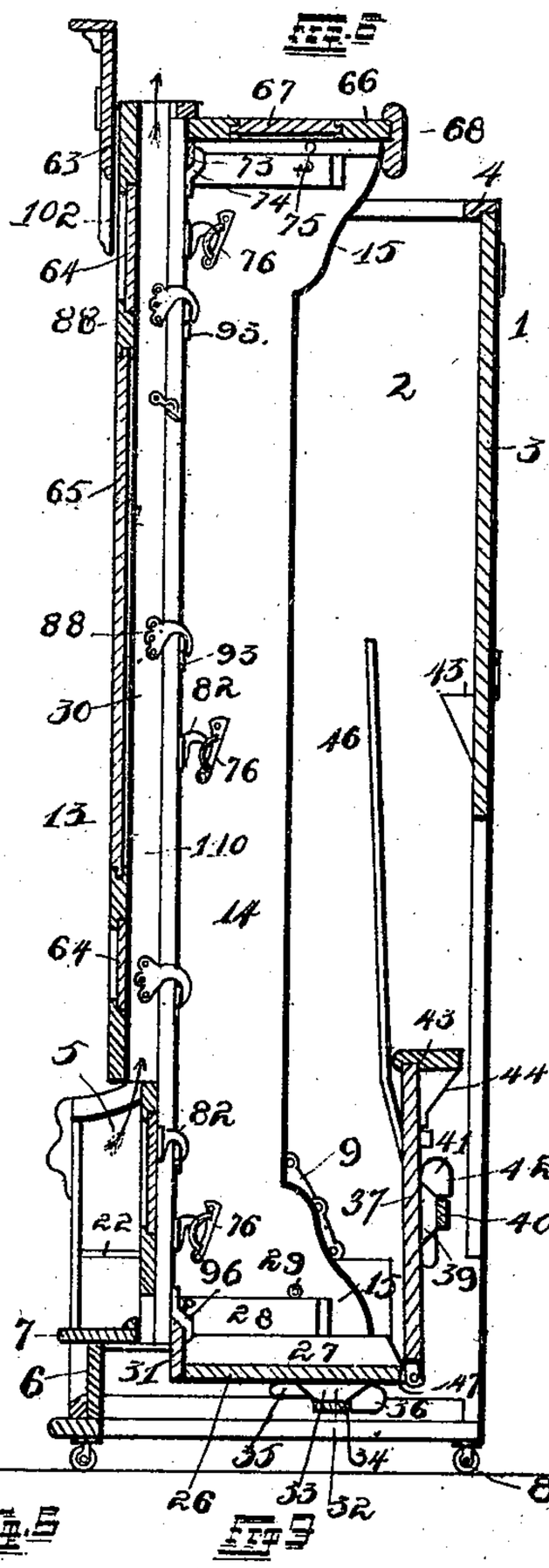

Fig. 7

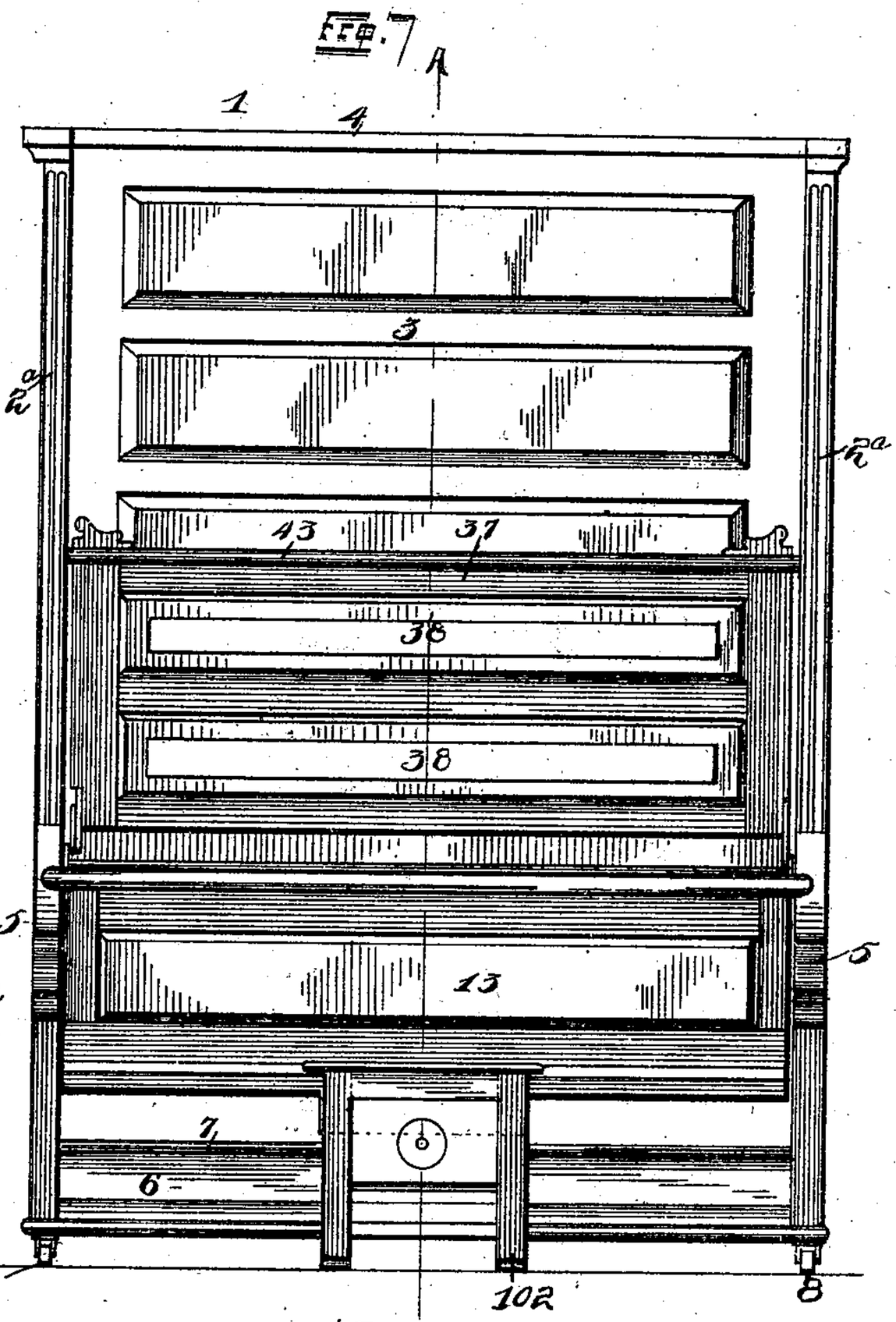

Fig. 9

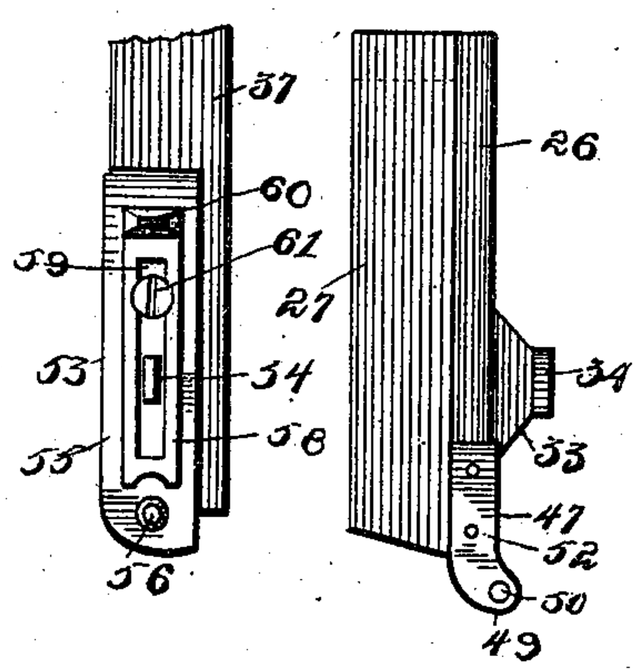

Fig. 10

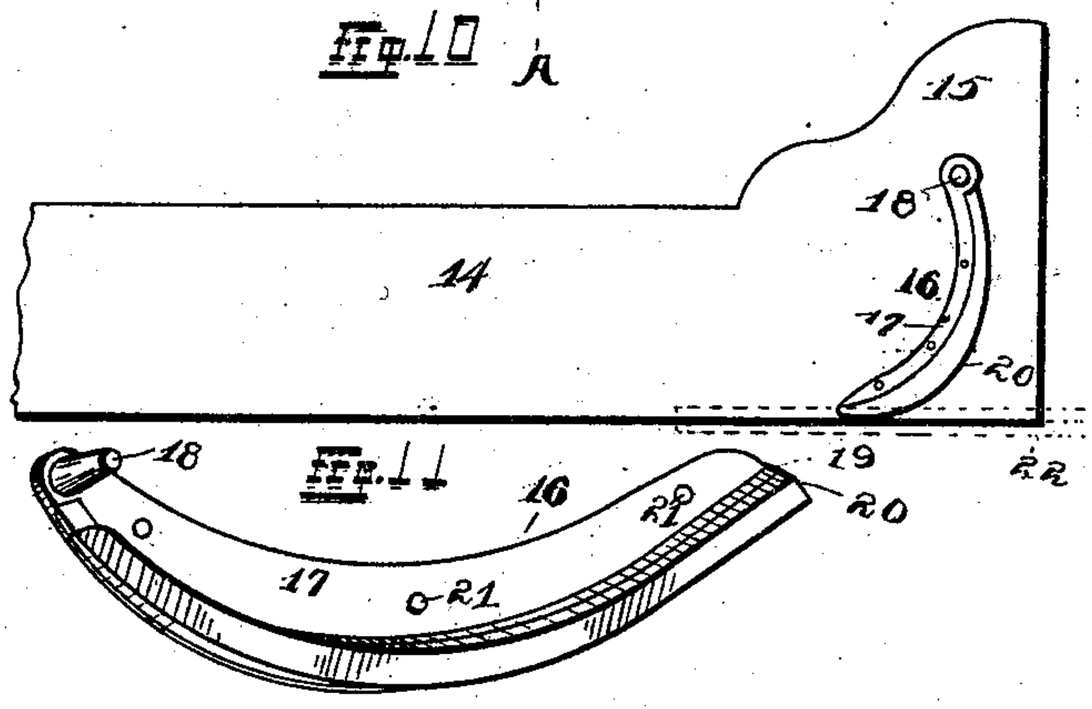

Fig. 11

Witnesses

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(No Model.) 3 Sheets—Sheet 3.

P. FLOWERS.

FOLDING BED.

No. 502,291. Patented Aug. 1, 1893.

