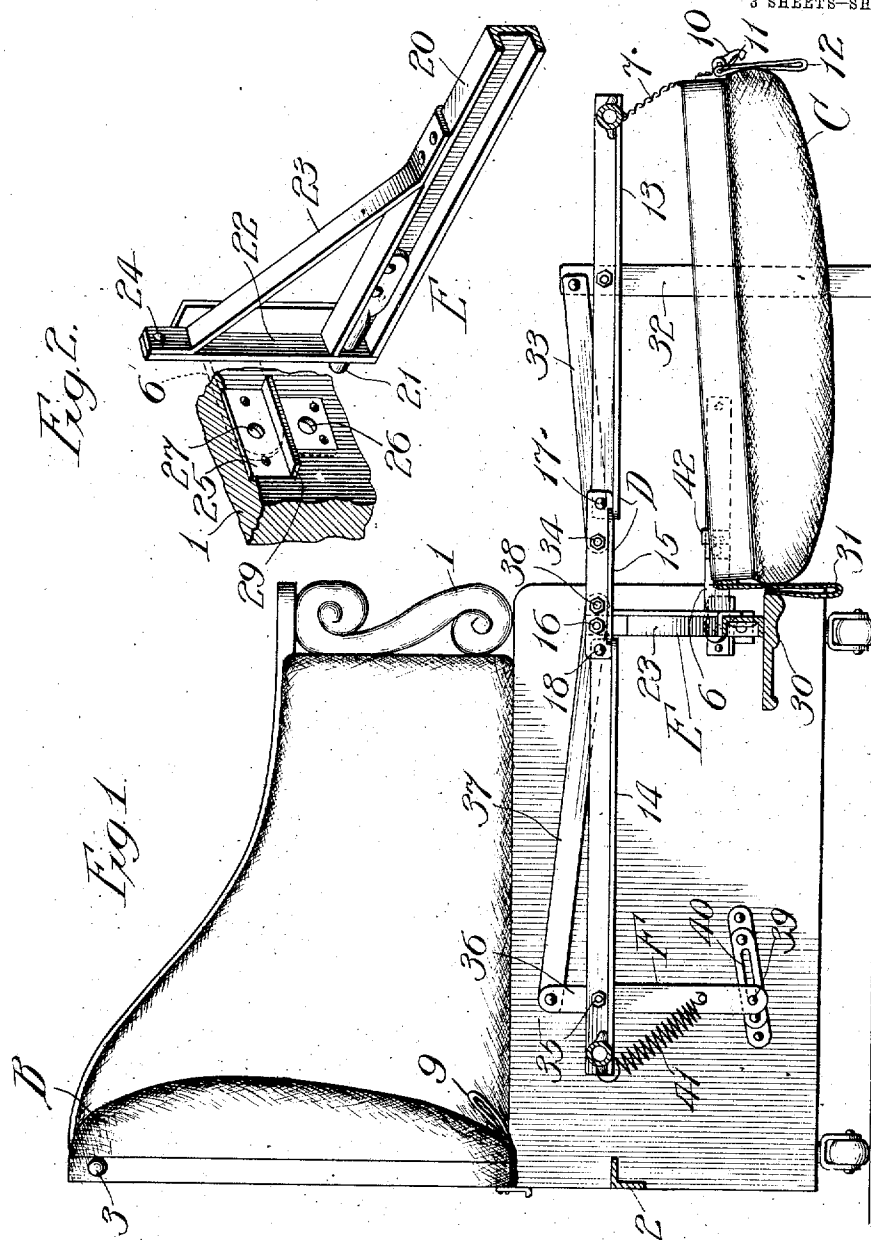


987,376

Patented Mar. 21, 1911.

