

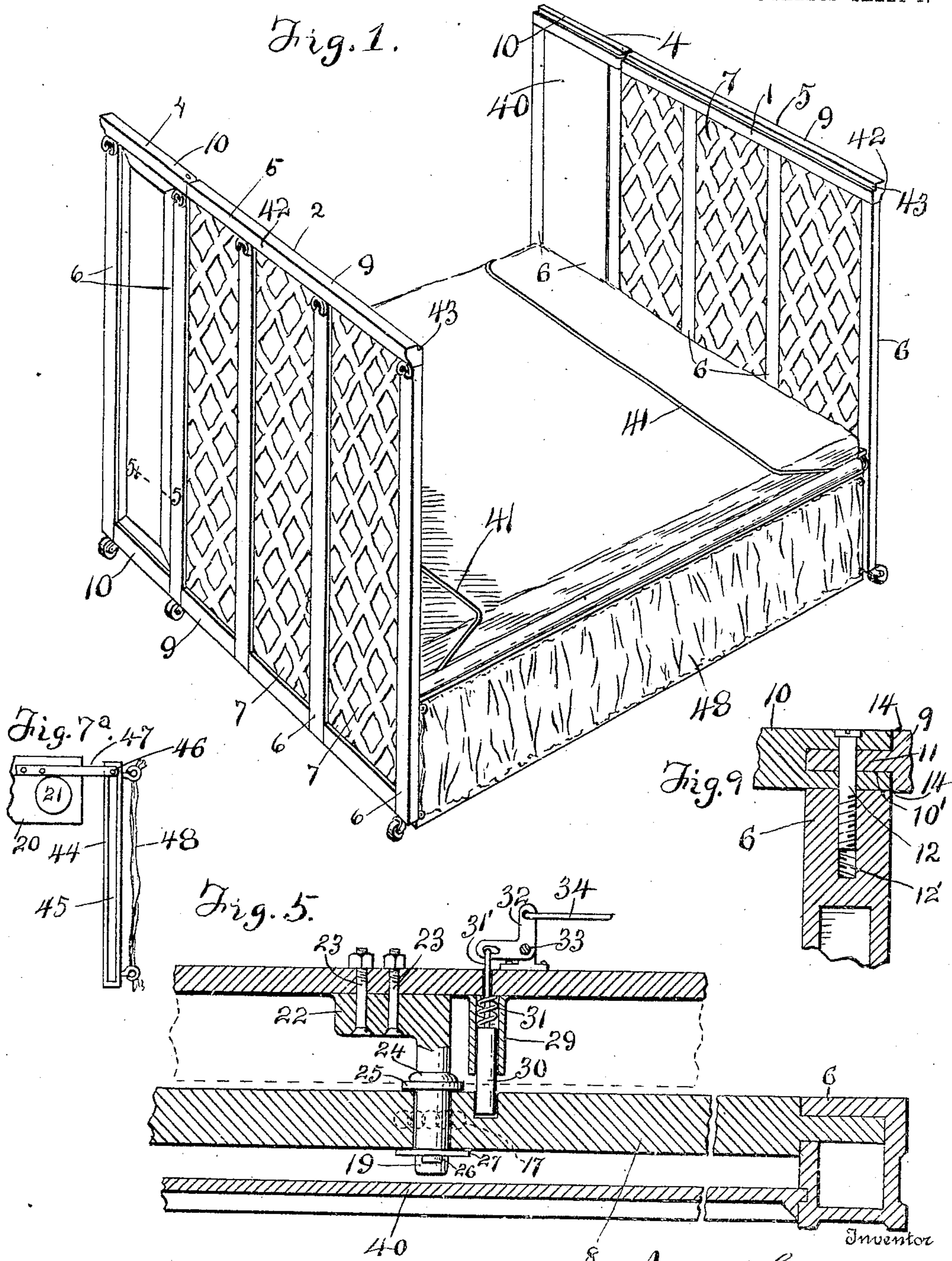
FOLDING BED.

APPLICATION FILED APR. 14, 1909.

940,038.

Patented Nov. 16, 1909.

3 SHEETS—SHEET 1.



Witnesses

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3 SHEETS—SHEET 2.

Fig. 2.

