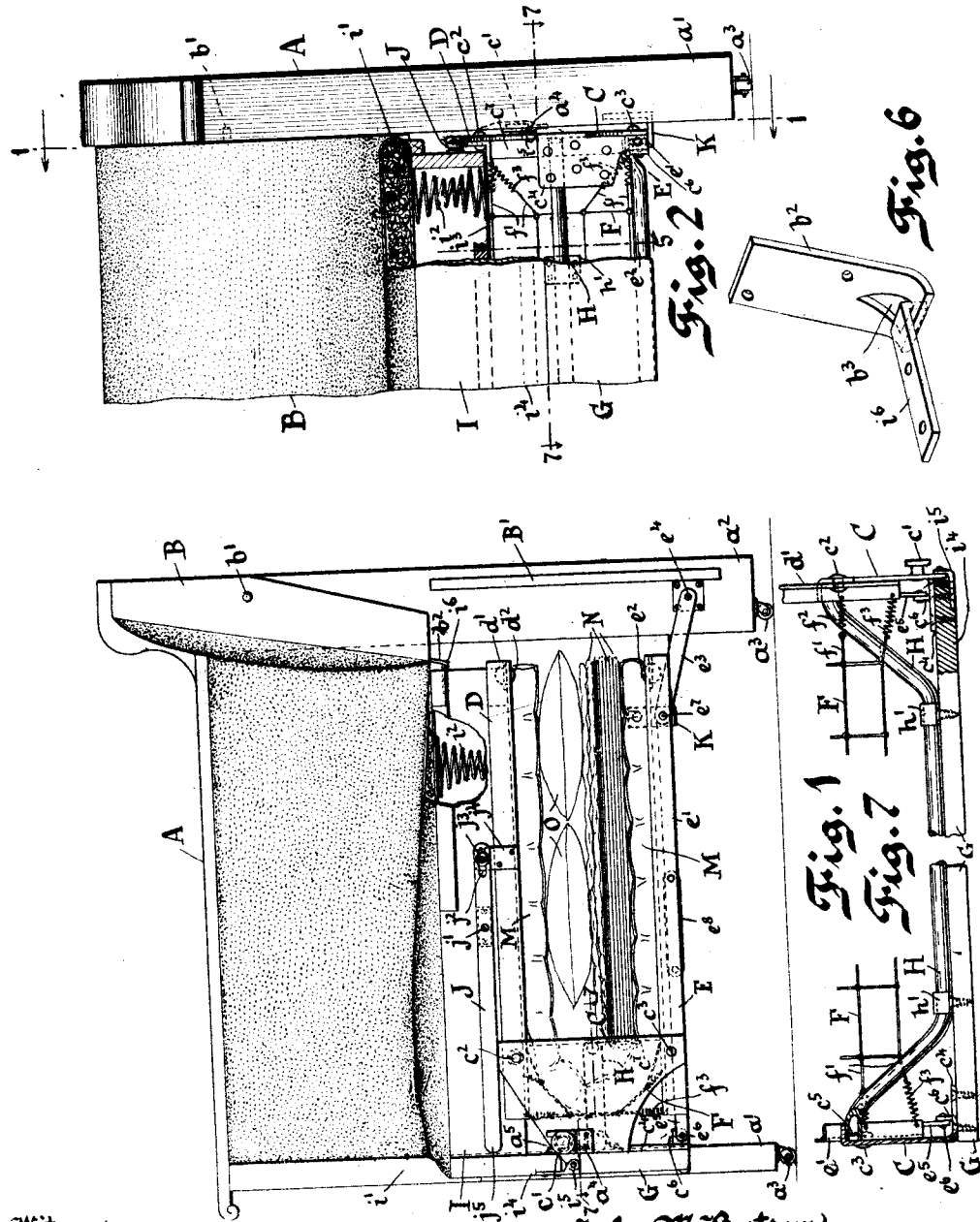


J. M. & A. G. BOSTROM.
BED SOFA.
APPLICATION FILED JUNE 17, 1912.

Patented June 24, 1913.
2 SHEETS-SHEET 1.

