

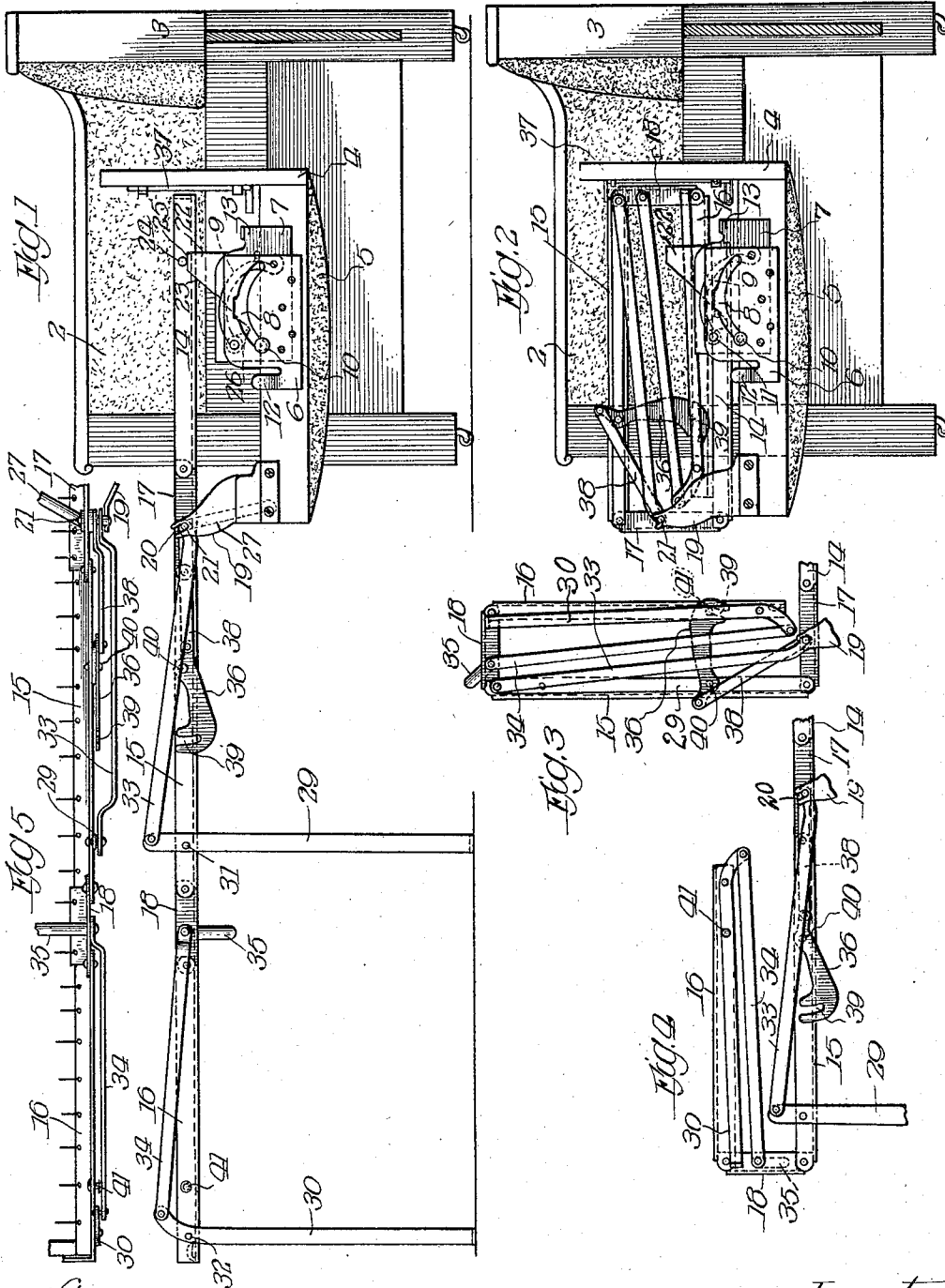
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SOFA BED.

