A. F. OLD & F. BENNETT.

CONVERTIBLE COUCH.

APPLICATION FILED SEPT. 6, 1906.

954,579.

Patented Apr. 12, 1910.

3 SHEETS—SHEET 1.

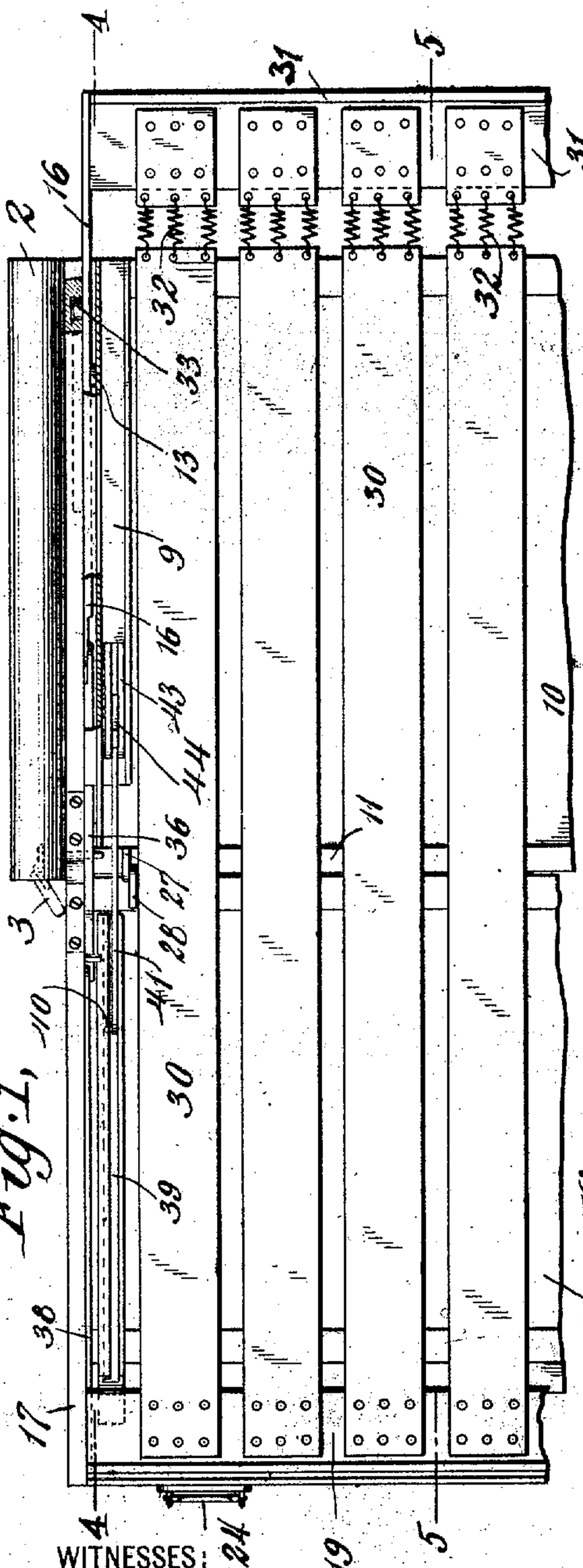

Fig. 1.