Fig. 12

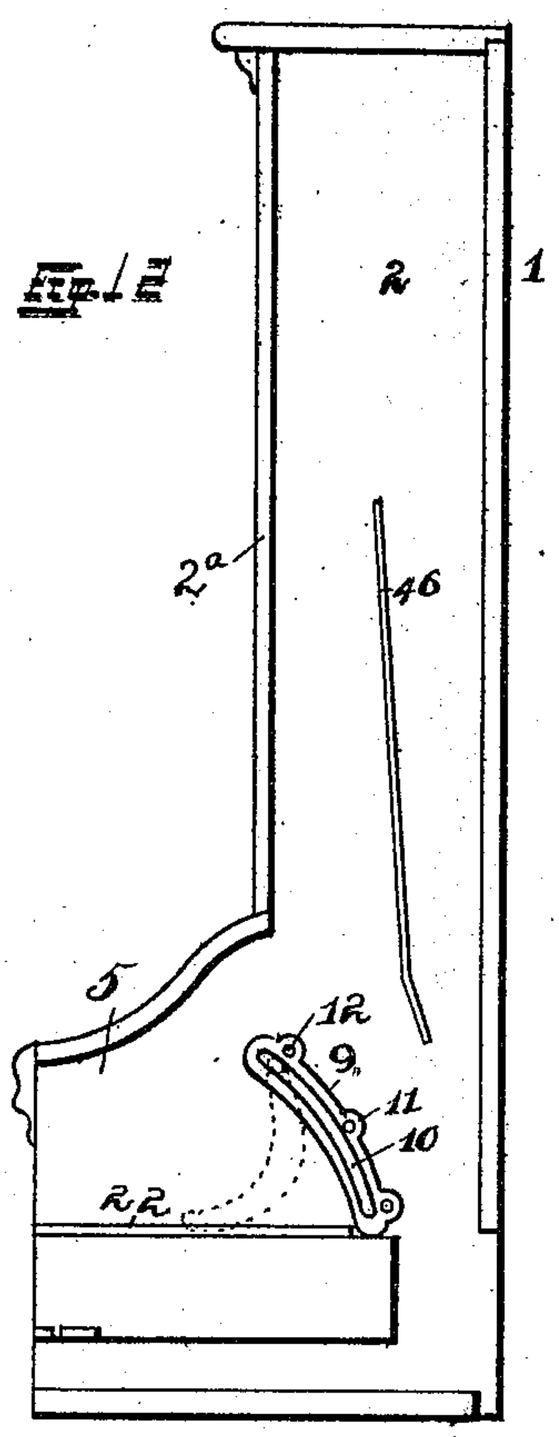


Fig. 13

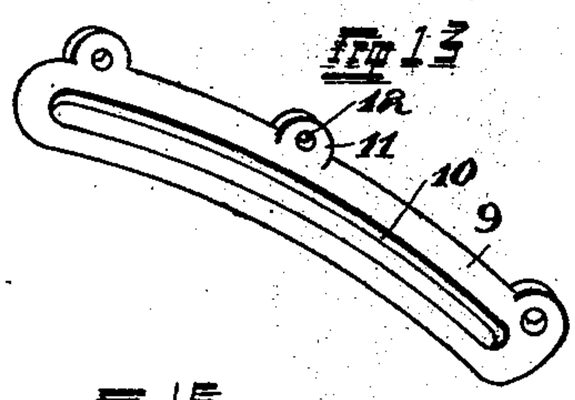


Fig. 14

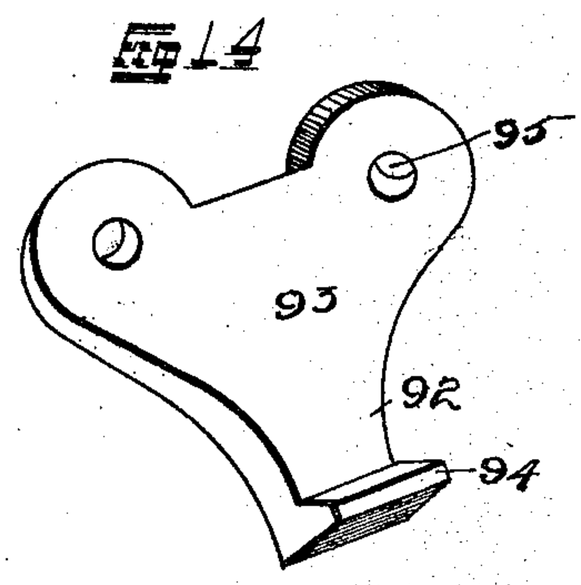


Fig. 15

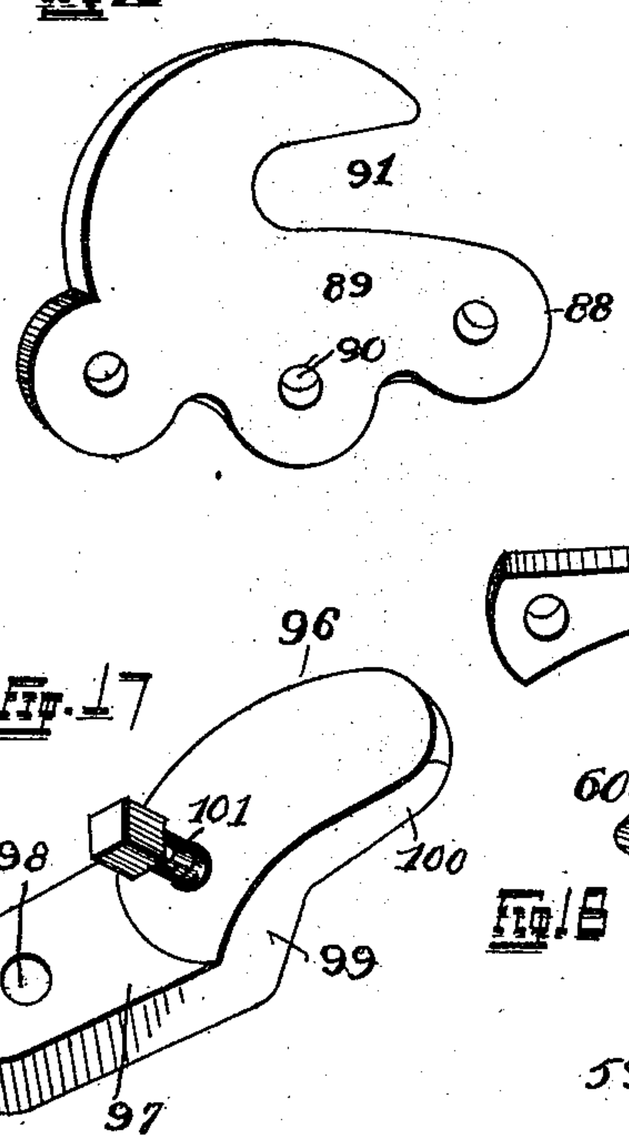


Fig. 16

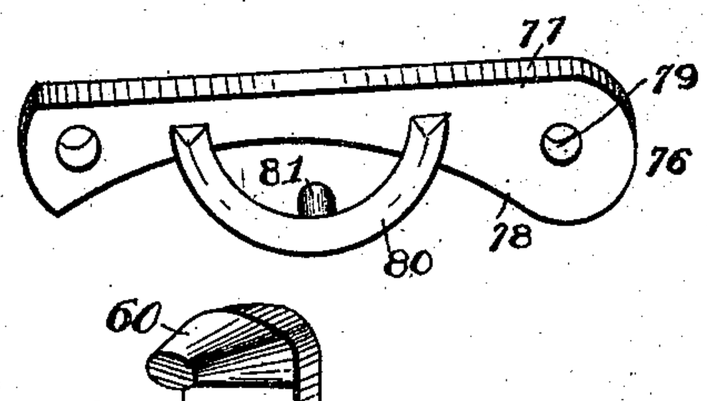


Fig. 17

Fig. 18

Fig. 19

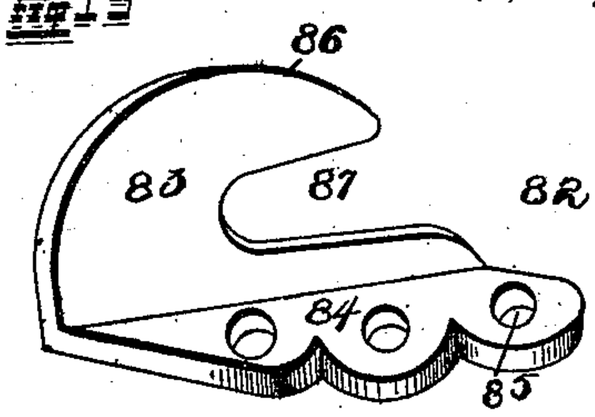


Fig. 20

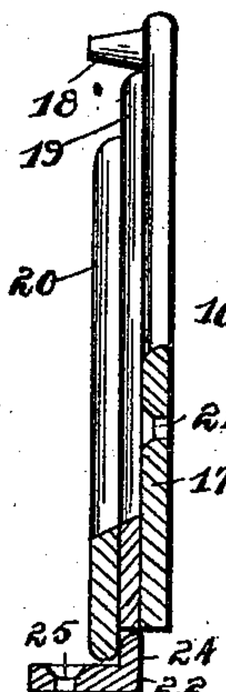


Fig. 21

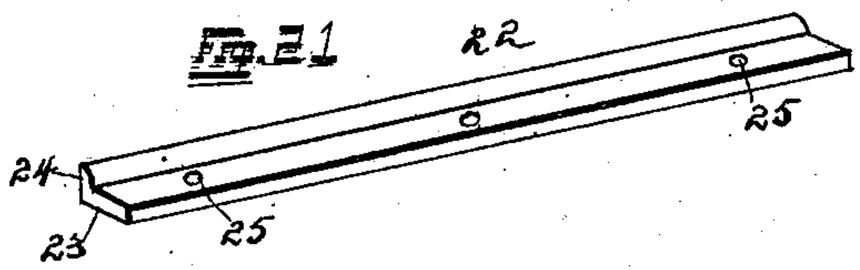
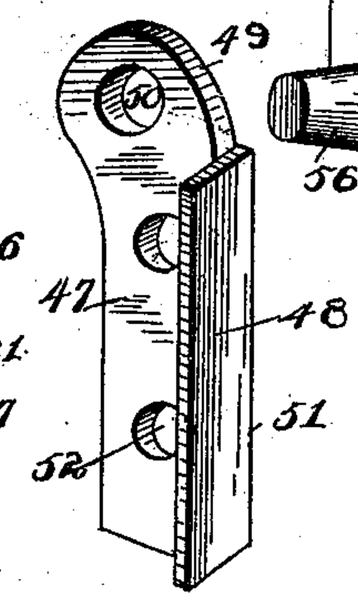


Fig. 22



Witnesses

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UNITED STATES PATENT OFFICE.

PHILLIP FLOWERS, OF ST. LOUIS, MISSOURI.

FOLDING BED.

SPECIFICATION forming part of Letters Patent No. 502,291, dated August 1, 1893.

Application filed November 16, 1892. Serial No. 452,158. (No model.)

To all whom it may concern:

Be it known that I, PHILLIP FLOWERS, of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Folding Beds, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in "folding beds," and consists in the novel arrangement and combination of parts as will be more fully hereinafter described and set forth in the claims.