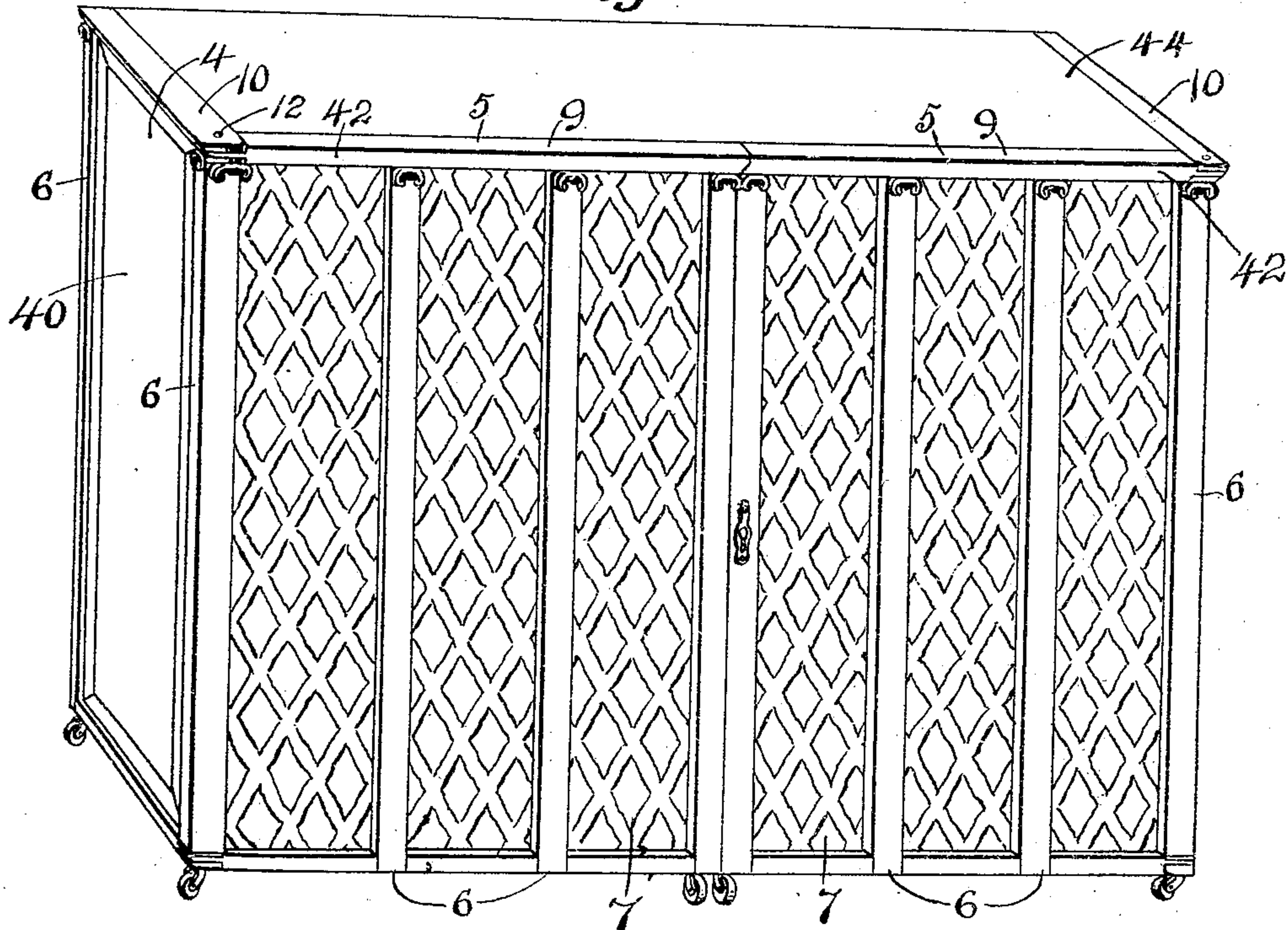
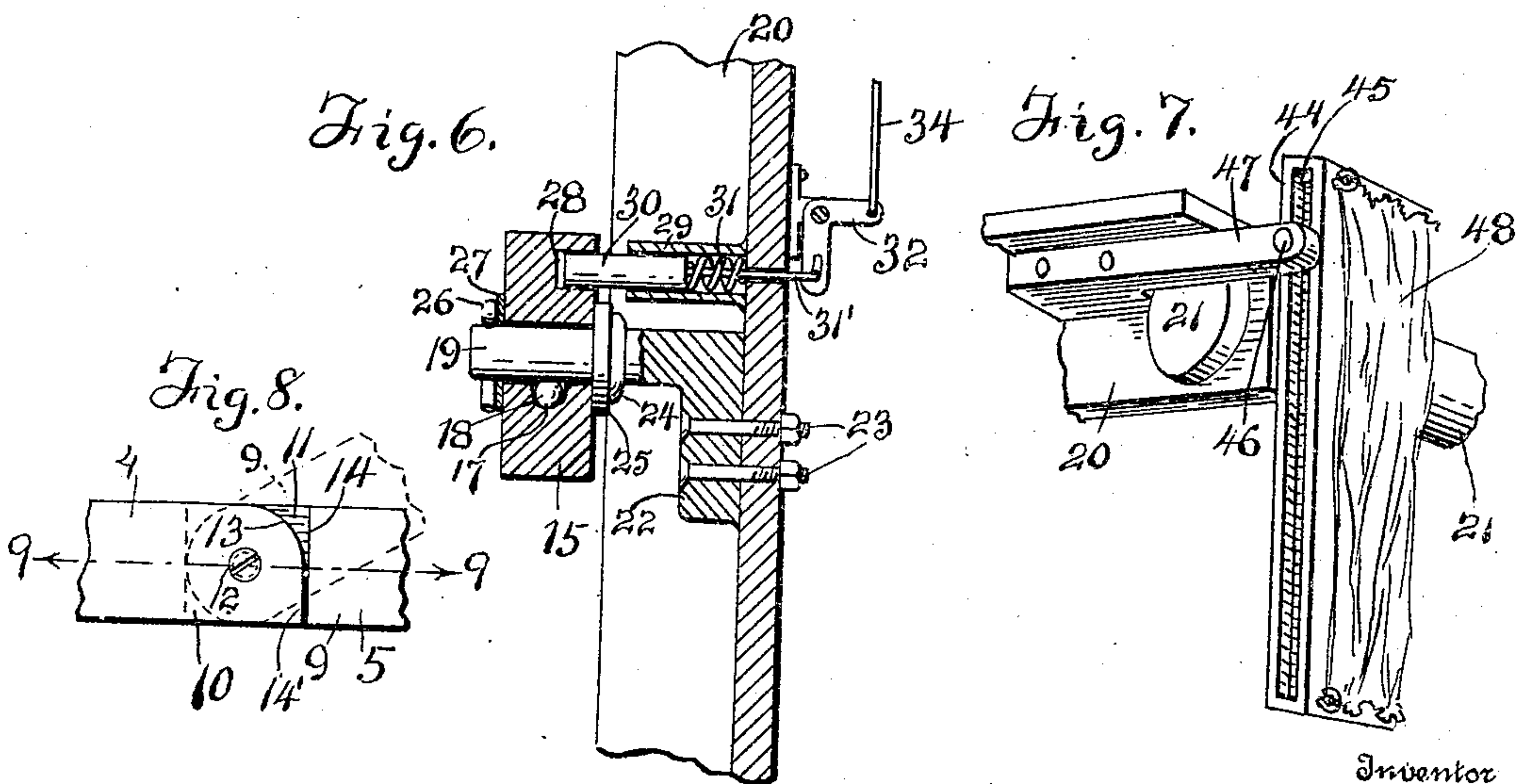