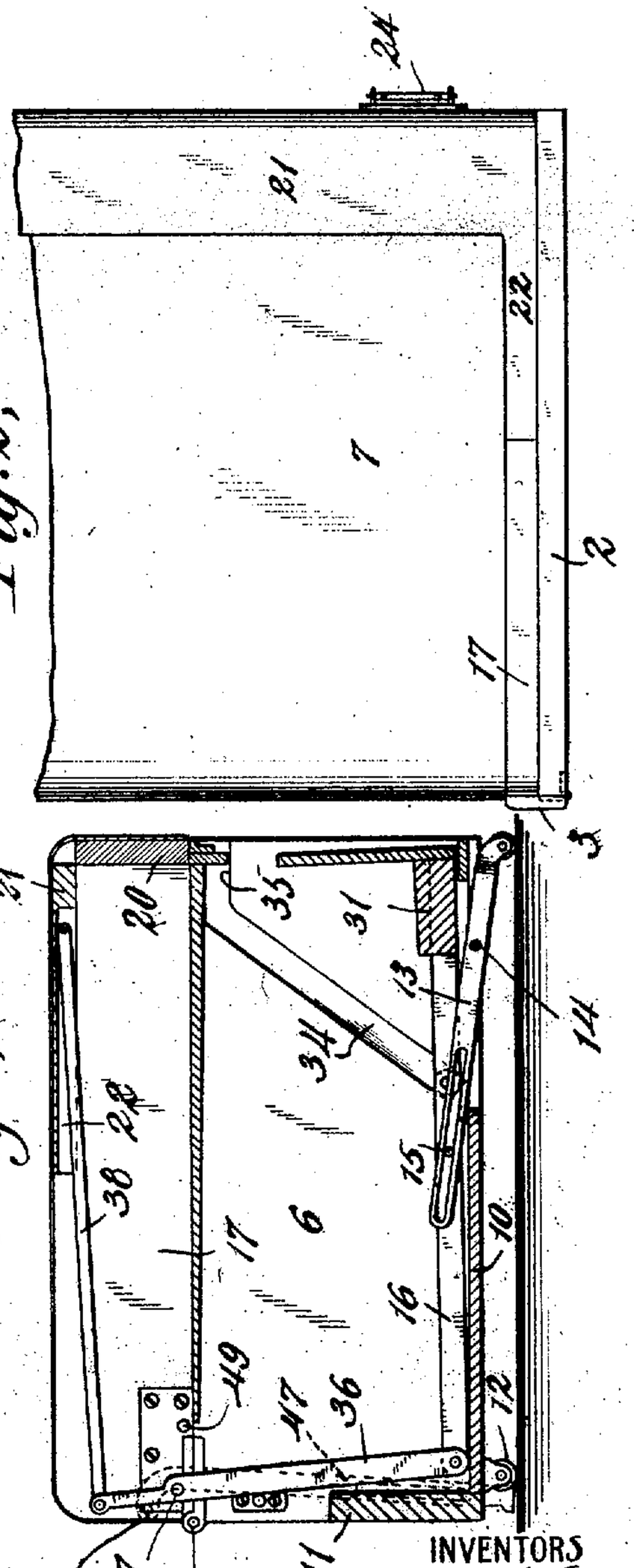

Fig. 2.

Fig. 3.

WITNESSES:

E. C. Tucker

INVENTORS

A. F. Old

F. Bennett

BY

J. P. Edmonds

ATTORNEY

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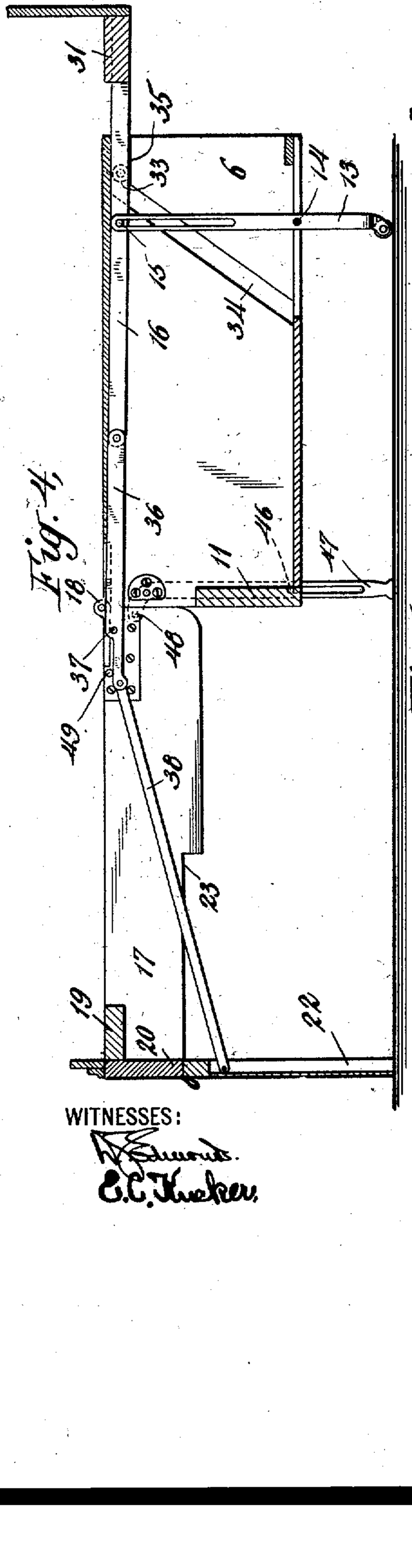

Fig. 2.