1,065,772.



Witnesses:

C. R. Cramer.

E. H. Bond

John M. Bostrom
Axel G. Bostrom

Inventors

334

George A. McFarlane

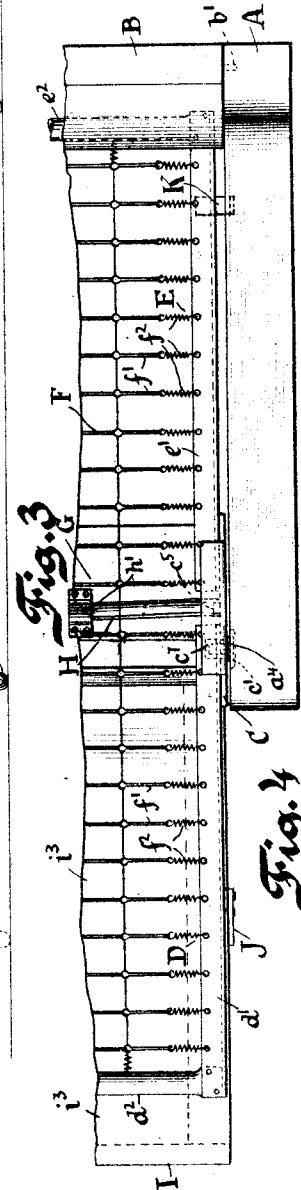
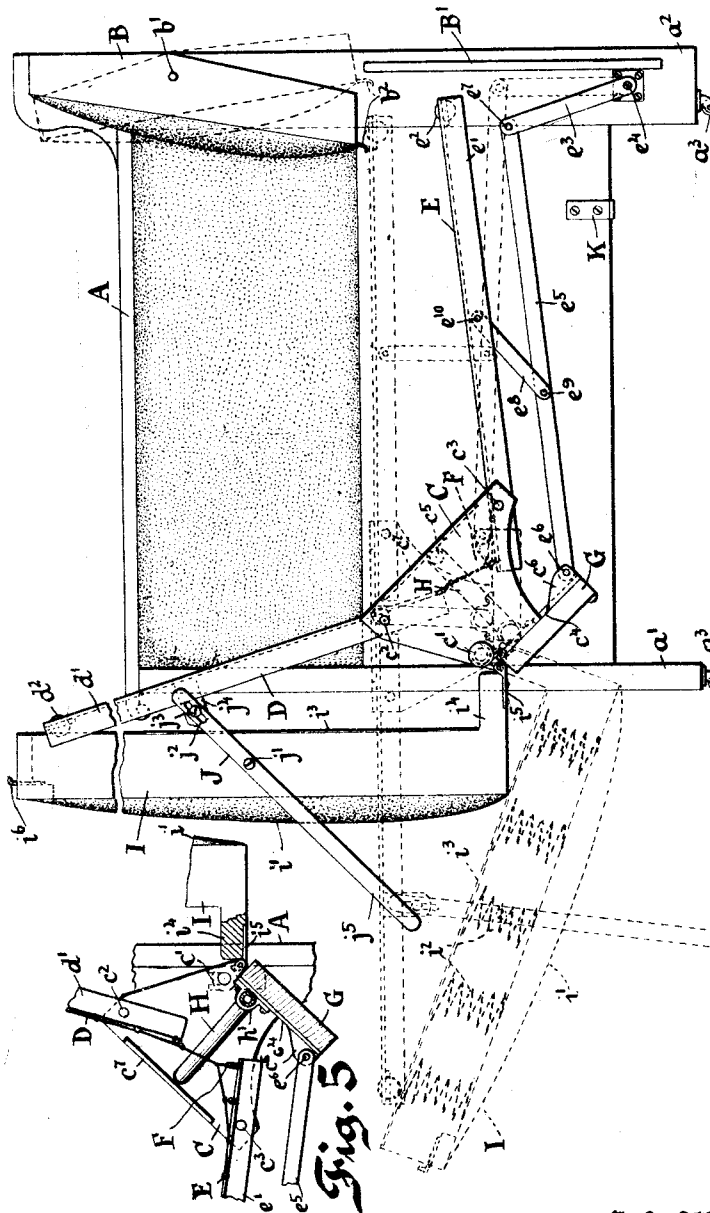
attorney

