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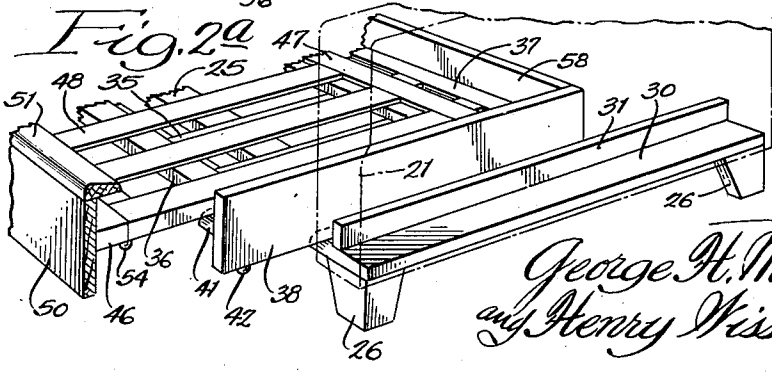
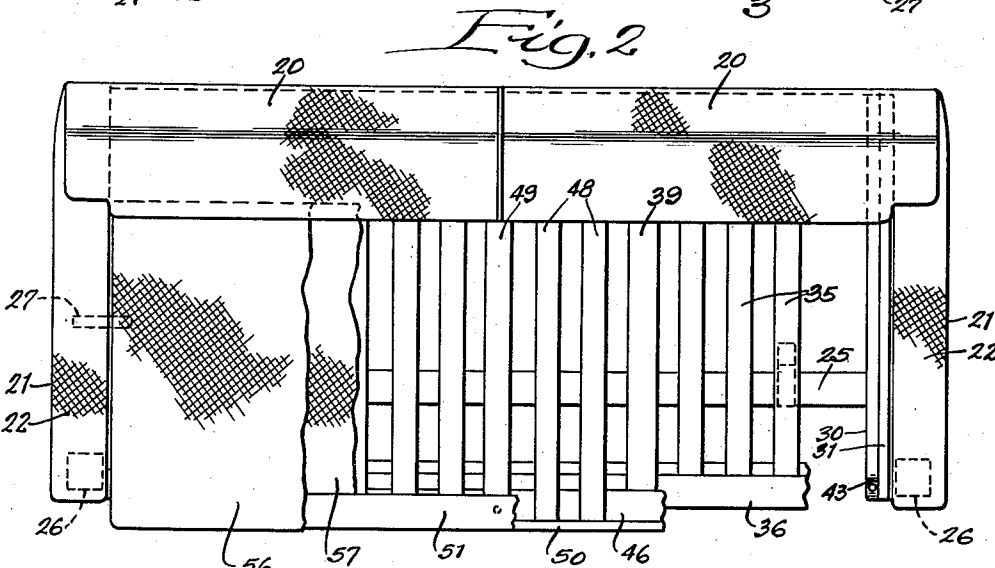
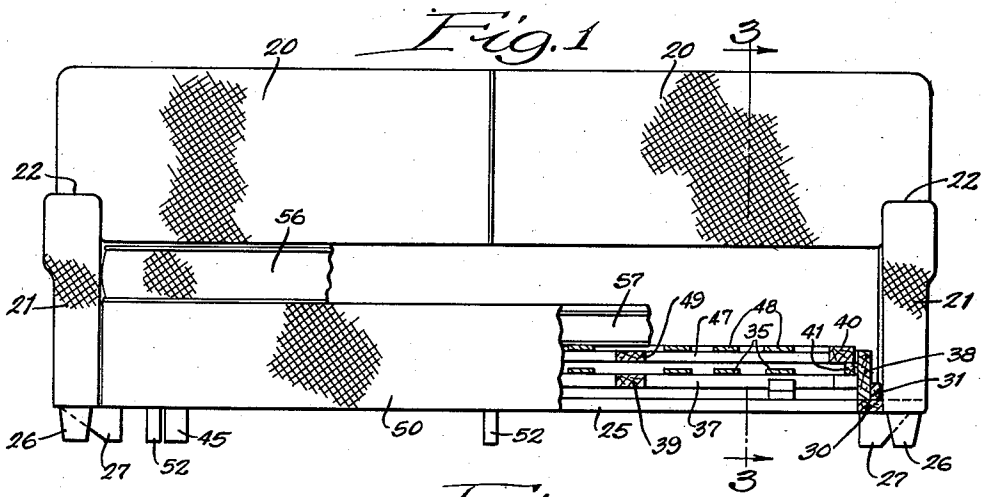
G. H. McKEOWN ET AL.