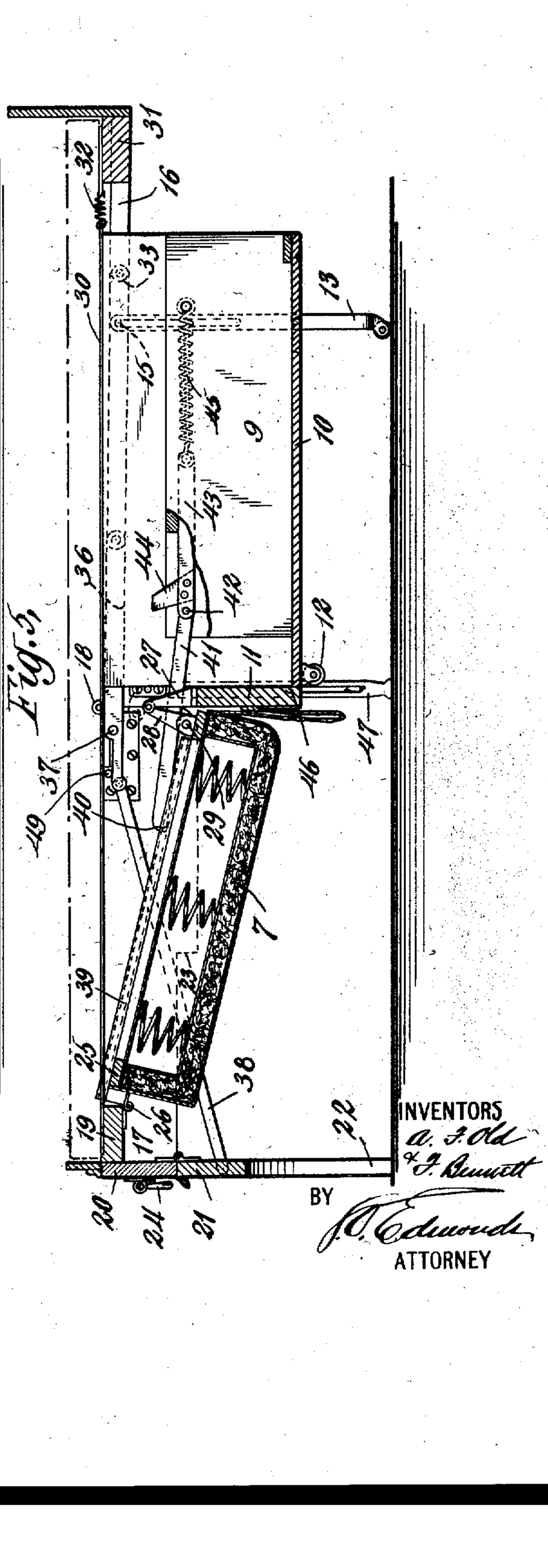

Fig. 3.

WITNESSES:

F. F. Edwards.

C. C. Tucker.

INVENTORS

A. F. Old

& F. Bennett

BY

F. F. Edwards

ATTORNEY

A. F. OLD & F. BENNETT.

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3 SHEETS—SHEET 3.

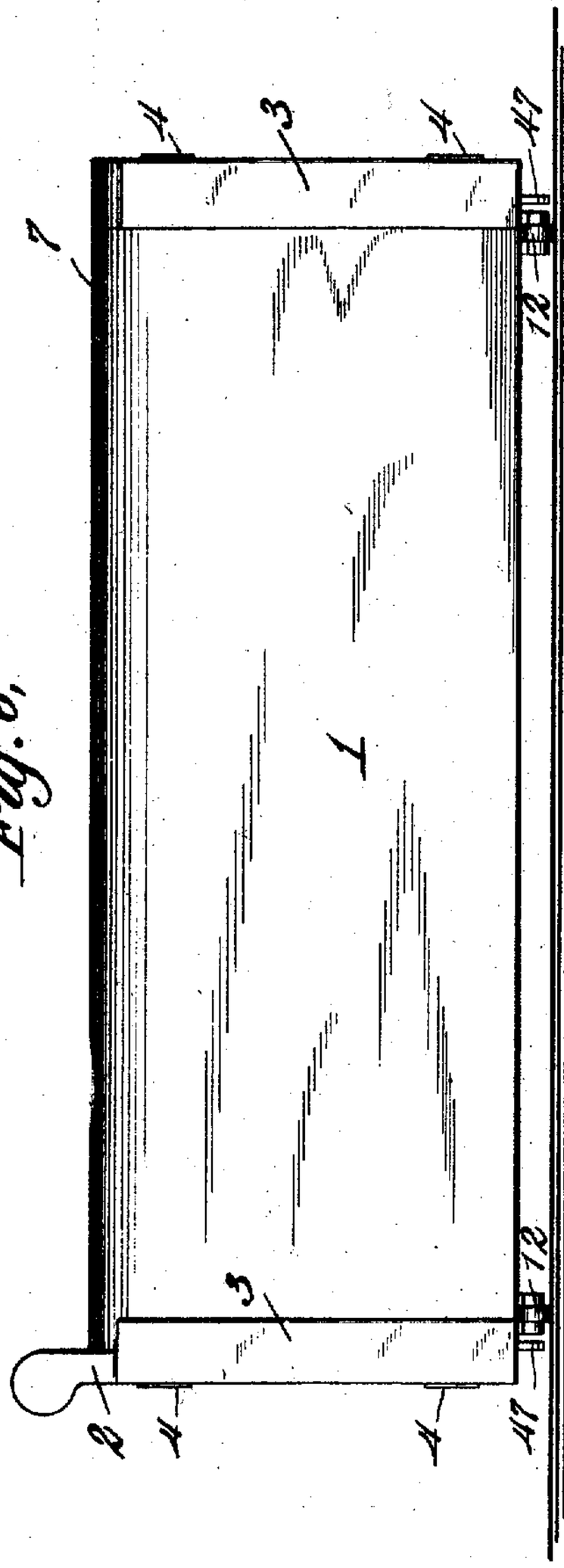

Fig. 6.