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By *George H. Moore* Attorney

UNITED STATES PATENT OFFICE.

JOHN M. BOSTROM AND AXEL G. BOSTROM, OF MILWAUKEE, WISCONSIN.

BED-SOFA.

1,065,772.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed June 17, 1912. Serial No. 703,996.

To all whom it may concern:

Be it known that we, JOHN M. BOSTROM and AXEL G. BOSTROM, both of Milwaukee, Wisconsin, have invented a Bed-Sofa, of which the following is a specification.

This invention relates to that class of furniture which is adapted in its normal or folded position to form a sofa or lounge and which can be unfolded so as to form a bed of double the width; these devices being commonly known in the trade as "davenport-ports."

The object of our invention is to provide an article of this class with a superior arrangement and construction of the parts; making it easier to fold and unfold, more readily accessible, more comfortable to sleep on as a bed and providing means whereby it cannot possibly fold up of itself; and arranged in such manner that when so folded, no part shall be visible to the eye which will make its use as a bed apparent.

In the accompanying drawings, Figure 1 is a side elevation of the bed-sofa with the end-side of the sofa nearest the observer removed, being substantially a transverse section on the plane 1 of Fig. 2; Fig. 2 is a front view of one end of the bed-sofa, a portion of the front-board and of the seat being broken away; Fig. 3 is a view similar to Fig. 1, showing, however, the parts in partially unfolded position and in fully unfolded position in full and dotted lines respectively; Fig. 4 is a plan view of one end of the sofa in unfolded position; Fig. 5 is a fragmentary transverse section substantially on the plane 5 of Fig. 2, looking in the direction of the arrow; Fig. 6 is a perspective view of the interlocking elements on the seat and back; and Fig. 7 is a fragmentary longitudinal section on the plane 7 showing the part H in section on the left, and parts above the section plane on the right.

The sofa-frame, which is the stationary portion, consists of the usual end-portions A, supported upon front and rear leg-posts a^1 and a^2 and casters a^3 , or otherwise designed in any preferred manner, and united at the back by an upholstered back member B and a back-board B' or otherwise. The cushion back B is preferably pivoted on a pair of pivot-pins b^1 so that it can swing through a small angle, as illustrated in dotted lines in

Fig. 3, for the purposes hereinafter mentioned; but this is not essential to the invention.

At the front of the sofa and at each end, adjacent to the respective members A on their inner sides, are a pair of swinging-members C, each formed preferably of sheet metal carrying a headed trunnion c^1 , which is adapted to engage with a slotted bearing-block a^4 , secured to member A, the slot a^5 in said block extending downward from the top and forming a socket in which the shank of the trunnion c^1 is adapted to rest and turn, the head of the trunnion holding it in engagement and this holding also the two end-members A in rigid relation to each other, while permitting, at the same time, the movable portions about to be described, which are attached to the members C, along with said members to be raised out and removed from the stationary sofa-frame when desired. The swinging members C are roughly triangular in form, carrying the trunnions c^1 at one angle and at the other two angles pivots c^2 and c^3 , to which are permanently connected the two bed-halves D and E. Each of the two bed-halves consists of a three-sided frame formed of angle-irons d^1 and e^1 on the ends and pipes d^2 and e^2 on the sides opposite the pivots c^2 and c^3 , these pipes having their ends flattened and riveted to the angles d^1 and e^1 as shown in Fig. 4. Between the end-bars d^1 and e^1 on the respective bed-halves is stretched a rectangular-mesh bed-bottom F which extends across the two bed-halves, in such manner, however, as not to interfere with their folding movement. It is not, however, essential that the bed-bottom should be of rectangular mesh. The ends of the bed-bottom are connected by rod-links f^1 and helical springs f^2 to the bars d^1 and e^1 , whereby in the folded position, Figs. 1 and 2, the links f^1 and springs f^2 on the adjacent inner ends of the frames D and E can spread to a certain extent by the stretching of said springs, as illustrated at f^3 in Fig. 2.