2,412,628

SOFA BED

Filed May 24, 1943

3 Sheets-Sheet 1



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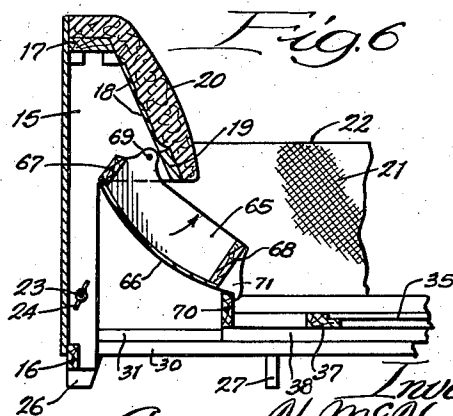
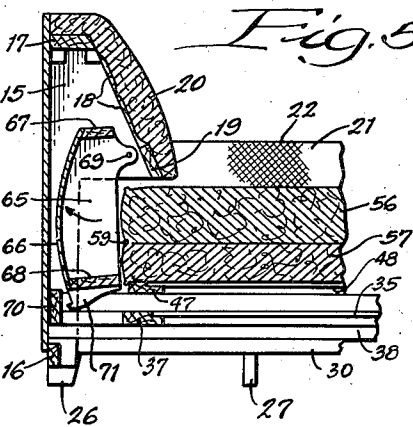
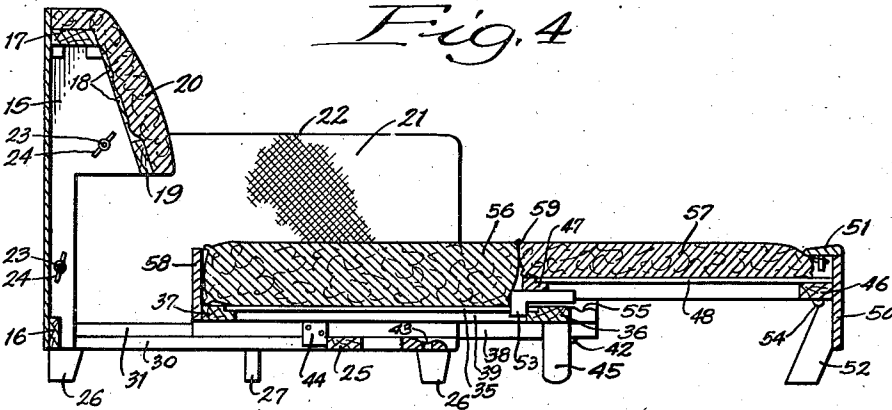
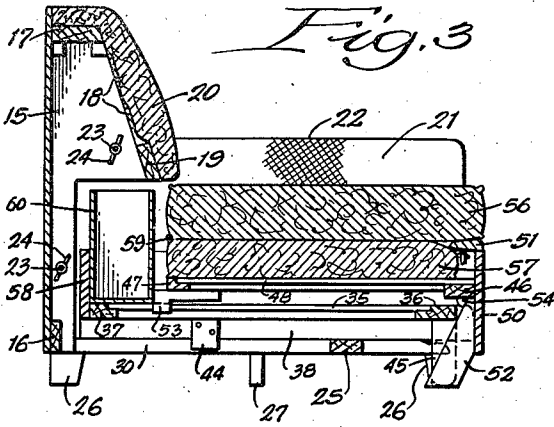
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3 Sheets-Sheet 2