Fig. 6.

Fig. 7.



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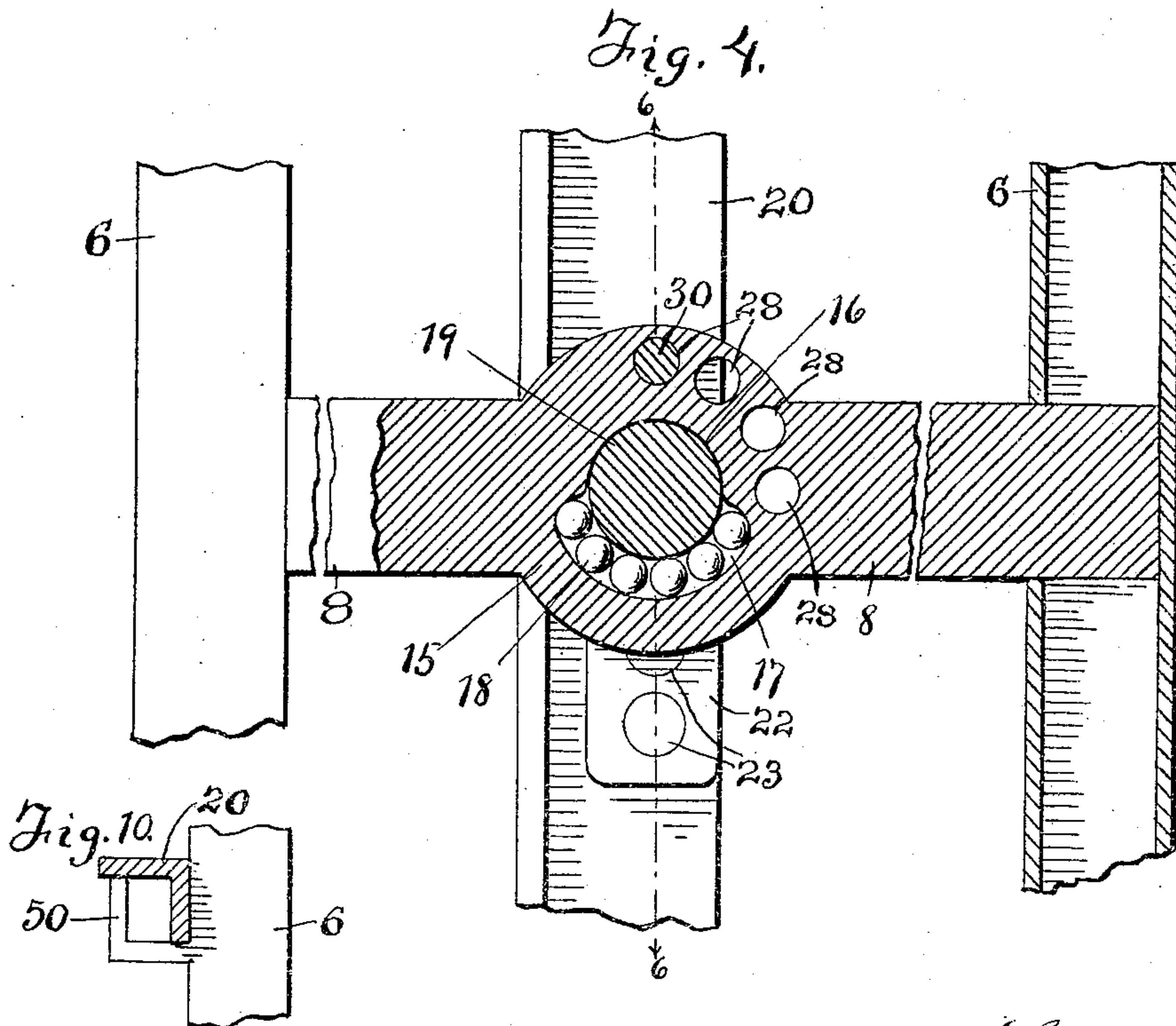