3 SHEETS-SHEET 1.



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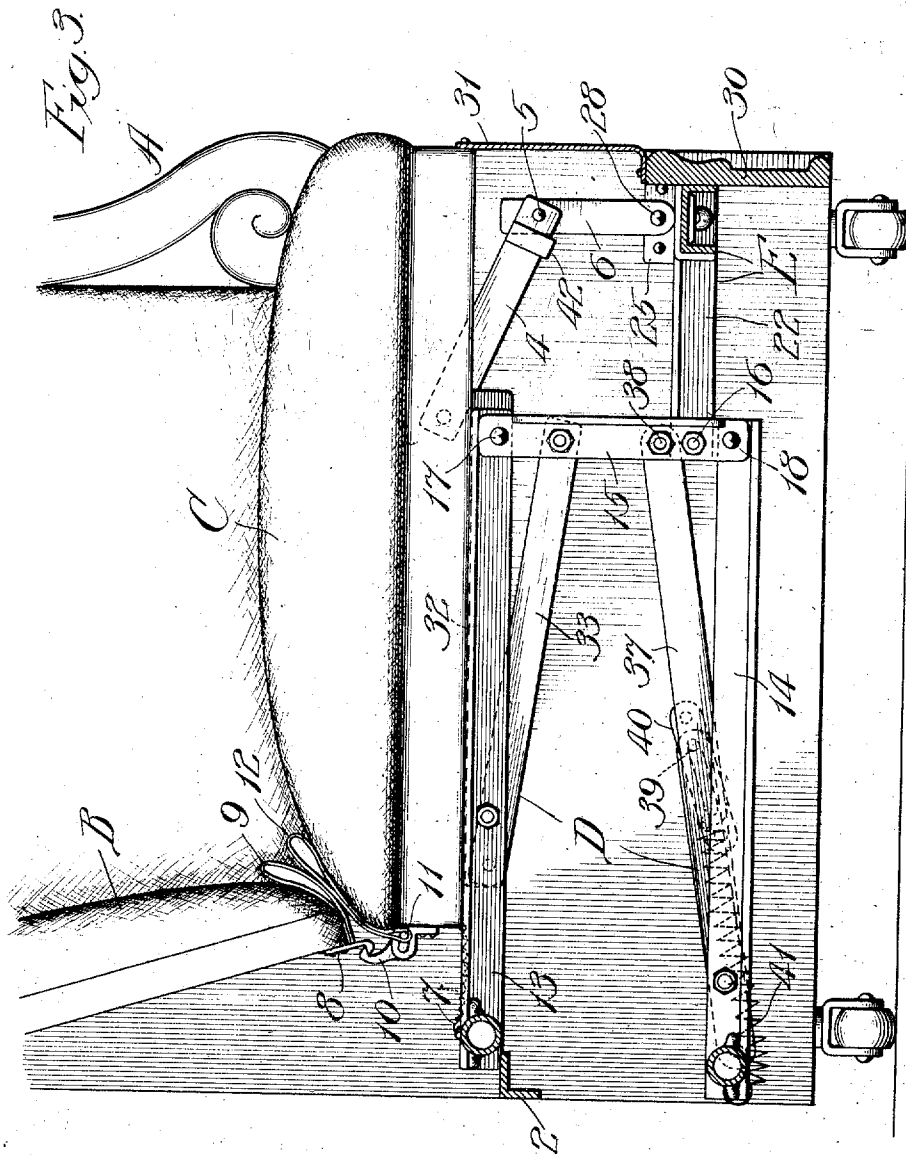
S. KARPEN.
SOFA BED.

APPLICATION FILED APR. 5, 1909.

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3 SHEETS-SHEET 2.