The object of my invention is to improve upon the class of beds above mentioned and to include therein features which cover many deficiencies before experienced, both in the construction and operation. One of its main points lies in the fact that the bed is instantly separable or collapsible for the transportation of the same. Another is its ventilation features by means of which the mattresses and covers are thoroughly aired during the day. The perfect balancing of the parts render its operation as nearly perfect as possible and it will be especially seen that its manipulation is simple, which point alone covers many of the objectionable features to the present folding bed.

In the drawings: Figure 1 is a side sectional elevation of the bed when open, the view being taken on a line A—A in Fig. 7. Fig. 2 is a side sectional elevation with parts broken away and removed, of the inner side of one of the side boards of the bed, showing its detail connection with the foot-board. Fig. 3 is a top plan view with parts broken away of the ventilation opening showing the hinged connection of the foot rest to adjoining parts, the view being had from the top of Fig. 6 when the bed is closed. Fig. 4 is a detail perspective view of a casting attachment made use of. Fig. 5 is a detail sectional view with parts broken away of the supporting foot rest showing its connection with the front panel board of the bed when the same is closed. Fig. 6 is a side sectional elevation with the bed closed, the same being taken on a line A—A in Fig. 7 if the same were folded. Fig. 7 is a detail elevation of the bed when open, and looking from the foot of same. Fig. 8 is a detail elevation of the device used to balance the head-board at one side. Fig. 9 is a detail side elevation showing a block secured to the thickness of the back frame by means of which the same is secured to the side-boards and showing the weight rack. Fig. 10 is a detail view of an attachment used for guiding the folding and unfolding of the bed, and showing said attachment secured to the outer side of one of the side-boards. Fig. 11 is a perspective view in detail of the attachment shown applied in Fig. 10. Fig. 12 is a side elevation of one of the side frames of the stationary part of the bed, showing the inner side thereof and a guide secured thereto, which is used in connection with the attachment shown in Figs. 10 and 11. Fig. 13 is a perspective detail view of the guide shown applied in Fig. 12. Fig. 14 is a perspective view of a casting used in conjunction with other parts to secure parts of the bed together. Fig. 15 is a perspective view of a casting made use of in connection with the attachment shown in Fig. 14. Fig. 16 is a perspective view of a device used in connection with the casting shown in Fig. 15. Fig. 17 is a perspective view of an attachment embodying a set screw used to balance the folding portion of the bed. Fig. 18 is a perspective view of two different devices used in conjunction with each other to balance the head board. Fig. 19 is a perspective view of an angle casting which is used both in connection with the casting shown in Fig. 14 and that in Fig. 16. Fig. 20 is an end sectional view of the device shown in Fig. 11 showing its relative position with a guide shown in Fig. 21. Fig. 21 is a detail perspective view of the guide shown in section in Fig. 20. Fig. 22 is a perspective view of an attachment used in conjunction with the parts shown in Fig. 18.

Referring to the drawings, a clear understanding of the device will be augmented by reference to the illustrations which are in detail and fully set forth all of the parts and their connection with other parts.

I will first describe the stationary or receiving part of the bed, with its various attachments before detailing the arrangement of the folding mechanism.

The stationary portion 1 of the bed consists of two upright side pieces 2, the two of which are connected together by a half-back

3, the same being adjoining the upper extremities of the sides 2 and under a top strip 4 which in Fig. 1 is shown in section by which it will be seen that the strip is a very narrow one and acts as a brace. The sides 2 have inwardly projecting strips 2^a at their front, vertical edges, and projecting fanciful shaped projections 5 projecting in front of the sides at the lower ends, and which when the bed is open serves to keep the pillows in place.

Projecting upwardly from the bottom of the projections 5 and at the front of same is a strip 6 which connects the two sides of the bed together, and which when the bed is open serves as a support for the head of the bed and when closed presents a pleasing appearance, as it is surmounted by a strip 7.

The entire construction above described rests upon four casters 8 which are located respectively at each of the four corners.

Taking the bed as closed it will be seen that the lower half of the back and the entire bottom of the bed is open allowing the free circulation of air through the covers, as the top of the bedstead is also open.

In proceeding with the description of the construction it is necessary to premise that the folding portion of the bed is complete, in order to detail the supporting mechanism.

Referring to Fig. 13 it will be seen that a guide 9 having a curvilinear slot 10 therein, said slot describing the segmental portion of a circle, and said casting being provided upon one side with lugs 11 having openings 12 by means of which the guide is secured to the inner sides of the side-board of the stationary construction 1. The guide 9 is secured to the inner sides of the side boards 2 with the curvilinear or concave form of the same extending toward the back and upper end of the bedstead such application allowing the folding part 13 of the bed to work in its proper plane.

The longitudinal side-boards 14 of the bed have upwardly projecting portions 15 upon both ends, as is usual in this class of construction and secured upon the head ends of said side-boards 14, in a relative position as shown in Fig. 10 and upon their outer sides are located castings 16 curvilinear in form and consisting of a plate 17 having at one end and projecting at right angles with its surface, a lug 18. Extending from a point adjacent the lug 18 and along one side of said plate 17 is a plate 19 and upon the top of which and extending outwardly a relative distance therefrom, is a plate 20. The detail of this construction will be best understood by reference to Figs. 11 and 20.

The plate 17 is provided with a number of screw holes 21 by means of which the same is secured to the bed board 14.

The projecting flange or plate 20 is adapted to serve as a guide for the travel of the casting and normally slides upon an angle guide 22 consisting of a bottom plate 23 with a projection 24 along one side at right angles with the plate 23, said projection 24 having its inner upper edge rounded to prevent friction.