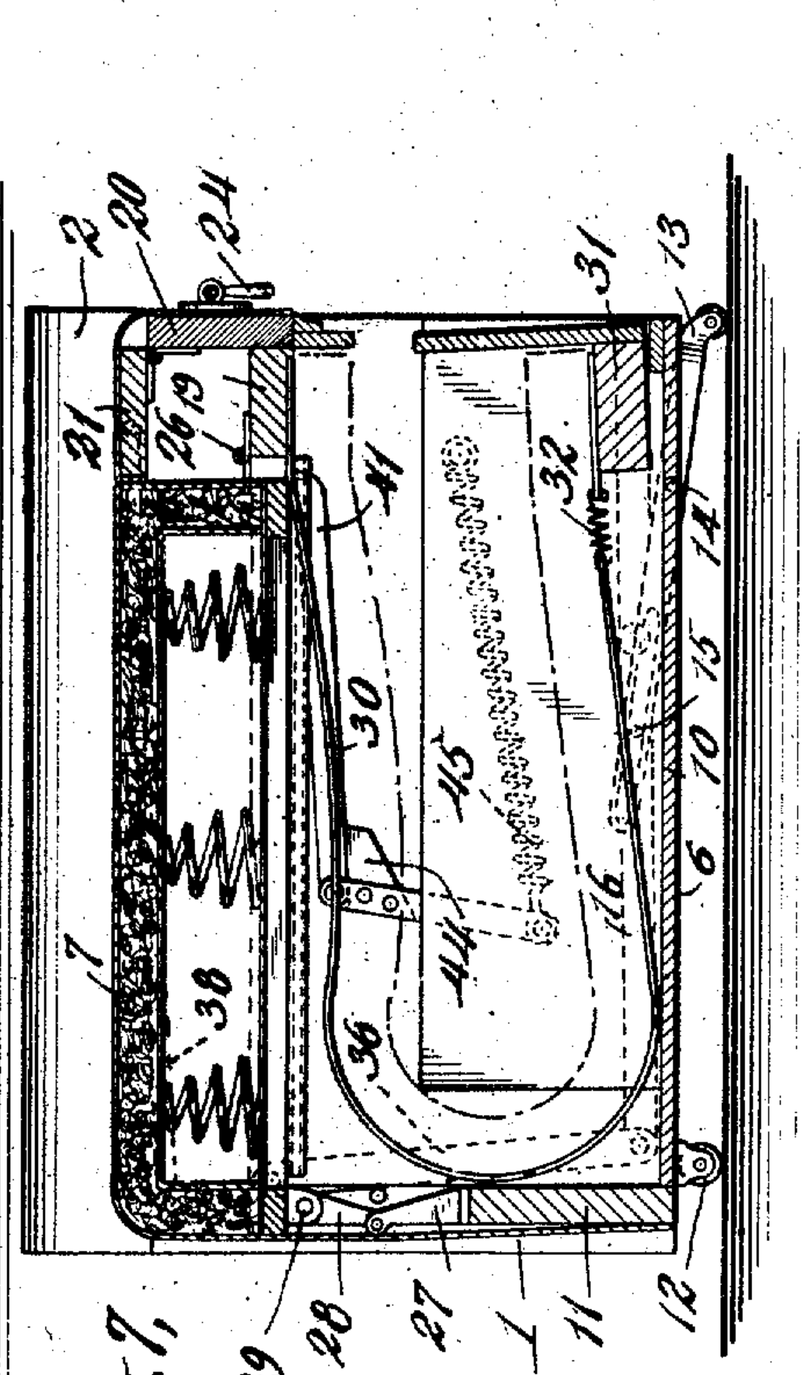

Fig. 7.

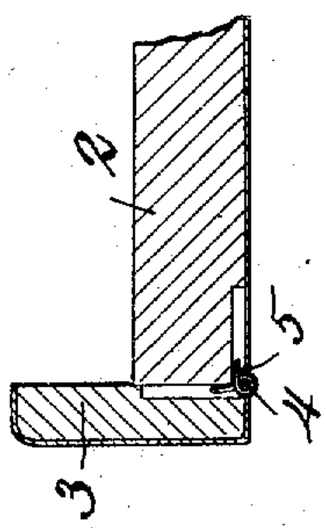

Fig. 8.

WITNESSES:

W. Edmunds.

E. C. Tucker.

INVENTORS

A. F. Old & F. Bennett

BY

W. Edmunds

ATTORNEY

UNITED STATES PATENT OFFICE.