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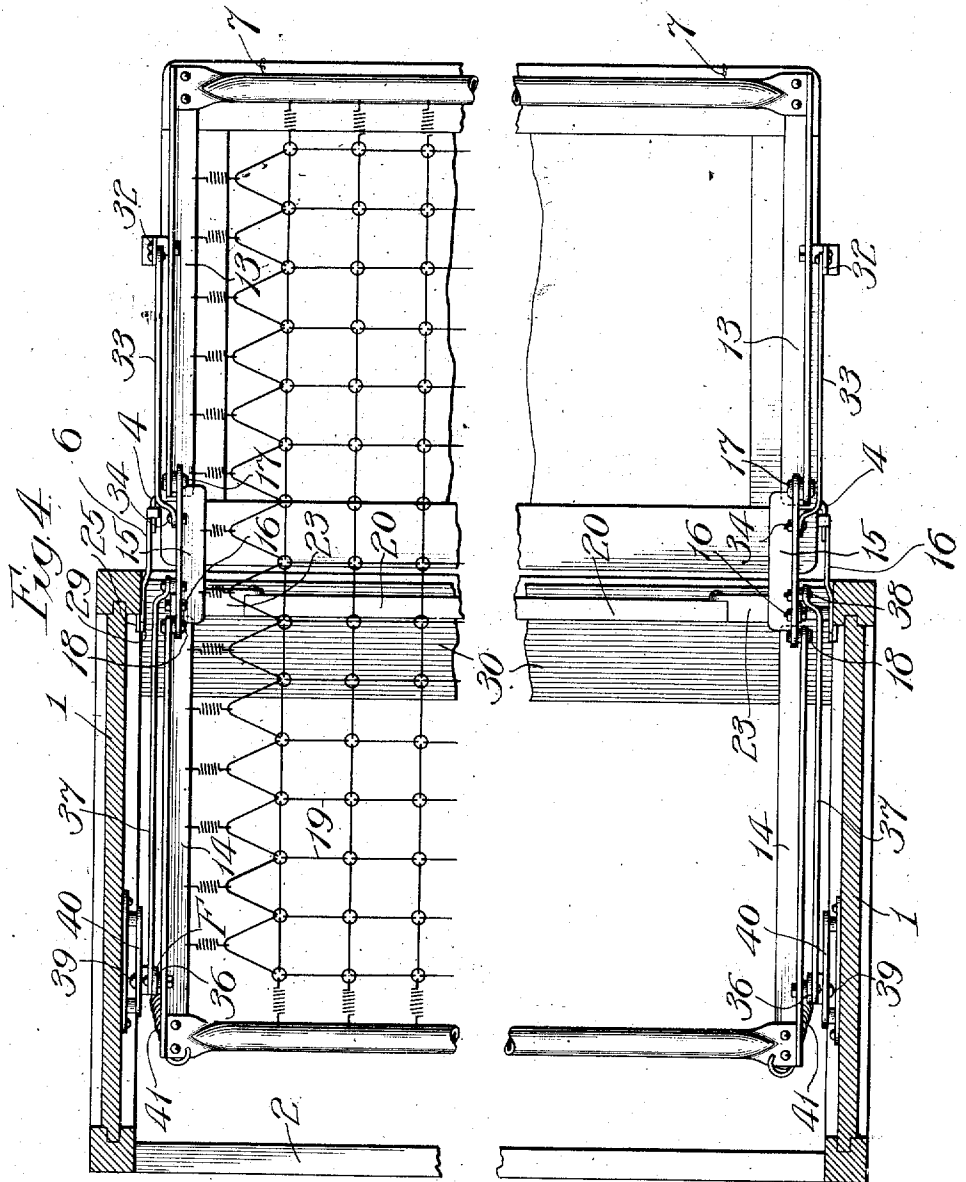
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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SOFA-BED.

987,376.

Specification of Letters Patent. Patented Mar. 21, 1911.

Application filed April 5, 1909. Serial No. 488,094.

To all whom it may concern:

Be it known that I, SOLOMON KARPEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Sofa-Beds, of which the following is a specification.

My invention relates particularly to combination sofas and beds, in which a foldable mattress-frame is normally housed within the main frame beneath the seat of the sofa and equipped with a foldable bed-bottom, or wire mattress the parts being so related as to afford room between the sections of the folded bed for the bedding, *i. e.*, the mattress proper, bed-linen and covers.

The primary object of the present invention is to provide a simple construction of combined sofa and bed which may be comfortably employed either as a sofa or a bed, and which can be manufactured at very moderate cost.

It may be preliminarily stated that in the preferred construction of the invention which is illustrated in the accompanying drawings, there are employed a main frame, a back pivotally connected therewith in such manner as to enable its lower portion to swing rearwardly when the device is converted to bed form; a seat mounted on the main frame and adapted to be swung to an inverted position in front of the main frame; and a folded bed normally housed in said frame beneath said seat and adapted to be unfolded in the operation of swinging the seat to the inverted position. In this construction, there is employed a truss which is pivotally supported at the lower front portion of the end-standards of the frame; and the folded bed comprises a central bed-section which is pivotally mounted upon the arms of said truss, and substantially U-shaped front and rear bed-sections pivotally connected with the intermediate bed-section. The seat has its front portion connected with the frame by a sort of double-hinge arrangement, which permits the seat to be swung to a position in front of the frame, and the front bed-section is attached to the seat so that the bed will be unfolded when the seat is swung to the inverted position. The rear portion of the rear bed-section is mounted upon links, or folding legs, whose lower ends are connected with guides which permit the folding to take place.