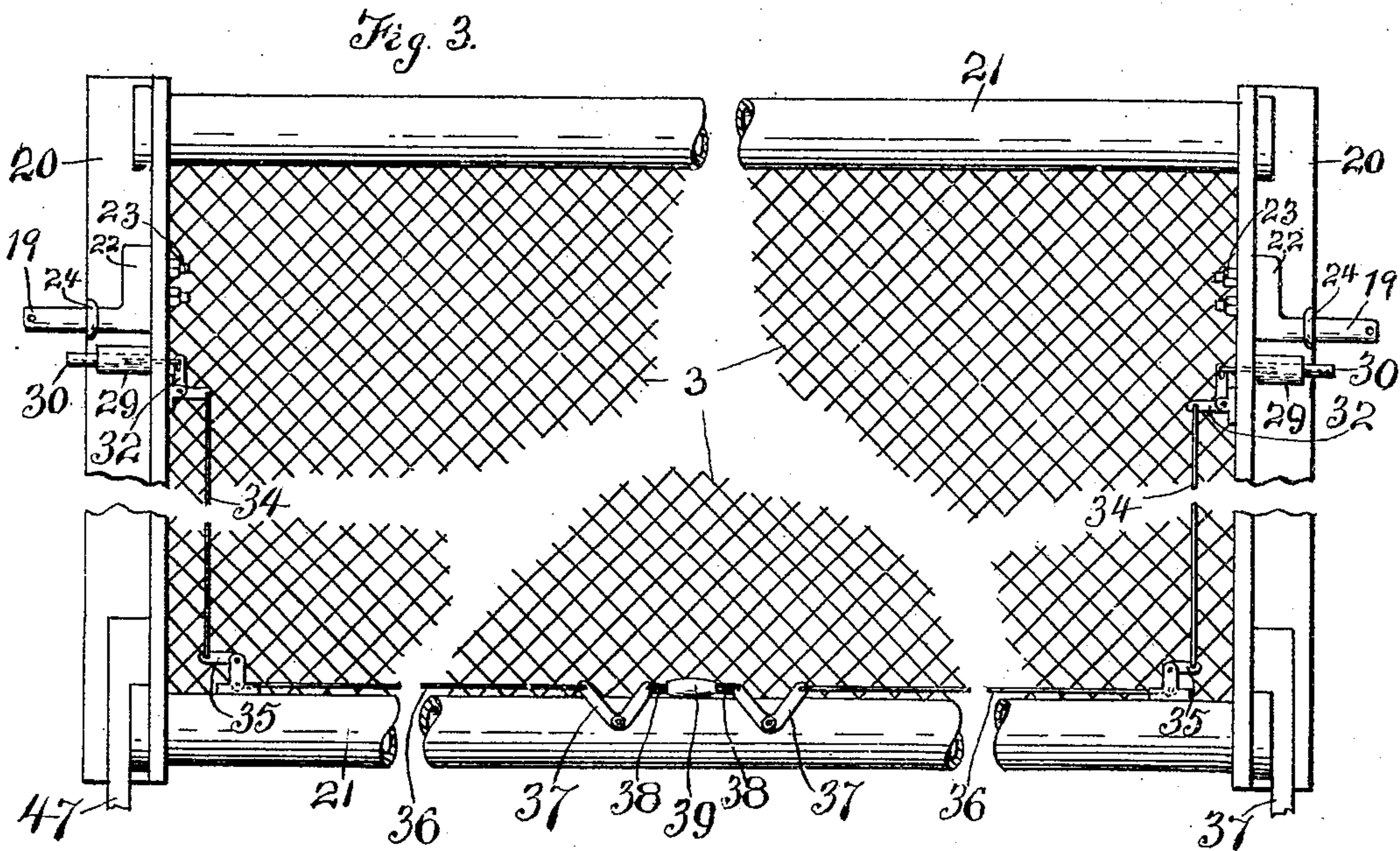
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3 SHEETS—SHEET 3.