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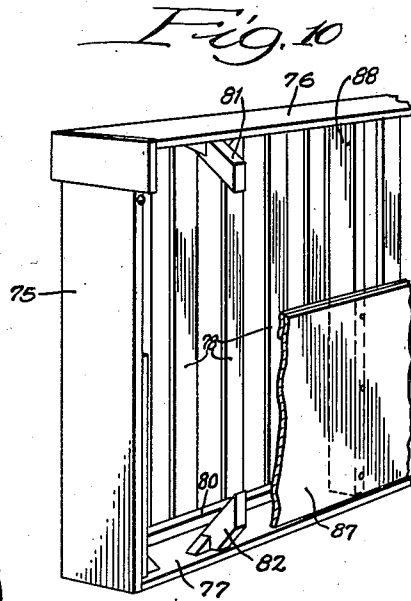
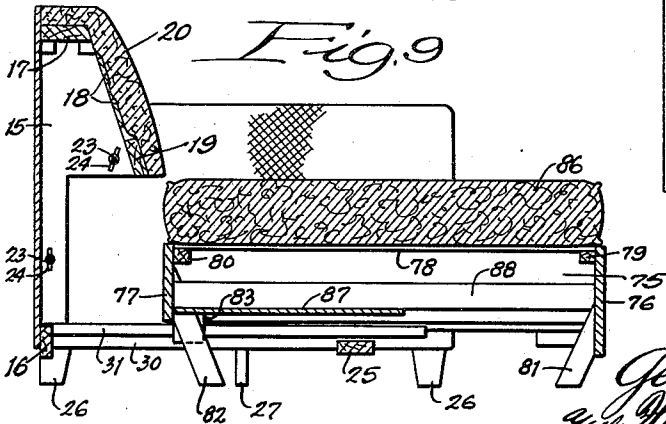
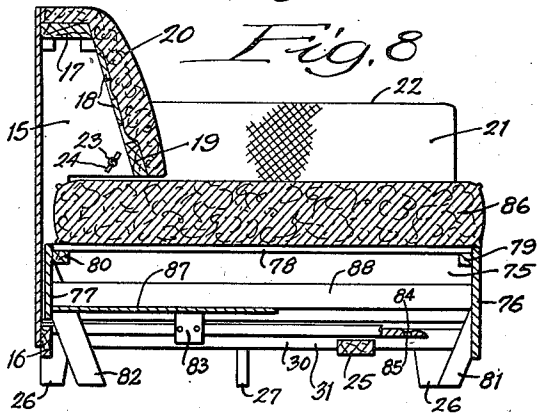
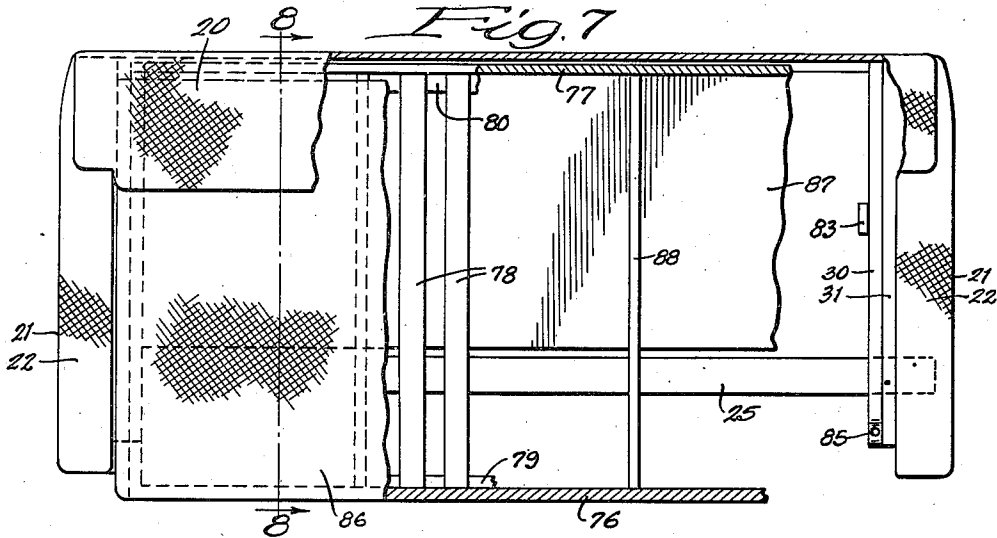
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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SOFA BED