In the accompanying drawings—Figure 1 represents a sectional view of my improved combined sofa and bed in the open position; Fig. 2, a broken perspective view illustrating the manner in which the truss employed is pivotally connected with the main frame; Fig. 3, a broken sectional view similar to the section shown in Fig. 1, but showing the structure in sofa form; and Fig. 4, a broken horizontal sectional view showing the structure in bed form.

In the preferred construction, A represents a main frame; B, a pivotally supported back; C, a seat mounted on the main frame and adapted to swing to a position in front of the main frame; D, a foldable mattress-frame, or bed-frame, normally housed within the main frame in folded condition beneath the seat of the sofa, as shown in Fig. 3, E, a truss pivotally mounted on the main frame, upon which the folding bed is mounted; and F, links, or folding legs, connected with the rear portion of the rear bed-section.

The frame A may be of any suitable construction. In the construction illustrated, it comprises end-standards 1 which may be of wood and as ornamental as desired; and a rear connecting member 2 joining said end-standards.

The back B may be of any approved construction. As shown, it is equipped at the upper portion of its ends with pivotal studs 3 which are received in pivot-sockets (not shown) with which the upper rear portions of the arms, or end-standards, 1 of the sofa are provided. The back stands normally in the rearwardly-inclining position shown in Fig. 3, but when disengaged from the seat of the sofa, the back drops automatically to the vertically depending position shown in Fig. 1, so as not to interfere with the use of the bed.

The seat C may be of any suitable construction. It preferably comprises the usual frame, springs mounted thereon, and a cushion-pad mounted on said springs. It has pivotally connected with its ends links 4, which, in turn, are joined by pivots 5 to links 6. The links 6 are pivotally connected with the frame in a manner which will be presently described. The rear portion of the seat is connected, by links, or chains, 7, with the swinging edge of the upper or front bed-section. The back B is equipped with a

catch-member 8 which is rigidly secured thereto; and a loop, or handle, 9 is provided, by means of which the back may be swung forward to enable it to be lockingly engaged with the rear portion of the seat. The rear portion of the seat is equipped with a movable catch 10 which is pivotally supported at 11, and which may be released by means of a loop, or handle, 12. When the structure is in the sofa form, the catches are in engagement with each other, and release may be effected by moving the catch 10 through the medium of the loop 12. The particular form of means for locking the seat and back together is of no importance, and no claim to a specific device for such purpose is made herein.

The folding bed D comprises an upper or front section 13; a lower or rear section 14; and an intermediate section 15. The intermediate section is securely fastened by bolts 16 to the arms of the truss E. The intermediate section comprises end-members; and the front and rear sections comprise substantially U-shaped members having the extremities of their arms connected, respectively, by pivots 17 and 18, with the extremities of the end-members of the intermediate section 15. The folding bed-frame, or mattress-frame, has attached thereto the flexible bed-bottom, or wire mattress, 19.

The truss E upon which the intermediate section 15 of the bed-frame is mounted, comprises, in the form shown, a longitudinally disposed channel-bar 20 having pivot-studs 21 projecting from the ends thereof; and upwardly extending arms 22 which may be formed of angle-bars, secured at right-angles to the channel-bar 20, the pivots 21 projecting beyond the uprights 22. The arms 22 are connected with the longitudinal member 20 by braces 23. The ends of the arms 22 are provided with perforations 24 which receive the pivotal bolts 16 which serve to connect the intermediate bed-section with the truss. The end-standards 1 of the main frame are equipped with pivot-plates 25 which are located at the front portions of said standards a short distance above the lower ends of the standards. The plates 25 are of Z-form, and have perforations 26 adapted to receive the pivots 21 of the truss E, and perforations 27 adapted to receive pivotal rivets 28 which serve to connect the links 6 with the plates 25. The webs 29 of the Z-form plates 25 are disposed horizontally and afford ledges upon which the links 6 bear when the bed is unfolded and the links 6 are in the horizontal position shown in Fig. 1. The channel-bar 20 of the truss E has secured to it a front piece, or molding, 30 which lies in a vertical plane when the structure is in sofa form and which swings to a horizontal plane when the structure is in bed form. The space between the front portion of the seat and the front piece 30 is

spanned by fabric 31 which conceals the interior structure.

Pivotally connected with the end-members of the front bed-section 13 are folding legs 32 which have extensions above their pivots 33 which are pivotally connected with links 33 whose opposite ends are connected, by pivots 34, with the intermediate bed-section.