Inventor

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UNITED STATES PATENT OFFICE.

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FOLDING BED.

940,038.

Specification of Letters Patent.

Patented Nov. 16, 1909.

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To all whom it may concern:

Be it known that I, JAMES LYONS, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Folding Beds; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in beds of the folding type, and the object in view is the production of a bed structure capable of being readily folded, without the accessories of weights or levers, to and from a condition having the appearance of some article of household furniture other than the bed.

With this and further objects in view, as will be in part hereinafter set forth and in part become obvious, the invention comprises certain novel constructions, combinations and arrangements of parts as will be hereinafter specified and claimed.

In the accompanying drawings—Figure 1 is a perspective view of a bed embodying the features of the present invention, the parts being shown in the unfolded condition. Fig. 2 is a similar view of the same in a folded condition. Fig. 3 is an inverted plan view of the spring frame and connected parts, parts being broken away for the saving of space. Fig. 4 is a vertical section taken transversely through one of the spring journals, and showing connected parts, some in section and some in elevation, the spring frame being indicated in its vertical position. Fig. 5 is a horizontal fragmentary section taken on the plane indicated approximately by line 5, 5 of Fig. 1. Fig. 6 is a fragmentary section taken on the plane indicated by line 6, 6 of Fig. 4, the journal and latch bolt being seen in elevation. Fig. 7 is a detail fragmentary perspective view of one end of the combined cover plate and curtain and connected parts, illustrating the method of mounting of the plate, and illustrating the plate as elevated above its normal, at rest position. Fig. 7^a is an end view of the same parts. Fig. 8 is a fragmentary detail top plan of one of the pivot points. Fig. 9 is a vertical section taken on the plane indicated by line 9, 9 of Fig. 8. Fig. 10 is a detail, fragmentary view of one of the

outside posts illustrating the support for the cross bar of the springs.

Referring to the drawing by numerals, 1 indicates the head piece, 2 the foot piece, and 3 the springs of a bed. The head piece 1 and foot piece 2 are exact duplicates of each other, except that one operates from the right hand and the other from the left hand, and therefore the description of one will equally apply to the other, and the same reference numerals have been accordingly applied. The head and foot pieces are each constructed of what might be termed a fixed section 4, and a hinged section 5, each of said sections having as many vertical posts 6, 6, as may be found desirable, the posts 6 of each section 5 being connected at top and bottom by connecting pieces 9, and each section 4 having its posts 6 connected at top and bottom by connecting pieces 10. As best seen in Figs. 8 and 9, each piece 10 is bifurcated at its outer end, as indicated at 10', and a tongue 11 extends from the respective contiguous piece 9 between the arms of the bifurcation and is pivotally retained therebetween by a bolt or pin 12 passed through the parts and threaded into threaded opening 12' in the outer post 6 of the respective section 4. The inner corner of the outer end of each piece 10 is rounded as indicated at 13 for allowing the squared shoulder 14 of the respective contiguous piece 9 to swing freely upon the pivot 12. The outer corner of the outer end of piece 10 is formed square as indicated at 14' and adapted to snugly receive the outer portion of the squared shoulder 14 for preventing outward pivotal movement of the respective section 5 farther than a position in alignment with the given section. Each section 5 may have the intervening spaces between posts 6, 6, closed by leaded glass or plates having leaded glass effect as indicated at 7, or by any other finishing device as found desirable according to the class of furniture being constructed and also according to the particular type of furniture to be simulated.

Extending between and suitably fixed to the inner and outer posts 6 of each fixed section 4 is a bar 8 which is arranged approximately in the horizontal plane to be assumed by the bed spring when in the horizontal position, and intermediate the length of the bar 8, the same is formed preferably with a thickened portion 15 having a transverse

opening or bore 16, a slot or recess 17 being disposed transversely of the axis of bore 16 and opening into the same, said slot being segmental, and struck on the same center as the annular wall of the bore. Arranged within the slot 17 are ball or other suitable anti-friction bearings 18, a portion of each of the balls 18 extending into the bore 16 a distance sufficient for sustaining a journal 19 which projects through the bore 16. The journal 19 is fixed to the respective cross-bar 20 of the spring frame 3, the said frame being completed by side bars 21 of any preferred type. I find a convenient form of connection for each journal 19 consists of an integral angle piece 22 bolted or otherwise secured, as at 23, (spaced from the inner bar 21), to the vertical flange of the respective cross-bar 20. Obviously, the journal may be connected in various other ways as may be found best adapted for any given spring frame.