The two members C have each a flange c^4 , by which they are secured to the lower half G of the front-board of the sofa, this serving to hold them in rigid relation and to support them against the pull of the bed-bottom-mesh F a tubular strut H is used,

this being commonly in the form of an iron-pipe which is bent obliquely at its ends so that the middle portion thereof rests against the front-board G and is secured thereto by clips h' , while the ends abut against the free edges of the members C, being seated upon bosses c^5 , Fig. 7.

The combination of the front board G taken with the two members C and strut H form together a rigid member of the framework, a structure which will be herein termed a frame-member.

The lower bed-half E is guided so as to maintain a substantially horizontal position in the folding and unfolding movement by a set of links which include the member C, pivoted at c' , as one swinging arm, a member c^3 pivoted at e^4 at the back of the sofa for the other swinging-arm, and an intermediate link e^6 connected to the members C and c^3 at pivots e^6 and e^7 respectively, the flange c^4 being provided with an ear c^6 upon which the pivot e^6 is placed. The bed-bottom E, which is also pivoted to the member C, is held in nearly parallel relation to the line joining the pivots e^6 and e^{10} being ap-
 15 e^6 at e^9 and to the angle-iron e' at e^{10} , the link joining the pivots e^9 and e^{10} being approximately equal and parallel to the line joining the pivots e^6 and c^3 as shown. In the folded position, the links e^6 and e^8 fold upon the angle-iron e' as in Fig. 1, and in the unfolded position, as will be seen from Fig. 3, the bed-bottom-half E is raised to a
 20 horizontal position on a level with the upper margin of the member C, and the latter has upon said upper margin an inwardly extending flange c^7 which abuts upon the top of the angle-bar e' and also of the angle-bar
 25 d' of the upper bed-half D in such manner as to hold the member C in rigid relation to both members.

The upper bed-bottom-half D is formed independently of the sofa-seat I, which latter is formed of a rectangular frame in the usual manner, upholstered with a cushion i' , which is attached to its under side the hour-glass springs i^2 , these latter being preferably inclosed and the frame covered on its under
 30 side by a sheet of canvas or burlap i^3 . The said frame I has its front-board depending below the remainder as shown at i^4 so as to form the upper half of the front-board, adjoining and being in the closed position of the bed-sofa continuous with the lower portion G. The seat-frame I is hinged to the member C by means of metal hinged pieces i^5 , and it is also connected to the bottom-half D by a link-J, which is pivoted thereto at j' .
 35 One end of the link J has a slot j^2 , through which passes a pin or screw j^3 , which is secured to an ear j^4 on the angle-bar d' , while the other end j^5 of said link forms a leg or support which, in the unfolded position of the bed-sofa, rests upon the floor and sup-
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ports the frame I, the latter in turn supporting the frame D at its outer edge, the said bar d^2 resting thereupon.