AUSBORN F. OLD, OF MONTCLAIR, NEW JERSEY, AND FREDERICK BENNETT, OF LONG ISLAND CITY, NEW YORK, ASSIGNORS TO THE HALE AND KILBURN MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

CONVERTIBLE COUCH.

954,579. Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed September 6, 1906. Serial No. 333,457.

To all whom it may concern:

Be it known that we, AUSBORN F. OLD, a citizen of the United States, residing at Montclair, in the county of Essex and State of New Jersey, and FREDERICK BENNETT, a citizen of the United States, residing at Long Island City, county of Queens, and State of New York, have invented certain new and useful Improvements in Convertible Couches, of which the following is a description.

This invention relates to convertible couches adapted for use as couches when in a closed position and as beds when opened.

The object of the invention is to improve the construction of these devices, more particularly for the purpose of producing a structure which can be positioned along a wall when closed to form a couch and be opened out to form a bed without moving it bodily forward from the wall, unless it is desired to do so, and in which the length of the couch is considerably reduced by so arranging the parts that the length of the bed is at a right angle to the length of the couch and the length of the latter need, therefore, be little greater than the width of the bed. Devices of this kind have been heretofore produced but these have all possessed objectionable features which in accordance with our invention are avoided. In our improved construction, the mattress and bedding can be arranged upon the springs before the structure is closed to form the couch so that when it is opened the bed is ready for occupancy immediately; also, in opening the bed a single movement carries all the parts to their ultimate positions, a spring frame being provided which during this single movement is automatically extended beyond the edge of the couch frame to give the bed sufficient length. The surface of the bed when the structure is open is of the desired height, too low a surface being avoided by providing means for raising the spring frame as the bed is opened and so supporting it in its raised position that movement thereof, except to close the bed, is effectually prevented.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the bed, the mattress and bedding being removed, broken away in part, Fig. 2 is a plan view of one end of the couch, Fig. 3 is a transverse section of the couch inside one of the ends thereof, Figs. 4 and 5 are sections of the bed on lines 4—4 and 5—5, respectively, of Fig. 1, Fig. 6 is a front view of the couch, Fig. 7 is a central transverse section thereof, and Fig. 8 is a detail view hereinafter referred to.

Referring to these drawings, Figs. 2 and 6 show the structure closed to form the couch; the seat portion is upholstered, and the covering thereof is extended down to the lower edge of the front of the couch, as shown at 1, Fig. 7. The ends 2 of the couch may have slats 3 hinged at 4 to the front edge thereof and provided with springs 5 for holding them in the position shown in Figs. 2, 6 and 8, and these slats may be arranged to be moved against the tension of springs 5 into substantial alinement with the ends 2 when the couch is opened to form the bed, as shown in Fig. 1. The couch comprises a lower section 6 and a movable upper or cushion section 7. The lower section is a box-like structure consisting of sides 9, bottom 10 and end-piece 11; it is supported at its forward edge on casters 12 and at its rear edge on legs 13 having rollers at their ends. Each of these two legs extends through a slot in the bottom 10 of section 6 near the lateral edge thereof and is pivoted thereto at 14, and at its upper end each of the legs has an elongated slot therein through which extends a pin 15 on a lever 16 located one adjacent to each of the sides 9 of section 6. The cushion section 7 has sides 17 hinged at 18 to the sides 9 of the lower section 6 at the upper forward corners of the latter and the free ends of sides 17 are connected by a cross-piece 19 and a foot-board 20. Hinged to foot-board 20 is a board 21 having secured thereto legs 22 and the sides 17 are cut away, as shown at 23 Figs. 4 and 5, to form pockets in which legs 22 are received when in the folded position. The foot-board 20 has handles 24 thereon, and a strap may also be provided extending over the foot-board and which may be grasped to turn the movable section 7 on the hinges 18 to its open position.

The upholstered cushion forming the major portion of the movable section 7 may be

of any desired construction; it is shown as consisting of a frame 25 having slats supporting spiral springs which serve to yieldingly position the upholstery and the covering material. The cushion is supported at its rear edge by two hinges 26 secured to it and to the cross-piece 19 and at its forward edge by two hinges having elongated hinge-members 27 and 28, the former secured to the end-piece 11 of lower section 6 and the latter having a pivotal joint 29 therein and being secured to the cushion frame 25. The purpose of the long hinge-members and the pivot 29 will be hereinafter pointed out.