Contiguous to the inner face of bar 8, the journal 19 is formed with an annular boss 24 and a washer 25 is mounted between the boss and the inner face of bar 8 for preventing outward longitudinal movement of the journal, inward longitudinal movement thereof being prevented by a suitable cotter pin 26 or other suitable retaining means engaging a washer 27. These parts engaging the journal also serve very efficiently to prevent undesirable lateral play between the bedding frame or support and the end pieces of the bed, and also to prevent independent lateral play of the end pieces.

The upper part of the thickened portion 15 of bar 8 is formed with a series of recesses 28—28 arranged in an arc struck upon the longitudinal axis of journal 19 as a center, the lowermost recess 28 having its horizontal axis on the same horizontal plane with the longitudinal axis of the journal 19, and the uppermost recess 28 having its horizontal axis in the same vertical plane of the longitudinal axis of journal 19. Each cross-bar 20 is provided contiguous to the respective journal 19 with a suitable housing 29 surrounding and guiding a plunger 30 which is pressed by any suitable spring 31 in a direction for causing the outer end of plunger 30 to engage the inner face of bar 8 and to enter any one of the recesses 28 when released in line therewith. The longitudinal axis of plunger 30 is in the same horizontal plane as the longitudinal axis of journal 19, so that when the plunger 30 is in the lowermost recess 28 the respective bar 20 will be locked in a horizontal position, and when the plunger 30 is in the uppermost recess 28 the bar 20 will be locked in a vertical position. An operating rod 31' is fixed to plunger 30 and extends inwardly through the bar 20 and pivotally engages an elbow lever 32 which is pivotally connected with the bar

20 in any suitable manner as indicated at 33. A rod, wire, or other cable 34 engages the inner free end of each lever 32 and extends to the outer side of the spring frame and there engages an elbow lever 35 pivotally carried by the outer side bar 21. Each of the elbow levers 35 is in turn engaged by a rod, wire, or other cable 36 extending toward the center of bar 21 and engaging the outer ends of elbow levers 37—37 pivotally carried by bar 21. The inner ends of levers 37 are loosely engaged by links 38—38 carrying an operating handle 39. Handle 39 in operation is designed to be grasped by the operator and pulled outwardly, thus swinging the levers 37 upon their pivots and drawing inwardly upon both cables 36, and as this movement is transmitted through levers 35, cables 34, levers 32 and rods 31', the plungers 30 are simultaneously retracted, and the spring frame is free to be swung upon journals 19 and may be swung vertical transversely of its longitudinal axis to any desired position from the horizontal to vertical. Obviously as soon as the spring frame has arrived at the desired position, it is only necessary to release the operating handle 39, whereupon the springs 31 will thrust the plungers 30 into recesses 28 and lock the spring frame in position. If the plungers happen to be between two of the recesses when released, the operator simply swings the spring frame either in one direction or the other until the plungers register with the recess.

An essential advantage is gained in the provision of a positive lock at the upper terminus of movement of the bedding support or frame, in that by locking the same in the vertical position any possible tilting or other disarrangement or overturning of the bed when folded is obviated, and the bedding carried by the frame is confined within the limits of the folded parts and prevented from striking the wall of the room or other contiguous structure which might occur by inward tilting of the frame but for the said lock.

In order to give a complete finished effect, each of the sections 4 is provided with a panel 40 extending from the inner post 6 to the outer post 6, and concealing journal 19 and connected parts.

In order to retain the bedding in position on the springs, suitable bails of any preferred type as indicated at 41—41, may be provided and arranged in any preferred manner for retaining the bedding against falling apart or away from the spring frame.

In order to complete the appearance of the article of furniture to be simulated, each of the connecting pieces 9 and 10 is formed along its outer edge with any suitable molding 42, and each of said pieces is also formed along its inner corner with a longitudinal rabbet 43, adapted to receive the side and

end edges of a top plate 44 when the parts are in a folded condition, seen in Fig. 2. The plate 44 will have a finish of course relative to the finish of the other parts, and, if the panel 40 has the appearance of hard-wood, the plate 44 will have the same appearance, although both plate 44 and panel 40 will preferably be made of sheet metal. The plate 44 is formed at each end with a groove 45 engaged by a pin 46 carried by a bracket 47 fixed to the outer end of the respective cross-bar 20. The plate 44 is thus free to slide back and forth, with an edge-wise movement, on the pins 46, and that face of plate 44 which is exposed when the parts are folded is preferably concealed when the parts are unfolded, and the opposite face of said plate may be provided with a curtain 48 or other suitable finishing as desired, so that when the plate is lowered, and the bed is in its open position the curtain 48 will be exposed. When the bed is folded, plate 44 may readily be inverted and positioned within the grooves 43.