When the bed sofa is to be unfolded, the seat I is grasped at the back (for which purpose any suitable strap or handle may be provided) and turned over upon its pivot in the manner shown in Fig. 3. This drags with it, because of the link-connection J, the bed-bottom-frame D, and this in turn pulls over the frame-member which consists of the two members C, the longitudinal board G and the strut H, turning upon the trunnions c' . This action in turn raises the bed-bottom E in the manner shown, so that when the link J, being turned into a position nearly at right angles with the seat-frame I, strikes upon the floor, and limits the further opening movement, the two half-frames D and E of the bed-bottom have reached a horizontal position on the same level, in which position they are rigidly held by the engaging-flange c' of the member C. It will be found now that any ordinary weight that can be placed upon the bed-bottom-half E will be insufficient to cause the reversal of the movement and shut up the sofa, especially because of the link connections c^3 and e^8 whereby the weight of a person lying upon the back-half of the member E will tend to keep the bed open rather than to close the same.

Where the sofa-back B is pivoted as shown, we provide a hook and eye engagement between it and the seat I, the same consisting of two or more apertured plates b^2 secured to the sofa-back B, and the same number of hooked bars i^6 on the back-edge of the seat I, which are adapted to engage in the apertures b^3 of the plates b^2 ; thus, in closing the sofa, the hinged back B is swung forward into position of engagement, and this prevents any crack or opening between the seat and back, through which articles might drop or which would be unsightly, and it further serves to support the weight of persons resting upon the seat which would otherwise come directly upon the unsupported free edge of the bed-bottom-half D. Furthermore, by pivoting the back B, a greater amount of free space is allowed in the open position of the bed-sofa, as the back B can be swung back so as to be free of the back-end of the frame E. Also a pair of bent straps K are attached to the sides of the frame-members A to form supports for the rear ends of the frame E and links e^6 in the folded position of the bed-sofa. It will be observed that in said folded position ample space is provided between the bed-bottom-halves for the storage of mattresses and bed-coverings.

We wish it understood that our invention is not limited to the use of all the above described features and constructions, for some

may be omitted and others may be varied or modified in various ways, as will readily occur to those skilled in the art. To illustrate the application of our invention, we have shown in Fig. 1, a mattress M, bed-

coverings N and pillows O.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a bed-sofa, the combination with the supporting sofa-frame of a seat-member pivoted at the front side thereof, a frame-member also pivoted at the front side of said supporting frame, two bed-bottom-halves pivoted to said frame-member, and a connection between said seat-member and one of said bed-bottom-halves, whereby the reversal of the former carries with it the latter, rotates said frame-member, and moves the other bed-bottom-half to a level and abutting position with the first.

2. In a bed-sofa, the combination with the supporting sofa-frame of a frame-member pivoted on trunnions at the front side of said frame, said frame-member having a pair of plates on its ends extending in the plane of rotation, a pair of bed-bottom-halves comprising frames pivoted to points on said plates distant from said trunnions, and a seat-member pivoted adjacent to said trunnions; said seat-member being reversible and having means for supporting it in a reversed position, and one of said bed-bottom-halves being also reversible and when so reversed extending over the reversed seat-member; the other bed-bottom-half having devices on which it is mounted to rise and fall and to be raised to a level with the first bed-bottom-half in the reversed position of the latter.

3. In a bed-sofa, the combination with the supporting sofa-frame of a frame-member pivoted upon trunnions at the front side thereof and having rearwardly extending plates lying in the plane of rotation, said plates having each a pair of pivots at the side distant from said trunnions, a bed-bottom-half comprising a frame pivoted to the lower or rear pair of pivots, link-work supporting and guiding the movements of said bed-bottom-half whereby as said frame-member turns upon its pivot the bed-bottom-half is raised and lowered in nearly parallel position, and a second bed-bottom-half comprising a frame turning on the upper or front pair of pivots and adapted for reversal; there being a connection between said frame-member and the said last named bed-bottom-half whereby the rotation of the latter through 180 degrees to the reversed position carries with it said frame-member through an angle sufficient to raise said first named bed-bottom-half to a level with the other bed-bottom-half.