A plurality of broad, flat springs 30 are secured side by side at one end to the cross-piece 19 and at the other end to the head-board 31, short spiral springs 32 being preferably inserted therein. The head-board 31 is secured at each end to one of the levers 16 and each of these levers has a roller 33 pivotally mounted thereon and lying within a groove in one of the sides 9 of the lower section 6. Each of these grooves 34 extends from near the bottom of the side 9 upward a considerable distance on an incline and at its upper end has a short horizontal extension 35. At their opposite ends, each of the levers 16 is pivotally connected to one end of a lever 36 pivoted at 37 on a side-board 17. The other end of each of the levers 36 is pivotally connected to one end of a lever 38 whose opposite end is pivoted to one of the legs 22. On each side-board 17 near the pivotal point 37 is a stop 49. At each of the lower lateral edges of the cushion frame 25 is a strip 39 having a slot therein into which extends a pin 40 on the end of a lever 41 whose other end is pivoted upon a pin 42 on the side 9 of the lower section 6; also pivoted upon each of the pins 42 is a lever 43 having a stop 44 thereon which is adapted to be engaged by the lever 41 when the latter is turned about pin 42. Coiled springs 45 are each secured at one end to one of the sides 9 and at the other to the free end of one of the levers 43. At the lower forward edge of each of the sides 9 of the lower section 6 is a stud 46 extending through a slot in a leg 47 whose upper end is pivotally connected at 48 to the side 17 of the cushion section.

The operation of the device as thus constructed will now be described. With the parts in the position illustrated in Figs. 2, 3, 6 and 7, the structure forms a couch having an upholstered surface with the covering material thereof extending down to the floor at the front to conceal the operating parts. The legs 22 offer no obstruction as they lie snugly in the pockets formed by the cut-away portions 23 in the sides 17. To convert the couch into a bed, the operator grasps the strap or the handles 24 attached to the foot-board 20 and raises the rear edge of the movable section 7. In doing so the springs 45 offer material assistance so that little effort is required to turn the movable section on its pivots; the springs 45 tend to turn the levers 43 about the pivots 42 and as the parts are then in the position illustrated in Fig. 7, the stops 44 are in engagement with levers 41 and therefore the springs tend to turn levers 41 about pivots 42 and thus raise the free edge of the movable section. As the latter is turned, the pins 40 move down the slots in strips 39 until the levers 43 reach a horizontal position at which time the movable section is vertically disposed and levers 41 then move away from the stops 44. When the movable section 7 is turned from the position shown in Fig. 3 to the position in which it is vertically disposed, the levers 36 are turned slightly on their pivots 37, due to the resistance to movement of the levers 16, and thus force levers 38 to the right in Fig. 3; this turns the board 21 and legs 22 on their hinges until they lie in the same plane with the foot-board 20. As the legs reach this position, the stops 49 engage levers 36 and further movement of the section 7 turns levers 36 in the opposite direction on their pivots 37, thus forcing levers 16 to the right in Fig. 3. This movement of levers 16 causes rollers 33 thereon to ride up the inclined slots 34 so that the head-board 31 is raised and at the same time moved to the right until finally the rollers 33 enter the horizontal extensions 35 of slots 34 when the parts are in the positions shown in Figs. 1, 4 and 5. As levers 16 are moving thus, the pins 15 thereon turn the legs 13 about their pivots 14 until the legs are vertically disposed and the rear edge of the lower section 6 to which legs 13 are secured at 14 is thus raised. Simultaneously therewith, the forward edge of the section 6 is raised by the legs 47.

In Fig. 3, it will be seen that the points of pivotal connection of the upper ends of legs 47 are above the hinges 18 and the lower ends of legs 47 are close to or on the floor, and the turning movement of the moving section operates to shift the relative positions of the hinges 18 and the pivots of legs 47. This edge of the lower section 6 is thus raised to correspond with the upward movement of the other edge, the paths of movement of the points of pivotal connection of the upper ends of legs 47 to the sides 17 being horizontal ones to the left and then back to their original positions and the paths of movement of hinges 18 being vertical ones from the positions shown in Fig. 3 where they are below the upper ends of legs 47 to those shown in Fig. 4 where they are above legs 47. When the movable section reaches its final position where the ends of legs 22 rest upon the floor, the springs 30

are drawn taut and the mattress lies horizontally thereon, as shown by the dotted lines in Fig. 5. As the movable section 7 is turned from its initial to its final position, the cushion, instead of turning on the hinges 18, turns upon the hinges formed by the long hinge-members 27 and 28 and due to the length of these hinge-members, the forward edge of the cushion is lowered a considerable distance below the springs 30 so that depression of springs 30 due to the weight of the occupant of the bed thereon, will not carry the springs into contact with the cushion. As the forward edge of the cushion is lowered thus, its rear edge turns relatively to the cross-piece 19 on the hinges 26, such movement being permitted by the pivots 29 in the hinge-members 28. When the parts are in the final position, the rollers 33 lie in the horizontal portions 35 of the slots 34 and weight upon the springs 30 exerts no tendency to move the rollers down the inclined portions of slots 34 and thus cause the bed to fold.