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Application May 24, 1943, Serial No. 488,106

9 Claims. (Cl. 5—58)

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Our invention to be herein disclosed relates to a couch which is readily convertible into a bed and vice versa. According to the present improvements, such a sofa bed may be produced inexpensively, may be made mostly from wood that is readily available, may have a minimum of weight to promote facile operation, and may be endowed amply with the necessary properties of strength, comfort, and attractive appearance to meet all the usual requirements of a couch or of a bed, or of both.

More particularly, our invention is concerned with a simple form of construction that, when shipped in knock-down condition, may be erected and assembled with ease and speed; a construction in which provision is made for accommodation of bedding, linen, etc., either within the bed frame itself or within a container (or containers) movable from a concealed position to one which is exposed and readily accessible with each conversion of the couch to a bed; a construction in which a cushion-mattress is formed of two hinged sections of unequal thickness permitting both sections, in superposed relation, to constitute a double thickness cushion for the couch, and both sections, when rested upon supporting surfaces of unequal elevation in edge-to-edge relation, to constitute for the bed a mattress which is even and level; and a construction in which the bed frame (or frames) may be separated from the couch frame, whenever desired, to facilitate accessibility to the under structure of either and to the floor area covered thereby, thus promoting cleanliness and sanitation in the use thereof.

All these several advantages are attainable by the sofa bed hereinafter described of which certain suggestive embodiments are illustrated in the accompanying drawings, wherein:

Figure 1 is a front elevation of our double sofa bed with one end portion broken away to exhibit beneath its cushion-mattress the frames of two superposed beds;

Fig. 2 is a top elevation thereof with parts broken away to exhibit the frames of the two beds;

Fig. 2a is a sectional perspective view looking toward one end of the sofa bed whose proximate end panel is removed to exhibit therewithin the two bed frames which are outwardly extended for unequal distances.

Fig. 3 is a transverse section through the sofa bed, taken on line 3—3 of Fig. 1;

Fig. 4, which is a similar view, shows the two bed frames outwardly extended to support there-

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on the cushion-mattress whose two hinged sections are also shown as outwardly extended;

Figs. 5 and 6 are two transverse sectional detail views showing in two different positions the bedding container which is pivoted to swing outwardly as the lowermost bed frame is advanced outwardly;

Fig. 7, which is a view similar to Fig. 1, shows our improved construction when embodied into a sofa bed of single person capacity, i. e., with one bed frame instead of two;

Fig. 8 is a transverse section through the sofa bed of Fig. 7, taken on line 8—8 thereof;

Fig. 9, which is a view similar to Fig. 8, shows the bed frame outwardly extended, as when converted to sleeping use; and

Fig. 10 is a fragmentary perspective view of the bed frame shown in Figs. 7, 8 and 9, looking toward the bottom and one end portion thereof.

Referring first to the double sofa bed of Figs. 1-6, the couch frame herein shown comprises end boards 15 joined to or at opposite ends of a lower back rail 16, also a top rail 17, a pair of slats 18 and a lower forward rail 19 (see Figs. 3 and 4) which furnish support for a back cushion (or cushions) 20 extending between the end boards each of which provides a mounting for a couch end in the form of a panel 21 having a suitable arm rest 22 with covering or upholstery thereover, as desired. Each end panel may be removably secured to its associated end board as by bolts 23 whereon are threaded wing nuts 24, thereby facilitating erection and assembly of the couch frame from a knock-down condition. A further connection between the two end panels of the couch may be provided by a forward rail 25, as shown. The frame in its entirety is desirably supported upon corner legs 26 depending from the couch end panels with other legs 27 optionally positioned intermediately thereof.