The links F are joined by pivots 35 to the rear portions of the end-members of the bed-section 14, and the links have extensions 36 with which are pivotally connected links 37 whose other ends are connected, by pivots 38, with the intermediate bed-section. The lower ends of the links, or legs, F are 80 equipped with cam-studs 39 which move in inclined guides 40 with which the end-standards of the main frame are equipped on their inner surfaces. Springs 41 connect the legs F with the rear portion of the 85 frame-section 14.

The operation will be readily understood from the foregoing detailed description. The bed is usually made up before converting the structure to sofa form, the bedding, 90 which includes the mattress proper, the bed-linen and covers, being secured to the mattress-frame, or bed-frame, so as to fold therewith. In converting to sofa form, the seat is swung from the position shown in 95 Fig. 1 to the position shown in Fig. 3. In this operation, the links 4 and 6 assume the position shown in Fig. 3, and the bed-frame is folded to the position shown in Fig. 3. In the same operation, the truss E turns 100 upon the trunnions, or pivots, 21, thus carrying the pivots 16 downwardly and rearwardly. At the same time the links, or legs, F swing rearwardly about the studs 39, while the studs 39 also slide in the guides 40. 105 In the sofa form, the intermediate bed-section 15 assumes a vertical position and the arms 22 of the truss E assume a horizontal position. After the seat has been swung to the normal position for use as a seat, the 110 lower portion of the back is swung forwardly through the medium of the loop 9, and the back is lockingly engaged with the catch with which the seat is equipped.

In converting from sofa form to bed form, 115 the loop 12 is employed to lift the rear portion of the seat, the initial lift serving to release the back, which swings to the vertical position shown in Fig. 1. In the operation of swinging the seat to the position shown 120 in Fig. 1, the links 4 and 6 are brought into substantial alinement, and the links 6 rest upon the ledges 29 of the pivot members 25. The links 4 are equipped with stops 42 which engage the projecting ends of the 125 links 6, so that the edge of the seat which lies adjacent to the frame in the inverted position of the seat will be supported through the medium of the links 4 and 6. The opposite edge of the seat is supported 130

through the medium of the chains 7. In the operation of swinging the seat to the inverted position, the bed is unfolded through the medium of the chains 7, the truss E swinging upon its pivots so that its arms assume an upright position and elevate the intermediate section of the bed. In the unfolding operation, the front legs 32 and rear legs F are swung to the upright position through the medium of the links 33 and 37, respectively.

The foregoing detailed description has been given for clearness of understanding only, and no undue limitation should be understood therefrom. Hence, the appended claims should be construed as broadly as permissible in view of the prior art.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a structure of the character set forth, the combination of a frame, a movable seat, a folded bed normally housed in said frame beneath said seat, and a truss having pivotal connections with the front portion of said frame and equipped at its end-portions with rearwardly projecting arms connected with a section of said folded bed.

2. In a structure of the character set forth, the combination of a frame, a movable seat, a truss pivotally connected with the front portion of said frame and having a front piece attached thereto and adapted to turn with the truss, said truss having rearwardly extending arms at its end-portions, and a folded bed normally housed in said frame beneath said seat and comprising sections pivotally connected together, one of said sections being connected with said arms.

3. In a structure of the character set forth, the combination of a frame, a seat mounted thereon and adapted to swing to an inverted position in front of the frame, links connecting the front portion of said seat with the front portion of said frame, a rotatable truss equipped at its end-portions with rearwardly extending arms, and a folded bed normally housed in said frame beneath said seat, one section of said folded bed being connected with the arms of said truss.

4. In a structure of the character set forth, the combination of a frame, a seat mounted thereon and adapted to swing to an inverted position in front of the frame, a rotatable truss pivotally connected with the lower front portion of said frame and having rearwardly extending arms, a folded bed having a section connected with said arms, and connections between said seat and one section of said bed, whereby the bed will be unfolded when the seat is swung to said inverted position.

5. In a structure of the character set forth, the combination of a frame, a movable seat, a truss pivotally connected with the lower front portion of said frame and equipped

with rearwardly extending arms, and a bed normally housed in said frame beneath said seat and comprising an intermediate section having end-members mounted on said arms, and front and rear sections pivotally connected with the end-members of said intermediate section.