It will thus be seen that a single movement of the movable section of the couch converts the latter into a bed of such length that the occupant thereof can lie with his body at a right angle to the length of the couch, and therefore the length of the couch is approximately the same as the width of the bed instead of being equal to the length of the bed in which case it would be much greater than is ordinarily desired. With the structure illustrated in the drawings, converting the couch into a bed operates to move the head-board back beyond the rear edge of the couch but if it is desired to do so, the couch shown in the drawings may be positioned at such a distance from the wall that it will not have to be moved forward from the wall in order to permit this backward movement of the head-board. The structure illustrated may be mounted in a casing affording a high upholstered inclined back and ends for the couch and in which the couch is positioned at such a distance from the rear wall as to provide space for the rearward movement of the head-board. Furthermore, it will be seen that the bedding can be arranged before the bed is converted into a couch, there being ample space therefor within the couch as shown in Fig. 7, so that when the couch is again converted into a bed, the latter is ready for occupancy immediately.

In order to convert the structure into a couch again, it is only necessary to grasp the handles 24 and turn the movable section about the hinges 18 back to its former position, and in doing this the lower section 6 will drop and the legs 22 fold automatically to the position shown in Figs. 2, 3 and 7. When approximately one-half of the movement of the movable section has been completed, the levers 41 will engage the stops 44 and further movement of the movable section will strain the coiled springs 45, thus cushioning the downward movement of the movable section and preventing it from falling into its final position with a jar.

What we claim as new and desire to secure by Letters Patent of the United States is:—

1. A convertible couch comprising a frame, a lower section movable vertically therein, an upper section pivoted to the lower section and movable to two positions in one of which it is horizontally disposed to form the seat of the couch, and means operated automatically by a single turning movement of said upper section about its pivotal connection to the lower section for raising the lower section and for converting the couch into a bed the length of which is perpendicular to the length of the couch, substantially as set forth.

2. A convertible couch having a lower section, an upper section pivoted to the lower section at one edge thereof, an end-board for the bed, and means operated by turning the upper section on said pivots for automatically moving said end-board beyond the non-adjacent edges of said sections and converting the couch into a bed, substantially as described.

3. A convertible couch having a frame, a lower section movable vertically therein, an upper section pivoted to the lower section and having two operative positions in one of which it is horizontally disposed and forms the seat of the couch, a spring frame secured at one end to the upper section and at the other to the lower section, and means operated automatically by a single turning movement of the upper section about said pivot for raising said lower section and converting the couch into a bed the length of which is perpendicular to the length of the couch, substantially as described.

4. A convertible couch having a lower section, an upper section pivoted to the lower section and movable to two positions in one of which it is horizontally disposed and forms the seat of the couch, a spring frame having one end secured to the upper section and the other end carried by the lower section, and means independent of said spring-frame connected to the upper section and to the spring-frame and operated by movement of the upper section on said pivots for raising said lower section and the end of said spring frame carried by said lower section and converting the couch into a bed the length of which is perpendicular to the length of the couch, substantially as described.

5. A convertible couch having a lower section, an upper section pivoted to the lower

section at one edge thereof, a head-board for the bed, and means operated by turning the upper section on its pivots for automatically raising said head-board and moving it beyond the edge of the lower section opposite that to which said upper section is pivoted, substantially as described.

6. A convertible couch having a lower section, an upper section pivoted to the lower section, and end-board for the bed carried by one of said sections, springs secured at one end to said end-board and at the other to the other of said sections, and means operated by turning said upper section on its pivots for raising said lower section and simultaneously moving said end-board beyond the non-adjacent edges of said sections, substantially as described.

7. A convertible couch formed in two sections, a lower section which is movable vertically and an upper section pivoted to the lower section and movable on said pivots to two positions, in one of which it is horizontally disposed and forms the seat of the couch and in the other of which it converts the couch into a bed, and legs for said lower section automatically and positively operated by the movement of said upper section to raise the lower section, substantially as set forth.

8. A convertible couch having a lower section, an upper section pivoted to the lower section, a lever secured at one end to the upper section, a second lever pivoted to the other end of said lever, a stop on the second lever adapted to engage the first lever, and a spring secured at one end to the second lever and at the other to said lower section, substantially as described.

9. A convertible couch having a lower section, an upper section pivoted thereon, legs pivotally mounted on said upper section, a spring frame mounted on said sections, and means operated by movement of said upper section about its pivots for automatically turning said legs on their pivots, raising said lower section and moving said spring frame so that it extends beyond the non-adjacent edges of said sections to form a bed the length of which is perpendicular to the length of said couch, substantially as described.

10. A convertible couch formed in two sections, an upper section and a lower section, said upper section being movable relatively to said lower section to two positions in one of which it is horizontally disposed and forms the seat of the couch and in the other of which it converts the couch into a bed the length of which is perpendicular to the length of the couch, and said upper section comprising a frame and a cushion pivotally mounted thereon, substantially as set forth.

11. A convertible couch having a lower section, an upper section, and a cushion forming part of said upper section, said upper section and cushion being independently pivoted to said lower section, substantially as described.