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Witnesses:
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UNITED STATES PATENT OFFICE.

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SOFA-BED.

1,179,103.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, GEORGE A. HOLST and JOSEPH UMHOFFER, citizens of the United States of America, and residents of 2538 West Thomas street and 470 West Twenty-eighth street, Chicago, county of Cook, and State of Illinois, respectively, have invented certain new and useful Improvements in Sofa-Beds, of which the following is a specification.

This invention relates to convertible furniture of the class in which a series of storable sections are arranged to unfold to form a bed, and more particularly to sofa beds in which the bed portion is extensible transversely of the sofa, the frame of the sofa serving as a housing for the sections when folded. Beds of this character have been made in different ways, usually with the bed portion pivoted directly to the front of the sofa, or carried by a rotatably mounted hollow frame having a seat member for the sofa formed directly upon or carried by one side, and having the bed portion pivotally connected to and carried by the reverse side, the bed in either case being extensible transversely of the sofa and being foldable for storage under the seat member when the bed is not in use. In folding such a bed it is necessary either to hold the foot section in place in folded relation by hand while turning the adjacent sections, or to provide a fastening or holding means therefor.

The main objects of this invention are to provide an improved fastening for multiple section folding beds adapted for securing part of the sections in folded relation during the folding of the remaining sections; to operatively connect such a fastening for automatic action without any attention from the operator in folding and unfolding the bed; and to arrange a latch of this character which shall be operatable by the folding movement of an intermediate section for locking an outwardly adjacent section and vice versa.

A specific construction embodying this invention is shown in the accompanying drawing in which—

Figure 1 is a side elevation of a sofa bed with the bed sections unfolded and with one side of the sofa frame removed to show the details of the seat member and operating mechanism associated therewith. Fig. 2 is a similar view showing the bed in its folded position and with the seat

member ready for tilting or rotating to its upright or normal sofa position. Fig. 3 is a side elevation of the foot and middle sections of the bed illustrating the first stage of the unfolding operation with the middle and major foot sections folded and locked together and disposed in an upright position. Fig. 4 is a side view similar to Fig. 3 but illustrating the next stage of unfolding, the middle major section being in its bed position and the foot major section being folded thereupon, but with the automatic locking means disengaged therefrom ready for the final operation of swinging the foot section into place in alinement with the rest of the sections. Fig. 5 is a plan view of a portion of the bed when extended and shows the relative position of the leg folding and section locking members on one side of the bed.

In the construction shown in the drawings the sofa bed comprises the usual sofa housing or frame having ends 2 and back 3, in combination with a rotary or tiltable seat frame 4 operatively mounted between and supported by the said ends 2. This seat frame has one side upholstered to form a sofa seat 5 and the reverse side is formed as an open framework adapted and arranged to support and house the bed sections which are pivotally attached thereto for unfolding when the seat frame 4 is tilted to its inverted position, as shown in Fig. 2.

The connection of the seat frame to the sofa frame comprises two pairs of plates 6 and 7 secured to the opposite ends 2 of the housing and to the seat frame respectively. These plates are respectively provided with slots 8 and 9 with which coast pins 10 and 11 respectively, secured on the plates 7 and 6. The relative shape and disposition of the slots 8 and 9 and the location of the pins 10 and 11 are such that the seat frame 4 may be inverted through tilting by reason of the shifting pivotal action taking place between the seat frame 4 and the sofa frame through the coaction of the said pins and slots. The plates 6 and 7 are respectively provided with shoulders 12 and 13 which are arranged so as to have interlocking engagement when the seat frame is shifted to its normal or sofa position (not shown).