4. In a bed-sofa, the combination with the

supporting sofa-frame, of a frame-member pivoted upon trunnions at the front side thereof and having rearwardly extending plates lying in the plane of rotation, said plates having each a pair of pivots at the side of each plate distant from said trunnions, a bed-bottom-half comprising a frame pivoted to the lower or rear pair of pivots, link-work supporting and guiding the movements of said bed-bottom-half whereby as said frame-member turns upon its pivot the bed-bottom-half is raised and lowered in nearly parallel position, a second bed-bottom-half comprising a frame turning on the upper or front pair of pivots and adapted for reversal; there being a connection between said frame-member and said last-named bed-bottom-half whereby the rotation of the latter through 180 degrees to the reversed position carries with it said frame-member through an angle sufficient to raise said first-named bed-bottom-half to a level with the other bed-bottom-half; a seat member, and a folding leg at each end forming a connection between said seat-member and said last named bed-bottom-half adapted to support said last-named bed-bottom-half in the reversed position.

5. In a bed-sofa, the combination with the supporting sofa-frame of a frame-member pivoted upon trunnions at the front side thereof and having rearwardly extending plates lying in the plane of rotation, said plates having each a pair of pivots at the side distant from said trunnions, a bed-bottom-half comprising a frame pivoted to the lower or rear pair of pivots, link-work supporting and guiding the movements of said bed-bottom-half whereby as said frame-member turns upon its pivot the bed-bottom-half is raised and lowered in nearly parallel position, a second bed-bottom-half comprising a frame turning on the upper or front pair of pivots and adapted for reversal; there being a connection between said frame-member and said last-named bed-bottom-half whereby the rotation of the latter through 180 degrees to the reversed position carries with it said frame-member through an angle sufficient to raise said first named bed-bottom-half to a level with the other bed-bottom-half; a seat-member pivoted at the front side of said sofa-frame, a pair of folding legs pivoted on the ends of said seat-member and adapted to support the same in a reversed position, and a pin-and-slot connection between said seat-member and said reversible bed-bottom-half, whereby the reversing of the former carries with it the latter.

6. In a bed-sofa, the combination with the supporting sofa-frame of a frame-member pivoted upon trunnions at the front side thereof and having rearwardly extending plates lying in the plane of rotation, said

plates having each a pair of pivots at the side distant from said trunnions, a bed-bottom-half comprising a frame pivoted to the lower or rear pair of pivots, link-work supporting and guiding the movements of said bed-bottom-half whereby as said frame-member turns upon its pivot the bed-bottom-half is raised and lowered in nearly parallel position, a second bed-bottom-half comprising a frame turning on the upper or front pair of pivots and adapted for reversal; there being a connection between said frame-member and said last-named bed-bottom-half whereby the rotation of the latter through 180 degrees to the reversed position carries with it said frame-member through an angle sufficient to raise said first-named bed-bottom-half to a level with the other bed-bottom-half; a seat-member pivoted at the front side of said sofa-frame, and a pair of folding legs pivoted on the ends of said seat-member and adapted to support the same in a reversed position; each leg having an extension connected with said reversible bed-bottom-half by a pin-and-slot connection whereby on reversing the seat-member said reversible bed-bottom-half is carried with it and said leg is extended into operative position, and on folding back said seat-member into its normal position, said leg is automatically folded against the side thereof.

7. In a bed-sofa, the combination with the supporting sofa-frame of a frame-member pivoted upon trunnions at the front side thereof and having rearwardly extending plates lying in the plane of rotation, said plates having each a pivot at the side distant from said trunnions, a bed-bottom-half comprising a frame pivoted on said pivots, a pair of links pivoted to the respective ends of the frame-member and extending rearwardly, a second pair of links pivoted to the sofa-frame at the back and pivotally connected to the rear ends of said first pair of links, and a third pair of links connecting the first pair of links with the respective ends of said bed-bottom-half whereby the rotation of said frame-member produces an upward movement in said bed-bottom-half and said bed-bottom-half is supported by said third pair of links; in conjunction with means for rotating said frame-member.