Joined to and carried by each end panel is an end rail 30 which extends from front to back along its inner face (see Fig. 1), receiving support intermediately of its ends from one of the legs 27. This rail, plus a molding 31 thereon, constitutes a horizontal way affording sliding support to an inner (and under) bed frame which is adapted to slidably support upon itself an outer (and upper) bed frame, in either retracted or advanced positions. The inner bed frame, as shown, comprises a plurality of fore and aft spring slats 35 supported at opposite ends upon front and rear rails 36 and 37 connected to end frame boards 38, there being intermediate cross braces 39, as needed. Each frame board which extends above

and below the front and rear rails 36 and 37 supports on its inner face a molding 41 just above the end rail. Such a frame which is rigid is yieldable throughout its slatted region to provide a desired support for one section of a cushion-mattress as will later be described.

The inner bed frame just described is of an over-all size to occupy substantially all the space between the couch ends and to extend from a point adjacent the couch front to one which is close to its back. When thus positioned (see Fig. 3), the bed frame is free to enter into the space beneath the back cushion (or cushions) 20 where a pair of buttons 42, one projecting from the under side of each end board 38, is adapted to lodge within cooperating sockets 43 formed adjacent beveled ends of the end rails. By this means the bed frame is normally held in its inward position. The frame boards 38 which are slidingly rested on the ways of the couch frame permit the inner bed frame to be advanced outwardly to the point of engagement between the fixed forward rail 25 and a stop block 44 depending from each end rail 38 (see Fig. 4) in which position the bed frame will clear the overhanging back cushion 20 whereby its entire top area is made available for sleeping purposes. To further support the bed frame, when so advanced outwardly, legs 45 depend from the front rail 36 for engagement with the floor.

The outer (or upper) bed frame also comprises end rails 40 interconnecting front and rear rails 46 and 47 between which are supported a plurality of spring slats 48 with cross braces 49, as needed. These end rails are slidingly rested upon ways formed by the moldings 41 and supporting frame boards 38 of the inner bed frame. Affixed to the front rail and extending above and below it is a front board 50 which continues for the length of the bed, being provided along its top with an inwardly extending ledge board 51. An outer bed frame of this description may be advanced or retracted relative to the inner bed frame (and to the couch frame as well) by sliding movements which are arrested as by engagement of the front legs 52 depending from the front board 50 with the front of the inner bed frame and also by engagement therewith of a fixed stop 53 which is carried by the outer bed frame. Normally the outer bed frame, when pushed inwardly to its limit, will tend to remain in this position due to engagement of a pair of buttons 54, which depend from its front rail 46 adjacent opposite ends thereof, within sockets 55 which are provided adjacent beveled ends on forward extensions of the frame boards 38 (see Fig. 3).

Since the outer bed frame overlies the inner bed frame, it follows that the planes of their supporting slats are different. To meet this offset condition we employ a cushion-mattress comprising two sections 56 and 57 which are the same in length but different in width and thickness. In the open-out position of Fig. 4, the section 56 which is the thicker (and wider) is rested upon the inner (and under) bed frame with one longitudinal edge adjacent a back board 58 which upstands from the rear rail 37; the opposite edge which then lies slightly inwardly of the front rail 36 is hingedly connected at its top along a line 59 at the top of the other section 57 which is of lesser thickness (and width). This latter cushion section is rested upon the outer (and upper) bed frame by whose ledge board 51 it is confined against outward sliding movement. The difference in thickness of the two cushion sections is

such that, when supported upon the two bed frames of unequal height, as already pointed out, their top surfaces will lie in substantially the same plane whereby to provide a mattress which is level and even and hence conducive to good sleeping.