The plate 23 is provided with a number of perforations 25 through which screws may be placed to secure the plate upon the top of a board or block which is secured in a horizontal position on the inner sides of the side-boards 2 of the stationary construction 1. With the bed open the casting 16 is in a position as shown by dotted lines in Fig. 12 and when the same is closed, the lug 18 travels down through the guide slot 10 and the flange 20 fitting over the projection 24 upon the guide 22.

From the above description it will be seen that the entire weight of the bed in folding and unfolding rests upon the guide 22, the connection of the guide 9 and the casting 16 being had to facilitate an easy and perfect movement of the bed in operation. The two side-boards 14 are connected at the head of the bed by a cross-piece 26 which has at points adjacent both ends, strips 27 extending from the front surface of same. Corresponding strips 28 are secured upon the inner sides of the side-boards 14 and the head-board 26 is secured to said side-board 14 by the placing of an eye-bolt 29 through said strips 27 and 28, and which holds the same secured together upon the folding frame 30 more fully hereinafter described. The head-piece 26 is also provided with a bottom strip 31 extending outwardly toward the foot of the bed at right angles with said strip, and extending from points adjacent the inner sides of the side-boards 14. Above the center horizontally, of said head-board 26 and running longitudinally along the rear surface of said head-board is a weight rack 32 which consists of braces 33 at both ends and intermediate of the ends if desirable said brace 33 connected by a strip 34 over which sectional adjustable weights 35 are placed. The weights 35 have an enlarged upper end 36 which prevents the weight 35 from slipping through the rack and which also serve as a means for their removal. The main portion of the head extends above the head-board 26 and is secured to the same in such a manner that the same is collapsible in the rear of the head-board 26 as it stands when open, but as the same is in a horizontal position when the bed is closed, the collapsible back is in upwardly extending position at right angles with said head-board 26. This construction consists of a frame 37 having horizontal panels 38 as shown in Fig. 7 and upon the back of which are secured the projections 39 similar to the one 33 previously described, and having a strip 40 connecting the same, with weights 41 having enlarged upper ends 42, to engage over the strip 40, these weights being similar to those previously described. The weight rack is located about the center horizontally, and upon the rear side of the frame 37 and thus balances this construction in such a manner that the parts are facilitated in operation. The top

of the frame is surmounted by a strip 43 which connects with the back of the frame 37 by an angle block 44. One of these angle blocks 44 is secured at each side of the bed and is adapted to strengthen the top strip 43.

Intermediate of the sides of the bed and upon the half back 3 is a triangular-shaped casting in side elevation, said casting being indicated by the numeral 45 and is adapted to engage the under side of the cross-piece 43 when the bed is open, or in other words the full weight upon the upper half of the bed is held by this block.

To prevent the upper portion of the head, which is indicated by the numeral 37 and which is hinged as hereinafter described to the head-board 26 from tilting forward, strips 46 are secured to the inner sides of the side-boards 2 and engage the front of the top strip 43 when the engagement of same with the block 45 is disengaged. These strips 46 also serve as a guide for the upward movement of the frame 37 when the bed is being opened, and the downward movement of same when being closed.

I will now describe the attachment used for the hinged connections, said hinged connections being made at both sides of the bed. To facilitate a clearer understanding of the device as used, reference should be made to Figs. 18 and 22. One member of the hinge as shown in Fig. 22 consists of a plate 47 having extending at right angles, on one side a plate 48 which is only about two-thirds the length of the plate 47 which has an ear 49 upon one end above the plate 48 which is slightly curved and provided with a perforation 50 in which a lug or projection upon another member operates. The member above described is indicated by the numeral 51 and its plate 47 is provided with perforations 52 by means of which the device is secured to the end of the head-board 26, with the plate 48 against the rear face of said head-board to strengthen the construction. The other member 53 consists of a device as shown in Fig. 18 with the exception that the projection or lug 54 intermediate of the length of same is not necessary, as it serves a function in a separate construction by means of which the opposite end of the frame 37 is hinged. The member 53 consists of a plate 55 having a lug 56 surmounting the same adjacent one end, said lug 56 being circular in cross-section and said plate 55 also provided with openings 57 by means of which the same is secured to the end of the frame 37, the same being countersunk to receive said plate. The lug 56 engages in the opening 50 and allows of the operation of the hinged connection at this end. The opposite end of the construction has a member 51 secured to the end of the head-board 26 as above described with the ear extending toward the rear portion of the bed. The member 53 complete with the intermediate lug 54 is secured to the end of the frame 37 and its lug 56 is longer than the one used at the opposite end.

In order to place the frame in position, the end having the member 53 with the longer lug 56 is first fixed by inserting the lug 56 in the opening 50 in the ear 49 and by pushing the frame as far as possible toward the side-board 2 at that side, it is possible to insert the lug 56 upon the member 53 at the other side into the opening 50 at that side. The frame is then pushed to that side and a semi-member 58 having a slot 59 and a hand catch at its upper end, is inserted over the member 53, with the lug 54 in the slot 59. The thickness of the semi-member 58 compensates for the discrepancy in the width of the hanging of the frame and is inserted between the ear 49 of the member 51 and the surface of the plate 55 of the member 53 and is held in place by a set screw 61 engaging a screw-threaded opening 62 in the plate 55 above the lug 54. The projection 60 upon the semi-member 58 is for the manipulation of said member as will readily be seen by reference to Fig. 18.