Thus it will be seen that while the parts may be easily and readily manipulated, the resultant structure is susceptible of assuming a very compact condition, and at the same time it offers every facility for artistic finish of the type of the article of furniture to be simulated. When the parts are made to assume the form of a book-case as herein disclosed, one of the outer posts may be provided with an escutcheon or other device for giving the desired finished appearance to the book-case.

It will be apparent that in operation, the position of the journal 19 spaced from the inner edge of the spring frame will allow the inner portion of the frame to somewhat counterbalance the outer portion thereof so that no counterbalancing weights or springs are required, and if the operator in raising or lowering the spring frame happens to allow it to slip, it will not fall with any disastrous results, as the plungers 30 will immediately enter the first recesses 28 with which they register, and thus almost instantly stop the movement of the spring frame. The provision of this locking device obviates any possibility of upward tilting of the outer edge of the frame by reason of the occupant lying near the inner edge thereof.

Of course, the outer edge of the frame will be supported directly by each outer post 6, and for that purpose said post is preferably provided with a bracket 50 positioned and adapted to receive the respective cross-bar 20 which is preferably of the angle-bar type. The inner portion of the frame is sustained by the journals 19, and thus necessity for any side rails of the bed is obviated, the spring frame serving as the connecting means between the head and foot pieces of the bed.

I claim.

1. In a folding bed, the combination of head and foot pieces, each comprising a fixed section and a pivoted section, a bedding support arranged between the head and foot pieces and pivotally carried by the fixed sections and adapted to swing from a horizontal to a vertical position transversely of its longitudinal axis, the pivoted sections being of such width as to have their free edges substantially meeting when the bedding support is in its vertical position and the pivoted sections are folded in front of the bedding support, and means cooperating with the pivotal connections between the bedding support and fixed sections for preventing lateral play between the bedding support and the head and foot pieces and allow independent play of the pivoted sections of the head and foot pieces.

2. In a folding bed, the combination of head and foot pieces, each comprising a fixed section and a pivoted section, and a bedding frame disposed between the head and foot pieces and pivotally engaging the fixed sections thereof at points spaced from the edge of the frame, the pivots of said pivotal engagement being constructed and disposed for preventing lateral play of the head and foot pieces while permitting independent swinging movement of the said pivoted sections.

3. In a folding bed, the combination of head and foot pieces, each comprising a fixed section and a pivoted section, a bedding support arranged between the head and foot pieces and pivoted to the fixed sections to swing vertically transversely of its longitudinal axis, the pivoted sections being adapted to be swung to a position in front of the bedding support when the same is pivoted to a raised position, and the pivoted sections being dimensioned when so positioned as to overlap substantially all parts of the bedding support, and means engaging the pivotal connections between the bedding support and fixed sections for obviating lateral play therebetween.

4. In a folding bed, the combination of head and foot pieces, each comprising a fixed section and a pivoted section, a bedding frame arranged between and pivotally carried by the head and foot pieces and adapted to swing upon such pivotal support, transversely of its longitudinal axis from a horizontal to a vertical position, and means for locking the bedding frame in its horizontal position, in its vertical position and in an intermediate position, so that the bedding is confined within the limits of the bed structure when the bed is folded and prevented from contacting with contiguous structures.

5. In a folding bed, the combination of head and foot pieces, each comprising a fixed section and a pivoted section, a bedding

frame arranged between and pivotally carried by the head and foot pieces and adapted to swing upon such pivotal support transversally of its longitudinal axis from a horizontal to a vertical position, and means for locking the bedding frame in various positions throughout its pivotal travel and in its vertical position, so that the bedding is confined within the limits of the bed structure when the bed is folded and prevented from contacting with contiguous structures.

6. In a folding bed, the combination, with head and foot pieces, of a bedding frame interposed therebetween and pivotally connected thereto and adapted to swing upon its pivot transversally of its longitudinal axis, and means for locking said frame at various points of its swinging movement and in a vertical position, so that the bedding is confined within the limits of the bed structure when the bed is folded and prevented from contacting with contiguous structures.

7. In a folding bed, the combination of head and foot pieces, each comprising a fixed section and a pivoted section, a bedding frame pivotally mounted between the head and foot pieces, and means for locking said frame at various points throughout its pivotal movement, and in a vertical position, so that the bedding is confined within the limits of the bed structure when the bed is folded and prevented from contacting with contiguous structures.

8. In a folding bed, the combination of head and foot pieces, each comprising a fixed section and a pivoted section, a bedding frame pivotally mounted between the fixed sections, means operating normally to lock the bedding frame at various points throughout its path of movement and in a vertical position, so that the bedding is confined within the limits of the bed structure when the bed is folded and prevented from contacting with contiguous structures, and means for disengaging said locking means.