For converting the extended double bed of Fig. 4 into a lounge of reduced transverse dimension, the cushion section 56 is swung up and around the hinge line 59 to occupy a position upon the other section 57 upon which it is rested. Because of its increased width, this section 56 in the overlying position extends forwardly slightly beyond the forward edge of the cushion 57 so as to rest upon the ledge board 51 and derive support therefrom. With the cushion sections so doubled up, the space above the inner (and under) bed frame becomes available for accommodation of a box (or boxes) 60 which when placed adjacent the back board 58 will occupy a position beneath the back cushion 20 upon reconversion of the bed into a couch. Such a box (or boxes) will provide a convenient storage receptacle for bedding, linen, etc., normally out of the way but always conveniently accessible when needed. In fact, the box (or boxes) may upon occasion be removed in their entirety from the sofa bed, if desired. In closing the bed frames, one with respect to the other and both with respect to the couch frame, an inward push is all that is required—the outer (and upper) bed frame will first move in and then, upon engagement of its legs 52 with the front rail 36, the inner (and lower) bed frame will advance with it for the remainder of the distance necessary for both bed frames to reach the positions indicated in Fig. 3. The width of the inner bed frame exceeds that of the doubled-up cushion by an amount sufficient to provide space for the box (or boxes) 60 at the rear thereof—a space which otherwise would be put to no use.

In lieu of the loose box (or boxes) 60 shown in Fig. 1, we may employ the special container of Figs. 5 and 6. This is a rack having ends 65 connected by a bowed back-bottom 66 and spaced walls 67 and 68, thus providing an enclosure that is open on the front-top side. Each rack end is formed with an upper corner extension through which extends a pin 69 to establish pivotal connection with the proximate end board 15. The rack is thus pivotally supported in a manner to swing from the position of Fig. 5 in which the open side faces forwardly to that of Fig. 6 wherein the open side is faced in an upward direction. Movement of the rack is controlled by the positions of the two bed frames, the inner (and lower) of which is provided with a back bar 70. Ears 71 which are extended downwardly and forwardly from the two rack ends lie between the back bar and the rear edges of the doubled-up cushion so as to engage alternately with each. In the pushed-in condition of the bed frames, indicated in Fig. 5, the cushion holds back the rack and provides a closure for its open side; upon advance of the inner (and under) bed frame, the rack is then engaged by the back bar 70 to swing the rack outwardly to the exposed position of Fig. 6 at which point the bed frame will have reached its limit of movement; conversely, on the return movement the cushion will engage the rack to force it back to the position of Fig. 4.

The sofa bed (single person capacity) of Figs. 7-10 will now be considered. Inasmuch as the couch frame may be substantially the same as the one already described, the corresponding parts bear like reference numerals whereby spe-

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cific description thereof becomes unnecessary. The single bed frame, however, is constructed in the general form of a box with ends 75 connected by front and back boards 76 and 77, and a top formed of a plurality of fore and aft spring slats 78 whose ends are joined to front and rear rails 79 and 80 which may be affixed to the front and back boards as well as the box ends. Such a frame is slidably carried upon ways at each end of the couch frame, formed by rails 30 with associated moldings 31, the bottom edges of the box ends being rested upon these ways so as to be guided thereby when the bed frame is slid inwardly or outwardly relative to the couch frame. In its forward and rearward region the bed frame is provided with legs 81 and 82, respectively, adapted for engagement with the floor whereby to afford adequate support thereto both along its forward edge when used in association with the couch frame and at all four corners when separated from the couch frame and used independently thereof.

A pair of stop blocks 83 oppositely affixed to the couch ways upstand to engage with the depending lower portion of the back board 77 (see Fig. 9) whereby to limit outward movement of the bed frame to the point of clearance relative to the overlying back cushion 20. As by means of buttons 84 depending from the bed frame for engagement in sockets 85 provided near the beveled ends of the ways, the bed frame will tend to remain in its normally innermost position. A cushion-mattress 86, of an overall size substantially the same as the bed frame top whereon it is rested, is adapted to enter into the space beneath the back cushion when the bed frame is fully retracted, and to emerge therefrom when oppositely moved. If desired, this mattress may be tied to the bed frame so as to remain in a fixed position relatively thereto even when the forward edge of the frame is lifted and swung through 90° or so. In such a position of verticality the bottom of the bed box will be exposed to permit convenient access thereto. So that the box interior may be advantageously utilized, we have extended across its bottom for the length thereof, and for perhaps its rear (lower) half or more, an enclosure board 87. Into the space thus defined, bedding, linen, etc. may be placed for storage with assurance that it will always be conveniently accessible when desired for use. This enclosure board is preferably braced as by the provision of (one or more) transverse boards 88 each of which along one edge is connected to the enclosure board 87 and at its opposite ends is connected to the bed frame.