The frame 30 consists of a rectangular-shaped frame 63 having horizontal panels 64 and a looking-glass 65 intermediate and between the same. The frame 63 is the same width as the head-board 26 and in this description we will premise that the bed is open in order to give a clearer understanding of the parts and their arrangement. The side-boards 14 are secured upon the frame 63 as more fully hereinafter detailed and while connected at the head by the board 26, they are connected at the foot by a frame 66 having a panel 67, said frame surmounted by a strip 68 to give a fanciful appearance to the bed.

Referring to Fig. 2 it will be seen that a hollow casting lines an opening 69, and in said opening are transversely located pins 70 in vertical alignment and which are adapted to be engaged by projecting hook-like portions 71 of a casting 72 set into a portion 15 of the side-boards 14. The usual manner of securing the foot-board is the reverse from that which I use, as I hang the weight of the foot-board upon the side-boards 14 instead of the reverse. As there is no weight given to the foot-board by the side-boards, the previous arrangement, or rather reverse arrangement to that which I have shown is not necessary. The frame 66 has an inwardly projecting piece 73 adjacent its lower extremity, running horizontally across the bed and having an inclined inner face over which fits a lock casting 74, similar to the one shown in Fig. 17, with the exception of the set screw. Hooks and staples 75 also help to secure the ends of the side-boards 14 to the foot-frame 66 as shown in Figs. 1 and 6.

Two different modes of securing the side boards or bed frame proper to the frame 30 are used. Lugs 76 such as are detailed in Fig. 16 consist of a plate 77 having one edge

78 curvilinear in form, said plates provided at both ends with apertures 79 by means of which they are secured to the bed and have projecting in an inclined relation with the surface of the plate 77, a semi-circular staple 80 having a lug 81 projecting inwardly and directly under the curvilinear face 78 of the device.

In Fig. 19 is shown a catch 82 which has a portion 83 rising at right angles with the plate 84 which is provided with apertures 85 by means of which the same is secured to the frame 63 as shown in Figs. 1 and 6. The projection 83 has its upper edge 86 curved to fit in the curvilinear under face 78 of the member 76 and said portion 83 is also provided with a curvilinear opening 87 which fits over the lug 81 and locks the two parts together. About three of the above described devices are used in the length of the side-boards 14, and prevent any vertical movement of the boards, and to prevent a longitudinal movement of same I have provided a catch 88 as shown in Fig. 15, the same consisting of a plate 89 having openings 90 by means of which it is secured to the frame-work and a curvilinear opening 91 adapted to fit over the shank 92 of a casting 93 and against a projecting lug 94 upon the extremity of same, said casting 93 being provided with suitable apertures 95 through which screws are placed to secure it to the side-boards 14, while the members 88 are secured to the frame 63.

The castings shown in Figs. 15 and 19 are interchangeable, that is, either one or the other may be used in connection with the castings 76 and 93.

Secured to the frame 63 and engaging the horizontal strip 31 under the head-board 26, are castings 96 consisting of a portion 97 provided with an aperture 98 through which a screw is placed to secure the same, and from said portion 97 projects an inclined portion 99 terminating in a set-off portion 100 which engages the upper side of said strip 31. In the inclined portion is located a set screw 101 the manipulation of which against the inclined front edge of the strip 31, is used to regulate the horizontal position of the bed, when the same is set upon an uneven floor, or in other words the same is used to balance the bed.

By referring to Fig. 7 it will be seen that the construction for supporting the foot of the bed when open, is located intermediate of the width of the bed and consists essentially of a rectangular-shaped frame 102 and which is hinged to the lower outer extremity of the frame 63, as shown in Fig. 6. The foot end-piece 103 has an opening 104 substantially about the width of the foot supporting piece 102, and which has a projecting frame 105 describing its outlines, and to which said supporting frame 102 is hinged, as shown in the plan view in Fig. 3. When the bed is closed, the normal position of the foot-supporting construction 102 is a vertical one, as shown in Fig. 6, the same serving to set off the appearance of the complete bed. When the bed is open and the frame 102 serving as a support, it is necessary to furnish a means for preventing the movement of said foot-supporting device, and for this purpose I have provided a casting 106, detailed in Fig. 4 and which consists of a plate 107 having its upper edge curvilinear, and its lower edge provided with a projecting plate 108 which serves both as a means for its hand manipulation and as a gage for its movement. This projection is substantially about the length of the plate 107 and located adjacent one end thereof. Projecting at right angles from the plate 107 is a pin 109 which engages in the frame 63, as shown in Fig. 5. When the bed is lowered, the foot-supporting device 102 naturally assumes a vertical position, and the catch 106 drops into the position as shown in Fig. 5, and in closing the bed the operator pushes up the catch into the position as shown in Fig. 3, by pushing upon the projection 108. The opening 104 leads into a chamber 110 which is formed by the mattress upon the top and the frame 63 and panels therein upon the bottom, and which is open at the head end of the bed as shown in Figs. 1 and 6, and it is intended that this chamber serve for the passage or ventilation of air during the daytime when the bed is not in use, but which is closed at night by the position of the foot-supporting device 102.

The above descriptions include all of the detail construction parts and their application and connection, and in pursuing the following operation, care should be taken to keep the reference figures in view, as the peculiar form of many of the parts, assists in their function.

As before stated, the principal features of my invention lie in the construction which enables the "knocking down" of the bed for removal or transportation and in the perfect balance of the folding part of the bed, which enables its easy operation.