9. In a folding bed, the combination of head and foot pieces, each comprising a fixed section and a pivoted section, a bedding frame pivoted between the fixed sections, means for locking said bedding frame to the fixed sections in any position of adjustment within its pivotal path of movement and in a vertical position, so that the bedding is confined within the limits of the bed structure when the bed is folded and prevented from contacting with contiguous structures, and means for disengaging said locking means when desired to unlock the bedding frame, said means including an element for causing said locking means to be actuated and when released to lock the bedding frame in the next succeeding position of adjustment in its pivotal path of movement.

10. In a folding bed, the combination of head and foot pieces, a bedding frame pivot-

ally mounted between the head and foot pieces, means normally locking said bedding frame in any position of adjustment within its pivotal path of movement and in a vertical position, so that the bedding is confined within the limits of the bed structure when the bed is folded and prevented from contacting with contiguous structures, and means for disengaging said locking means when desired to permit swinging movement of the frame.

11. In a folding bed, the combination, with head and foot pieces, each comprising a fixed and a pivoted section, and a journal bearing carried by each fixed section, of a bedding frame interposed between the head and foot pieces, journals extending from said bedding frame through said journal bearings, and means engaging the journals for preventing lateral movement of the head and foot pieces with respect to the bedding frame.

12. In a folding bed, the combination of head and foot pieces, each comprising a fixed section and a pivoted section, a bedding frame interposed between said head and foot pieces and having journals extending from the ends of the frame, journal bearings on the head and foot pieces surrounding said journals, and means engaging the journals for preventing lateral movement of the head and foot pieces with respect to the bedding frame.

13. In a folding bed, the combination of head and foot pieces, each comprising a fixed section and a pivoted section, a bedding support interposed between the head and foot pieces having journaled connections with the head and foot pieces, the bearings of said connections surrounding the journals thereof, and means engaging the journals and journal bearings for preventing lateral movement of the head and foot pieces with respect to the bedding support.

14. An end piece for a folding bed, comprising a fixed section, and a section pivoted thereto, said sections having squared meeting portions with relatively flat outer faces, and a pivotal connection therebetween adapted to allow the squared portions to lie contiguous to each other when the pivoted section is in its open position, and to have the flat outer face of the pivoted section lying flush with the squared edge of the fixed section when the pivoted section is in its folded condition.

15. In a folding bed, the combination of head and foot pieces, each comprising a fixed section and a pivoted section, a spring frame interposed between the head and foot pieces and having journals extending from the ends of the frame, journal bearings carried by said head and foot pieces and surrounding said journals, and means engaging the journals and journal bearings for pre-

venting lateral movement of the head and foot pieces with respect to the spring frame.

16. In a folding bed, the combination of head and foot pieces, each having a journal bearing, one of the pieces being formed with a portion having recesses arranged in an arc struck on the same center as the axis of the journal bearing, the lowermost recess having its axis in the same horizontal plane with the horizontal plane of the axis of the bearing, and the uppermost recess having its axis in the same vertical plane as the vertical plane of the axis of the bearing, a spring frame interposed between the head and foot pieces, and having journals engaging said bearings, and means carried by the frame adapted to detachably engage said recesses for locking the frame in various positions.

17. An end piece for a folding bed, comprising a fixed section having vertical posts and connecting pieces connecting the posts, and a pivoted section having vertical posts and connecting pieces connecting the last mentioned posts, the connecting pieces of one section being formed with bifurcated ends contiguous to the other section, rounded inner corners and squared outer corners, and the connecting pieces of the other section being formed with tongues extending between the arms of the bifurcations and having squared shoulders at the juncture of the tongues with the connecting pieces adapted to contact with the squared shoulders of the other connecting pieces when the pivoted section is in its open condition for retaining said pivoted section against outward movement beyond a position in aline-

ment with the fixed section, and means pivotally connecting the tongues and arms of the bifurcations.

18. In a folding bed, the combination with head and foot pieces, and a spring frame foldably connected therewith, of a cover plate shiftably and revolvably supported by said spring frame and adapted to be shifted from a vertical to a horizontal position for serving as a cover plate when the parts are folded, and as a stretcher when the parts are unfolded.

19. In a folding bed, the combination with pivoted head and foot pieces, of a bedding frame, a pivoted front section thereon arranged to occupy a vertical position when the bedding frame is down and a horizontal position when the frame is up and serving in the latter position to cover the top of the space in which the folded bed is confined.

20. In a folding bed, the combination with pivoted head and foot pieces, of a bedding frame, a pivoted front section thereon arranged and adapted to occupy a vertical position when the bedding frame is down and a horizontal position when the frame is up and serving in the latter position to cover the top of the space in which the folded bed is confined, said front section being adapted to present a different face when up from that presented when down.

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

JAMES LYONS.

Witnesses:

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DELANCEY CLEVELAND.