The bed comprises three wide major sections 14, 15 and 16, and two narrow minor sections 17 and 18, reading from head to foot, hinged together by rule joints in alternate position and are adapted to be folded

upon the underside of and within the seat frame 4 with the three major sections lying in horizontal position and with the minor sections vertically disposed at the opposite edges thereof. Brackets 19 are secured to the ends of the seat frame 4 adjacent to what is the front edge of the seat frame when in the bed position, and the outer and upper ends are formed with notches 20 in which are pivoted the pins 21 secured to the ends of the narrow bed section 17 intermediate of the edges thereof. The connection of the bed section 17 to the brackets 19 is such that it may swing from a vertical storage position to a horizontal bed position. The inner or head major section 14 and the middle major section 15 are hinged to the section 17 at opposite ends thereof, lower and upper respectively when folded. The head section 14 is arranged to be shifted from a lowered position within the seat frame to an elevated position and vice versa with the shifting of the narrow section 17 into and out of its horizontally disposed position respectively. This is accomplished by means of plates 22 located rearwardly of the brackets 19 at the ends of the seat frame 4. Each bracket is provided with an inclined surface 23 on which the pins 24 secured to the section 14 ride. Each of the said surfaces 23 terminate at its upper end in a horizontally disposed surface 25 on which the pins 24 rest when the section 14 is shifted to its elevated position, and at its lower end terminates in a socket 26 which coacts with its respective pin 24 for securing the section 14 in its lowered position. Section 17 is further braced and secured to the supporting brackets 19 by means of a brace 27 connected at its ends to the ends of the section 17. The foot minor section 18 and the foot major section 16 are hinged together and the former is hinged to the middle major section 15. Sections 18 and 16 are adapted to be extended in horizontal alinement, or to be folded with section 15 onto the seat frame with the foot section 16 between the sections 14 and 15. The head and middle major sections are of substantially the same width, and the foot major section is somewhat narrower, so that it may be folded in between them, the difference in width being substantially equal to the thickness of the mattress and the usual bedding. The minor sections 17 and 18 are also of different widths, the difference being a little more than the thickness of the mattress and bedding, section 17 being the longer.

The sections are supported in their bed position by means of pairs of legs 29 and 30 respectively pivoted at points 31 and 32 on the ends of sections 15 and 16 respectively adjacent to the front edges thereof. The legs of each pair are extended upwardly beyond their pivots and have the pairs of links

33 and 34 respectively connected thereto and and to the sections 17 and 18 whereby the legs are caused to unfold automatically when the bed sections to which they are pivoted are unfolded and vice versa. The foot minor section 18 is braced by a rod 35 connected at its ends to the pivotal connection of the links 34. When the foot section 16 is folded upon the middle section 15 and these two sections as a group are raised and swung backwardly to fold upon the head section 14 they are thereby automatically locked together by means of latch members 36, one on each side, and when the said sections 15 and 16 come to rest upon the head section 14 they are locked to the seat frame by manual operation of a bar 37 adapted for that purpose, so as to hold the bed members in place when the seat frame is tilted to its seat position, said bar also being adapted for manual operation to lock the seat frame rigidly to the sofa frame to prevent the seat frame from tilting when in its inverted or bed position.

The bar 37 has its end portions bent at right angles to the middle portion so as to provide shoulders at opposite ends, the upper shoulder being in position to prevent the unfolding of the bed sections when the bar is turned to one position and permit such unfolding when the bar is turned through an angle of ninety degrees, the lower shoulder being located so as to lock the seat section in its inverted position, as shown in Figs. 1 and 2, when the bar 37 is turned to release the bed sections.

The mechanism for locking the sections 15 and 16 together comprises a pair of latch members 36 each pivotally connected near one end to the middle portion of the middle major section 15, the adjacent end of each latch being connected by a link 38 to the middle pivot 20 on the head minor section 17, and the free end of the latch being provided with a transverse slot 39 formed concentric with the pivot 40 on which the latch turns, and adapted to receive a shoulder or pin 41 transversely disposed on the major section 16 adjacent to the outer end thereof, said latch and link being arranged to swing the latch from a position alongside of the section 15 to a transverse or perpendicular position for engaging the foot section when the section 15 is rotated for folding, and vice versa. To this end the latch is arranged for its slotted end to project toward the foot with the slot facing upwardly, and with its short arm projecting toward the head of the bed when the latter is unfolded, the short arm and link being normally inclined somewhat downwardly so as to respond readily when the middle section begins to rotate.