In the disclosed sofa bed we dispense almost entirely with metallic hardware, springs and fittings, relying instead upon wood as the material for the frames of the couch and of the bed (or beds). The result is a construction that is both sturdy and light in weight. This is desirable because it conduces to ease in operation of the bed frame (or frames) during all converting movements, and this without the provision of any anti-friction devices whose use is entirely unnecessary. Because of the simplicity of the structure, we have incorporated a knock-down feature that is advantageous. This results from utilizing end panels which are desirably cushioned and/or upholstered, and which may be separately packed and handled, in combination with the main framework of the couch consisting of the end boards with interconnecting rails which are so disposed as to afford also a mounting for the

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elevated cushion. This framework which is a separate unit is relatively light and easily packed by itself, and comprises end boards which are adapted to rest against the end panels adjacent the rear portions thereof so as to afford thereto support extending from top to bottom. To connect the panels to the framework, bolts with wing nuts may be employed and in this way erection of the couch frame from a knock-down condition is facilitated. As by means of a forward rail 23 the front positions of the end panels are interconnected whereby to stabilize the entire structure.

The two bed frames may be light and easily moved. This very fact may create a problem when the sofa bed is in use as a couch, because the occupant (or occupants) in a sitting posture, upon leaning against the back cushion (or cushions), will impart to the cushion a forward thrust tending to advance one or both of the bed frames outwardly. To prevent this occurrence, the interengaging buttons and sockets have been provided. These offer little or no resistance to outward movement of either bed frame when free of any load, but act effectively to prevent any such movement from starting when a load is imposed on the cushion. Accordingly, by the means described, there will be no undesired forward movement of either bed frame when the couch is occupied by one or more persons who may wish to adopt relaxed sitting postures. Also, because the forward ends of the ways or frame boards are beveled or rounded, the buttons will easily ride up, over and into their cooperating sockets whenever the bed frames are pushed back to their innermost positions.

We claim:

1. In a sofa bed, a couch frame comprising a pair of end panels, a pair of end boards removably attached to the inner faces of the end panels to afford rigid support thereto, rails interconnecting the end boards a fixed distance apart in unitary relation, a back cushion carried by certain of the interconnecting rails in an elevated position and having a downwardly and forwardly extending front portion spaced from the back of the couch frame to form an intervening space, a pair of spaced ways extending from front to back, one carried by each end panel adjacent the inner face thereof, and a rigid bed frame extending between the couch ends and extended for substantially the width of the couch frame to lie in part beneath the back cushion, the end panels being stationary throughout and extending above the bed frame and the latter being slidably mounted on the two ways adapted to move outwardly independently of the end panels and the end boards to an overhanging position forwardly of the ways beyond the front ends thereof.

2. In a sofa bed, a rigid couch frame comprising a pair of interconnected ends, a pair of ways extending from front to back of the couch frame, a rigid bed frame between the couch ends mounted to slide outwardly on the ways to a forward position, a pair of ways extending from front to back of the bed frame, a second rigid bed frame extending over the first bed frame mounted to slide outwardly on the ways thereof to a position forwardly thereof, and a cushion-mattress comprising two hinged sections of unequal thickness adapted, when folded one on the other, to overlie and be directly supported upon the second bed frame to provide a double cushion seat and when extended outwardly, with the second bed frame also extended outwardly from the under-

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lying first bed frame, to overlie both bed frames with its section of greater thickness resting upon the first bed frame whereby to present a level and even top mattress surface.