6. In a structure of the character set forth, the combination of a frame, a seat mounted thereon and adapted to swing to an inverted position in front of said frame, links pivotally connected with the frame, links pivotally connected with said first-named links and with said seat, a truss pivotally connected with the lower front portion of said frame and equipped with rearwardly extending arms, a folded bed normally housed in said frame beneath said seat and comprising upper and lower sections and a substantially vertical intermediate section pivotally connected with the upper and lower sections and connected with the arms of said truss, and connections between the upper section and said seat, whereby the bed will be unfolded when the seat is swung to an inverted position.

7. In a structure of the character set forth, the combination of a frame, a seat mounted thereon and adapted to swing to an inverted position in front of the frame, a truss comprising a longitudinal member equipped with rearwardly extending arms, a front piece attached to said longitudinal member and adapted to assume a substantially horizontal position when the truss is rotated in converting the structure to bed form, and a folded bed normally housed in said frame beneath said seat and comprising sections foldably connected with each other, one of said sections being mounted on the arms of said truss.

8. In a structure of the character set forth, the combination of a frame, a movable seat, a truss pivotally connected with said frame and having rearwardly extending arms, a folded bed normally housed in said frame beneath said seat and having a section connected with said arms, folding legs connected with the rear portion of the lowermost section, and connections with said legs operative to raise the same to a standing position when said truss is swung upon its pivots.

9. In a structure of the character set forth, the combination of a frame, a movable seat, a truss pivotally connected to said frame and having rearwardly extending arms, and a folded bed normally housed in said frame beneath said seat and comprising an intermediate section mounted on said arms, front and rear sections pivoted on said intermediate section, folding legs connected with the front section, and means operative to unfold said legs in the operation of unfolding the front section.

10. In a structure of the character set forth, the combination of a frame, a movable seat, links pivotally connected with said frame, links pivotally connected with said first-named links and with said seat, one pair of said links having shoulders adapted to engage the other pair of said links, bearings adapted to support said first-named links in a substantially horizontal position, a truss pivotally connected with said frame and having rearwardly extending arms, and a folded bed normally housed in said frame beneath said seat and having a section connected with the arms of said truss.
11. In a structure of the character set forth, the combination of a frame, an inclined back pivotally connected at its upper portion with said frame and adapted to swing rearwardly at its lower portion, a seat adapted to swing forwardly to an inverted position in front of said frame, a releasable catch connecting said seat and back together, and a folded bed normally housed in said frame beneath said seat.
12. In a structure of the character set forth, the combination of a frame, an inclined back pivotally connected at its upper portion with said frame and adapted to swing rearwardly at its lower portion, a seat adapted to swing forwardly to an inverted position in front of said frame, a releasable catch connecting said seat and back together, a folded bed normally housed in said frame beneath said seat, and connections between said seat and one section of said folded bed, for the purpose set forth.
13. In a structure of the character set forth, the combination of a frame, a back pivotally connected therewith in a manner to permit its lower portion to swing rearwardly, a seat mounted on said frame and adapted to swing to an inverted position in front of said frame, a truss pivotally connected with said frame at a distance beneath

said seat and equipped with rearwardly extending arms, a folded bed normally housed in said frame beneath said seat and having a section connected with said arms, and connections between said seat and the front section of said folded bed.

14. In a structure of the character set forth, the combination of a frame, a back pivotally connected therewith and adapted to swing rearwardly at its lower portion, a seat mounted on said frame and adapted to swing to an inverted position in front of the frame, a truss pivotally connected with said frame at a distance beneath said seat and equipped with rearwardly extending arms, a folded bed normally housed in said frame beneath said seat and comprising front, rear and intermediate sections, said intermediate section mounted on the arms of said truss, releasable means locking said back and seat together, and connections between said seat and the front section of said folded bed.

15. In a structure of the character set forth, the combination of a frame, a truss mounted to turn with relation to said frame, a folded bed having a section connected with said truss, and a front piece carried by said truss and turning therewith in the operation of converting from one form to another.

16. In a structure of the character set forth, the combination of a frame, a front-piece pivotally connected with the lower front portions of the end-portions of said frame and having a portion adapted to swing inwardly beneath the pivotal points, and a folded bed having a section adapted to swing to a position in front of said frame, said front-piece turning to permit the unfolding of said bed.

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In presence of—

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