The foot minor section is so joined to the adjacent sections as to arrest their mutual folding movement as soon as they come into

parallel relation, as will be understood, and the latch is of proper length to engage the pin 41 and support the foot section securely in its folded parallel relation.

5 The operation of the device is as follows: If it is desired to convert the sofa into a bed, the seat frame 4 is first shifted to an inverted position. This is accomplished by elevating the front thereof, whereupon the
10 pins 10 and 11 shift in the slots 8 and 9 and cause the seat frame 4 to assume the position in which it is shown in Figs. 1 and 2. The rod 37 is then turned so as to disengage from the bed sections and to thereby lock the seat
15 frame in its inverted position in the sofa frame. The operator then grasps the brace-rod 35 and pulls the sections upwardly and outwardly to the position shown in Fig. 3. This movement of the sections swings the
20 section 17 on its pivot to a horizontal position which causes the section 14 to shift rearwardly and rise to its bed position. When it is desired to fold the bed sections to reconvert the device into a sofa, the outer
25 section 16 is folded upon the section 15, the folding movement thereof being arrested by their joints when the foot section comes into a position parallel with the middle major section. These sections are then
30 raised to fold upon the head major section by lifting the outer edge of section 15, as by means of the rod 35, and swinging it upwardly and forwardly. This movement causes the latch mechanism to operate and
35 swing upwardly to engage the pins 41 on the foot major section to secure the same in rigid folded relation with respect to the middle major section. Then as these sections are swung forwardly and downwardly
40 over the head major section the said latch prevents the foot major section from swinging away from the middle major section or turning out of its proper folded position. When the sections are thus folded they are
45 locked to the seat frame by turning the rod 37, whereupon the seat frame may be shifted to its normal or upright position for use as a sofa.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the
55 following claims.

We claim:

1. In a device of the class described, a plurality of foldable bed sections, adapted to fold together in combination with a latch
60 secured to and arranged to be actuated by the movement of an intermediate section for engaging and releasing another section folded upon said intermediate section.

2. In a device of the class described, a
65 chain of bed sections, comprising a plurality

of major sections joined by minor sections pivotally connected therebetween, one of the end sections being foldable upon the adjacent major sections, in combination with a latch pivoted to the said adjacent major
70 section, and a link connecting said latch and the adjacent minor section opposite from the said end section, said latch being operatable by the said link to engage the said
75 end section for securing it in folded position upon the said adjacent major section when the latter is turned to fold upon the next major section.

3. In a device of the class described, a housing frame, in combination with a chain
80 of foldable bed sections attached thereto and comprising head, middle, and foot major sections, and head and foot minor sections connecting the said major sections, and means operatable by folding the middle
85 major section upon the head major section for locking the foot major section in folded position upon the said middle section in folding the bed and vice versa.