By reference to Fig. 1 it will be seen that the weights 41 are located upon the back of the frame 37. Thus when the folding section of the bed is thrown down and the board 26 is turned outwardly until it assumes a direct vertical plane with the head-board 37, the weights 41 draw the latter rearward with the strip 43 in engagement with the blocks 45. In this position the upper half of the bed is supported upon the blocks 45, and is thereby prevented from closing. The weights 41 in conjunction with the weights upon the head-board 26, located as the latter are above the center of said board, also tend to assist the rise of the folding portion when the engagement of the strip 43 over the blocks 45 is released.

We will first take the bed in a closed position as shown in Fig. 6 and proceed with the operation in opening the same. The operator grasps the side of the folding portion 13 and

pulls down upon the same, and the weights above mentioned prevent the folding part 13 from dropping or gravitating too suddenly. Of course it is necessary for the operator to assist the bed in assuming the horizontal position shown in Fig. 1. The catch 106 which when the bed is up, is in the position as shown in Fig. 3, and as the bed lowers, its tendency is to assume the position shown in Fig. 5, which it does, thus assuming the position shown in Figs. 1 and 5. In closing the bed the person using the same reaches in and pulls outwardly upon the frame 37 and the weights located upon the back of said frame 37 and head-board 26 cause the folding portion 13 to lift slightly above the normal horizontal position, and the operator by simply giving the bed 13 a slight upward movement with the hand, throws the bed into a vertical position. While the bed is moving upward toward the closed position, the operator throws back the catch 106 from the position shown in Fig. 5 to that shown in Fig. 3, and when the bed is closed, the foot-supporting frame 102 assumes a vertical position, and improves the appearance of the bed, acting as it does as a cap-piece. The connection of the lug 18 in the guide 9, with the flange 20 of said frame upon which the lug is located, on the guide 22, facilitates the movement of the bed in its upward and downward movement as will readily be seen by reference to the foregoing descriptions and the illustrations.

The ventilating feature of the construction is an important one, as it guarantees the thorough airing of the mattress and bed clothes during the day. The half-back 3 of the bed is secured to the side-boards 2 by the use of the catches 91 used in connection with the lugs 93 and said back is therefore readily removable. The frame 37 can readily be taken out by withdrawing the plate 58. The side-boards 14 can readily be taken off of the frame 63 by disengaging the connection of the various catches shown in the illustrations, it being practical to disengage the same without the use of a screw-driver. The above points make the bed a desirable article of manufacture as the simpleness of the operation and the fact that it can so readily be taken apart for removal recommends the bed for practical uses. The finishing and shape of the panel work are of course immaterial but it is believed that the combination of finished parts in this bed presents a new and novel appearance.

Having fully described my invention, what I claim is—

1. In a folding-bed, the combination, with a stationary section provided with supports, of a folding section, a head-board hinged thereto, and provided with a rearward projection adapted to automatically engage said supports when the folding section is opened; substantially as set forth.

2. In a folding bed, the combination, with a stationary section provided with supports, of a folding section, a head-board hinged thereto and provided with a rearward projection adapted to engage said supports, and weights carried upon the rear face of said head-board and adapted to draw the same rearwardly; substantially as set forth.

3. In a folding bed, the combination, with a stationary section provided with downwardly-inclined supports or blocks 45, of a folding section, a head-board hinged thereto and provided with a rearwardly-projecting cross-piece 43 adapted to engage said supports or blocks 45, weights 41 carried at the back of said head-board and adapted to draw the same rearwardly, and guides 46 secured to the sides of the stationary section in advance of the cross-piece 43; substantially as set forth.

4. In a folding bed, the combination, with a stationary section, of a folding section provided between its outer walls and the bed proper with a channel open at both ends, and a foot-support adapted to automatically fold over and close said channel when the folding section is opened; substantially as set forth.

5. In a folding bed, the combination, with a stationary section, of a folding section provided between its outer walls and the bed proper with a channel 110 open at its ends, a foot-support 102 hinged to the folding section and adapted to close the outer end of said channel, and a catch 106 adapted to automatically lock the foot support in supporting position when the folding section is opened; substantially as set forth.

6. An improved folding bed having weights located above the center of the head-board upon the rear face of same, weights located upon the rear of the center of the head-frame, and engaging strip above said weights upon the head-frame, and said weights adapted to compel said strip to engage over blocks secured to the back of the stationary portion of the bed, to prevent the folding section from closing up, substantially as set forth.

7. In a folding bed, the combination, with a stationary section, and a folding section, of guides therefor consisting each of a segmentally-grooved plate 9 secured to the side of the stationary section, a flanged plate 22 secured under the plate 9, and a curved plate 17 secured to the opposing side of the folding section and provided at one end with a stud 18 working in the grooved plate 9 and with a flange 20 working upon the plate 22; substantially as and for the purpose set forth.

8. In a folding bed, the combination, with a stationary section, of a folding section provided with upwardly-projecting curved hooks, and side-boards 14 provided with catches formed with lugs adapted to be engaged by said hooks; substantially as set forth.

9. In a folding bed, the combination, with a stationary section, of a folding section provided with upwardly-projecting curved hooks, and side boards 14 provided with catches 76

comprising a staple 80, and a lug 81 projecting inwardly therefrom and adapted to be engaged by said hook; substantially as set forth.

10. In a folding bed, the combination, with a knock-down stationary section, and a knock-down folding section, of a head-board, and devices for hinging the latter to the folding section and consisting each of an apertured plate 47 secured to the upper end of said section, a plate 53 secured to the head-board and provided with a lug 56 bearing in said apertured plate, and an adjustable plate 58 adapted to lock the lug 56 in engagement with said apertured plate; substantially as set forth.

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

PHILLIP FLOWERS.

Witnesses:

HERBERT T. ROBINSON,

JNO. C. HIGDON.