12. A convertible couch having a lower section, an upper section pivoted to said lower section, and a cushion forming part of said upper section, said cushion being pivotally connected at one edge to said upper section and at the opposite edge pivotally connected to the lower section independently of the pivots joining the upper and lower sections, substantially as described.

13. A convertible couch having a lower section, an upper section pivoted to said lower section and movable about said pivots to convert the couch into a bed, a spring frame connected at one end to the upper section and at the other to the lower section, a cushion forming part of the upper section, and means operated by the movement of the upper section about its pivots for moving said cushion relatively to the upper section to carry it away from said spring frame, substantially as described.

14. A convertible couch having a lower section, an upper section pivoted thereon, legs pivotally mounted on said upper section, a spring frame secured at its ends to said sections, a cushion forming part of said upper section, and means operated by movement of said upper section about its pivots for automatically turning said legs on their pivots, raising said lower section, moving said spring frame so that it extends beyond the non-adjacent edges of said sections and moving said cushion relatively to the upper section to carry it away from said spring frame, substantially as described.

15. A convertible couch having a lower section, an upper section pivoted thereto, and means for raising said lower section as the upper section is turned on its pivots to convert the couch into a bed including legs pivoted to said upper section above the pivots joining the upper and lower sections, substantially as described.

16. A convertible couch having a lower section, an upper section pivoted thereto, and means for raising said lower section as the upper section is turned on its pivots to convert the couch into a bed including legs pivoted to said upper section above the pivots joining the upper and lower sections and having slots therein to receive studs on said lower section, substantially as described.

17. A convertible couch having a lower section, an upper section pivoted thereto, a head-board in the lower section, levers connected thereto, means operated by turning said upper section on its pivot for mov-

ing said levers, projections on said levers, and inclined ways with which said projections coact, substantially as described.

18. A convertible couch having a lower section, an upper section pivoted thereto, a head-board in the lower section, levers connected at one end thereto, projections on said levers, inclined ways with which said levers coact, levers pivotally mounted on said upper section and connected to said first-named levers, and stops on the upper section coacting with said pivoted levers, substantially as described.

19. A convertible couch having a frame, a lower section movable vertically therein, an upper section pivoted to the lower section and having two operative positions in one of which it is horizontally disposed and forms the seat of the couch, a spring-frame secured at one end to the upper section and at the other to the lower section, and means operated automatically by a turning movement of the upper section about the pivotal connection thereof to the lower section for raising said lower section, substantially as described.

20. A convertible couch having a lower section, an upper section pivoted to the lower section and movable to two positions in one of which it is horizontally disposed and forms the seat of the couch, a spring-frame having one end secured to the upper section and the other end carried by the lower section, and means connected to the upper section and to the spring-frame and operated automatically by turning the upper section about the pivotal connection thereof to the lower section for raising the lower section and the end of the spring-frame carried by the lower section, substantially as described.

21. A convertible couch having a lower section, an upper section pivoted to the lower section and movable to two positions in one of which it is horizontally disposed to form the seat of the couch, a spring-frame having one end secured to the upper section and the other end carried by the lower section, and means connected to the upper section and to the spring-frame and operated by turning the upper section about its pivotal connection to the lower section for projecting the end of the spring-frame carried by the lower section beyond the edge of the lower section distant from the upper section, substantially as set forth.

22. A convertible couch having a lower section, an upper section pivoted to the lower section and movable to two positions in one of which it is horizontally disposed to form the seat of the couch, a spring-frame having one end secured to the upper section and the other end carried by the lower section, and means connected to the upper section and to the spring-frame and operated by turning the upper section about its pivotal connection to the lower section for raising the end of the spring-frame carried by the lower section and projecting said end beyond the edge of the lower section distant from the upper section, substantially as set forth.

23. A convertible couch having a lower section which is vertically movable, an upper section pivoted to the lower section and movable to two positions in one of which it is horizontally disposed above the lower section and forms the seat of the couch and in the other of which it is disposed adjacent to one edge of the lower section, means carried by said sections for providing a yielding surface for the bed, and means operated automatically by turning the upper section upon its pivotal connection to the lower section for raising the lower section vertically, substantially as set forth.

24. A convertible couch having a lower section, an upper section pivoted to the lower section at one edge thereof, a head-board for the bed, a spring frame connected to the upper section and to said head-board, and means operated automatically by turning said upper section about its pivotal connection to the lower section for moving said head-board beyond the edge of the lower section opposite that to which said upper section is pivoted, substantially as set forth.

25. A convertible couch having a lower section, an upper section pivoted thereto, legs for said lower section, and means connecting said legs and said upper section and actuated automatically by turning said upper section relatively to the lower section to operate said legs and thereby raise said lower section, substantially as set forth.

This specification signed and witnessed this 31st day of August, 1906.

AUSBORN F. OLD.
FREDERICK BENNETT.

Witnesses:
E. C. EVANS,
E. S. LAFFEY.