4. A device of the class described, comprising a sofa frame and a tiltably mounted seat frame therein, in combination with a seat carried by said seat frame on one side and a foldable bed member carried by said
90 seat frame on its reverse side, said bed member comprising a series of sections arranged to unfold for transverse extension, one of the sections being hinged to the seat frame and others being outwardly disposed, and a latch carried directly by and operatable in
95 the direction of section swinging by the swinging of an intermediate section for locking and releasing a folded other outer section in folding and unfolding the said bed member respectively.
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5. In a device of the class described, a series of bed sections extensible in alinement and comprising an intermediate section having means operatable in the direction of section
105 movement by relative turning of an adjacent section on one side to lock and release an oppositely disposed section in and from folded position on said intermediate section respectively in folding and unfolding the bed.
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6. In a device of the class described, a series of bed sections comprising head, intermediate, and foot sections, one of said head and foot sections being foldable upon said
115 intermediate section and said two sections being rotatable as a unit to fold upon the other of said head and foot sections, a latch carried by said intermediate section and adapted to lock thereto that one of the head and foot sections which is first folded thereon, and means operatively connecting said
120 latch with the other of said head and foot sections for operating the latch during the folding and unfolding of the bed.
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7. In a device of the class described, a se-
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ries of foldable bed sections, comprising major and minor sections alternately arranged and adapted to fold together with the minor sections connecting the major sections, and with the major sections disposed in parallel relation in one direction and the minor sections disposed in parallel relation in a perpendicular direction relative to the major sections, one of the end major sections being foldable upon the adjacent intermediate major section in spaced parallel relation, the joint connections of the two designated sections with the intermediate minor section being adapted to limit the folding to such relation, means carried by said intermediate major section for engaging and rigidly locking said end section in its folded position, said means being operatively movable in the direction of folding and unfolding of said sections, and said locking means being operatable by folding of said intermediate major section relative to the adjacent minor section disposed oppositely from said end section.

8. In a device of the class described, a series of foldable bed sections adapted to be extended in alinement, and means carried by an intermediate section in definite movable relation thereto and arranged to become effective in the course of the folding operation for engaging a folded section to hold in folded relation such part of the sections as are disposed on one side of said intermediate section while the folding operation of the bed is continued, said means being operatively connected to another of said sections located at the other side of said intermediate section from said folded section for actuation by said other section when the said intermediate section is moved relatively thereto.

9. In a device of the class described, a series of foldable bed sections extensible in alinement and including an intermediate section having locking means movably mounted thereon and adapted automatically to hold the sections on one side of said intermediate section folded together during the folding and unfolding of the remaining sections, said means comprising a catch and a link connecting said catch to the adjacent section opposite from the folded sections for control thereby when the said intermediate section is folded thereupon.

10. In a device of the class described, a plurality of foldable bed sections adapted to be extended in alinement, in combination with a latch member carried by an intermediate

section and operatively connected to the adjacent section on one side for engaging and locking in folded position a section connected to the opposite side when the said intermediate section and first mentioned adjacent section are folded.

11. A sofa bedstead, comprising a main frame, end pieces, and a back piece for said frame, a seat normally supported between said end pieces, a plurality of movable bed bottom sections connected to said seat and supported therewith by said main frame, the outermost of said sections being reversible toward and pivoted to the adjacent section, and a section-locking latch secured to and operatable by the folding movement of an intermediate section for securing the outermost of said sections folded upon said intermediate section, said latch being operatable to release said outermost section by the unfolding movement of said intermediate section.

12. In a folding-bed structure, the combination with bed-supporting means and a folding-bed mounted thereon comprising three main bed-sections and spacing-sections connected therewith, of a latch-device mounted turnably on one main section and adapted to engage another main section connected thereto by one of said spacing-sections, and an actuating link connecting said latch-device to one of the other sections.

13. The combination with a folding bed-structure comprising a plurality of foldably-related bed-sections, of a latch-member pivotally connected with one section and adapted to lockingly engage another section, and an actuating link for the latch-member connected with a part of the folding-bed structure which is disposed at one side of the two said sections.

14. In a folding-bed structure, the combination with two main sections and a spacing-section joining them of latch-members pivotally connected with one main section and provided at their free ends with locking-notches, studs carried by the other main section and adapted for engagement with said locking notches, and actuating links for the latch-members connected with the spacing sections.

Signed at Chicago this 24th day of May, 1913.

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Witnesses:

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It is hereby certified that in Letters Patent No. 1,179,103, granted April 11, 1916, upon the application of George A. Holst and Joseph Umhofer, of Chicago, Illinois, for an improvement in "Sofa-Beds," an error appears in the printed specification requiring correction as follows: Page 3, line 102, claim 4, after the word "section" insert the words *comprised by said outwardly-disposed sections*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 16th day of May, A. D., 1916.

[SEAL.]

J. T. NEWTON,

Acting Commissioner of Patents.