8. In a bed-sofa, the combination with the supporting sofa-frame of a frame-member pivoted upon trunnions on the front side thereof and having rearwardly extending plates lying in the plane of rotation, said plates having each a pair of pivots at the side distant from said trunnions, a bed-bottom-half comprising a frame pivoted to the lower or rearmost pair of pivots, a pair of links pivoted to the respective ends of the frame-member and extending rearwardly, a second pair of links pivoted to the

sofa-frame at the back and pivotally connected to the rear ends of said first pair of links, and a third pair of links connecting the first pair of links with the respective ends of said bed-bottom-half whereby the rotation of said frame-member produces an upward movement in said bed-bottom-half and said bed-bottom-half is supported by said third pair of links, in conjunction with a second bed-bottom-half pivoted to the upper and forward pivots of said frame-member, means for supporting said second bed-bottom-half when reversed, and a flange on each of the plates of said frame-member extending across the ends of the two bed-bottom-halves and adapted to engage therewith in the extended position of the bed whereby said bed-bottom-halves are brought into and maintained in substantial alignment.

9. In a bed-sofa, the combination with the supporting sofa-frame of a frame-member pivoted upon trunnions at the front side thereof and having rearwardly extending plates lying in the plane of rotation, said plates having each a pair of pivots at the side distant from said trunnions, a bed-bottom-half comprising a frame pivoted to the lower or rearmost pair of pivots, a pair of links pivoted to the respective ends of the frame-member and extending rearwardly, a second pair of links pivoted to the sofa-frame at the back and pivotally connected to the rear ends of said first pair of links, and a third pair of links connecting the first pair of links with the respective ends of said bed-bottom-half, whereby the rotation of said frame-member produces an upward movement in said bed-bottom-half and said bed-bottom-half is supported by said third pair of links; in conjunction with a second bed-bottom-half pivoted to the upper and forward pivots of said frame-member, folding supports for said second bed-bottom-half when reversed, and a flange on each of the plates of said frame-member extending across the ends of the two bed-bottom-halves and adapted to engage therewith in the extended position of the bed whereby said bed-bottom-halves are brought into and maintained in substantial alignment, and a reversible seat-member pivoted to the front of said sofa-frame and adapted to overlie said second bed-bottom-half in the closed or folded position and to underlie the same in the open or reversed position.

10. In a bed-sofa, the combination with the sofa-frame of the front-board pivoted on trunnions, a reversible seat-member pivotally connected therewith, upon an axis at the upper edge of said front-board and having a front piece which in the closed position is substantially continuous with said front-board, a reversible bed-bottom half

also pivotally connected with the front-board, and a nonreversible bed-bottom half also pivotally connected with the front board.

- 5 11. In a bed-sofa, the combination with the stationary sofa-frame of the frame-member pivotally mounted at its ends upon trunnions, a link-member pivotally mounted at the back of the frame, a second link-member pivotally connected with said first-named link-member and with said pivoted frame-member, a nonreversible bed-bottom-half pivoted to said frame-member, and a third link-member pivotally connected with said second-named link-member and said bed-bottom-half and supporting the latter.

- 15 12. In a bed-sofa, the combination with the stationary sofa-frame of the frame-member pivotally mounted at its ends upon trunnions, a link-member pivotally mounted at the back of the frame, a second link-member pivotally connected with said first-

named link-member and with said pivoted frame-member, a nonreversible bed-bottom-half pivoted to said frame-member, and a 25 third link-member pivotally connected with said second-named link-member and said bed-bottom-half and supporting the latter, said last-named link-member being midway between the two sides of said bed-bottom half and disposed vertically when said bed-bottom half is raised, whereby a weight 30 upon the rear side of said bed-bottom-half tends to raise the other side thereof and thereby hold the frame-member against turning into the closed position. 35

In witness whereof, we have hereunto set our hands in the presence of two witnesses.

JOHN M. BOSTROM.
AXEL G. BOSTROM.

In the presence of—
J. W. WEST,
F. O. PANKWIN