3. In a sofa bed, a main frame including a back, interconnected ends, and a couch cushion between the ends and having a front portion extending downwardly and forwardly in spaced relation with the back of the main frame to form an intervening space, a bed frame mounted to slide transversely of itself on the main frame to and from a position in which the rear portion of the bed frame lies adjacent the back of the main frame and beneath the cushion in spaced relation thereto, a mattress mounted on the bed frame spaced from its rear portion, and a container having an opening at the top disposed between the main frame ends, to the rear of the mattress on the bed frame, below the couch cushion at the space between the front portion of the cushion and the back of the main frame, and movable outwardly with the bed frame to an accessible position forwardly of the couch cushion with its opening at the top.

4. In a sofa bed, a couch frame including a back, interconnected ends, a cushion between said ends having a front portion spaced from the back of the couch frame to provide an intervening space, a bed frame mounted to slide forwardly and rearwardly transversely of itself on the couch frame to and from a position in which the rear portion of the bed frame lies adjacent the back of the couch frame and beneath the cushion, a mattress mounted on the bed frame and spaced from the rear portion thereof, a container positioned in rear of the mattress at the space formed by said cushion and movable with the bed frame forwardly beyond the cushion to an accessible position, and means carried by the bed frame for moving the container forwardly to an exposed position when said bed frame is moved forwardly.

5. In a sofa bed, a rigid couch frame comprising a pair of interconnected ends, a bed frame slidably mounted between the ends for movement parallel thereto, a storage rack pivoted between the ends of the couch frame adjacent the rear of the bed frame and movable forwardly and rearwardly and arranged substantially vertical when in its rearmost position, interengaging means on the rack and bed frame arranged to move the storage rack forwardly to an exposed position when the bed frame is moved forwardly, and a back cushion mounted on the couch frame and extending over and concealing the rack when the latter is in its vertical position and from under which the rack is drawn when moved to its forward accessible position.

6. In a sofa bed, a couch frame comprising a pair of end panels, a pair of end boards removably attached to the inner faces of the end panels to

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afford rigid support thereto, rails interconnecting the end boards a fixed distance apart in unitary relation, a back cushion carried by certain of the interconnecting rails in an elevated position and having a downwardly and forwardly extending front portion spaced forwardly from the back of the couch frame to form an intervening storage space, a pair of spaced ways extending from front to back, one carried by each end panel adjacent the inner face thereof, a rigid bed frame extending between the couch ends for substantially the width of the couch frame to lie in part beneath the back cushion and the end panels being stationary throughout and extending above the bed frame and the latter being slidably and removably mounted on the ways and adapted to move outwardly relative thereto and spaced from the back cushion to afford access to said intervening storage space.

7. In a sofa bed, a rigid couch frame comprising a pair of interconnected ends, a back cushion extending between the ends in an elevated position and arranged to form an intervening space between the back cushion and the back of the couch frame, a pair of ways extending from front to back of the couch frame, a rigid bed frame between the couch ends mounted to slide forwardly and rearwardly on the ways, and a receptacle pivotally mounted in the back of the couch frame in said intervening space formed by said back cushion and pivotally movable outwardly and forwardly, said bed frame having means for engaging the receptacle for moving the same outwardly to an exposed position when the bed frame is moved forwardly.

8. In a sofa bed, a rigid couch frame comprising a pair of interconnected ends, a bed frame slidably mounted between the ends for movement forwardly and rearwardly of the couch frame, a storage rack positioned between and pivoted to said ends adjacent the rear of the bed frame, and interengaging means on the rack and bed frame operating to swing the pivoted rack counter to gravity from one position to another with each forward movement of the bed frame.

9. In a sofa bed, a couch frame, a bed frame including a cushion supported thereon mounted to slide forwardly and rearwardly on the couch frame, a storage rack on the couch frame adjacent the rear of the bed frame and located above the latter, means for mounting the storage rack for movement on the couch frame between inward and outward positions in the former of which the rack is concealed rearwardly of the bed frame cushion, and means on the bed frame engageable with the rack for moving the latter outwardly to an exposed position when the bed frame is moved forwardly.

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