Aug. 31, 1943. V. J. BERGSTROM 2,328,411

CONVERTIBLE COUCH STRUCTURE

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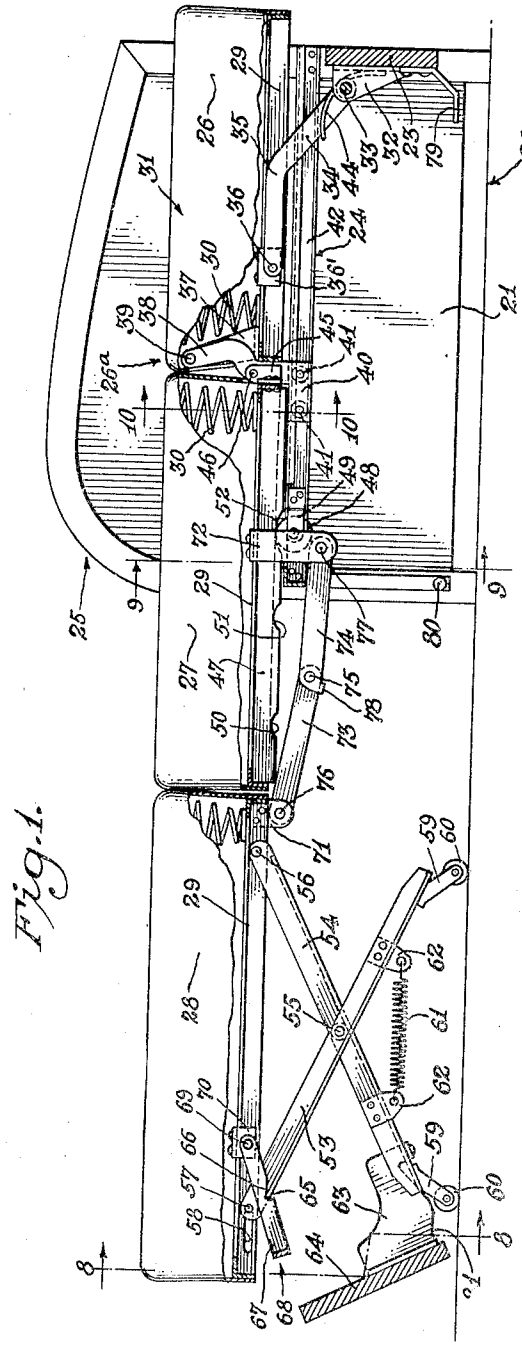


Fig. 1.

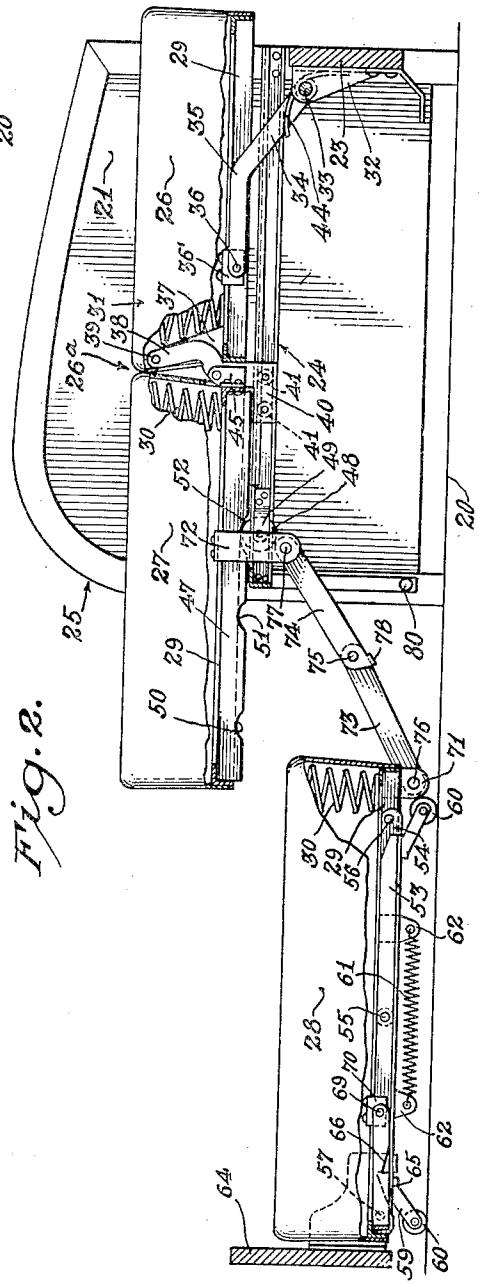


Fig. 2.

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Fig. 3.

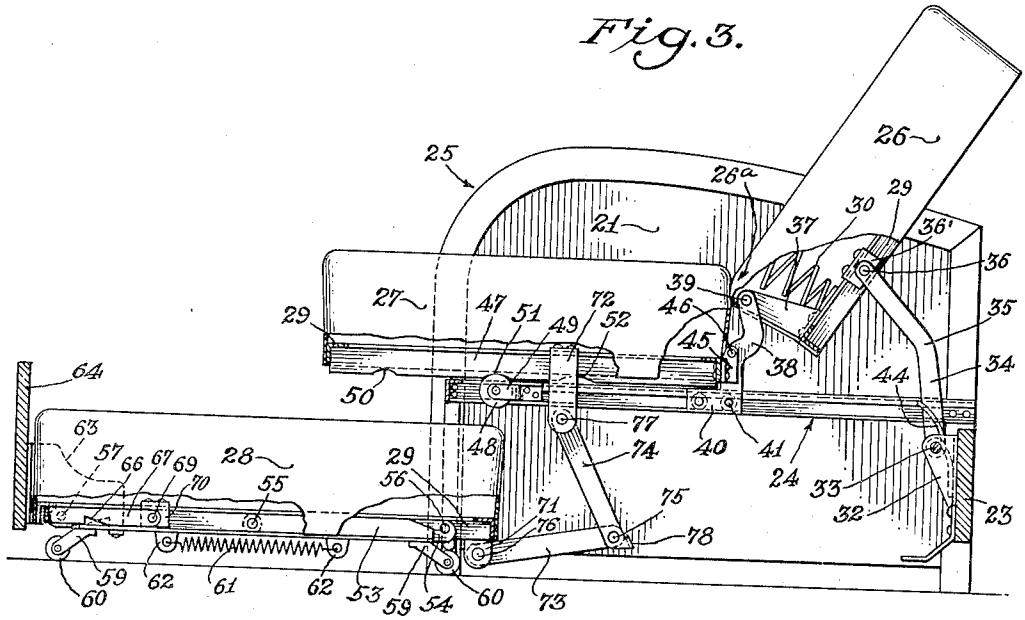
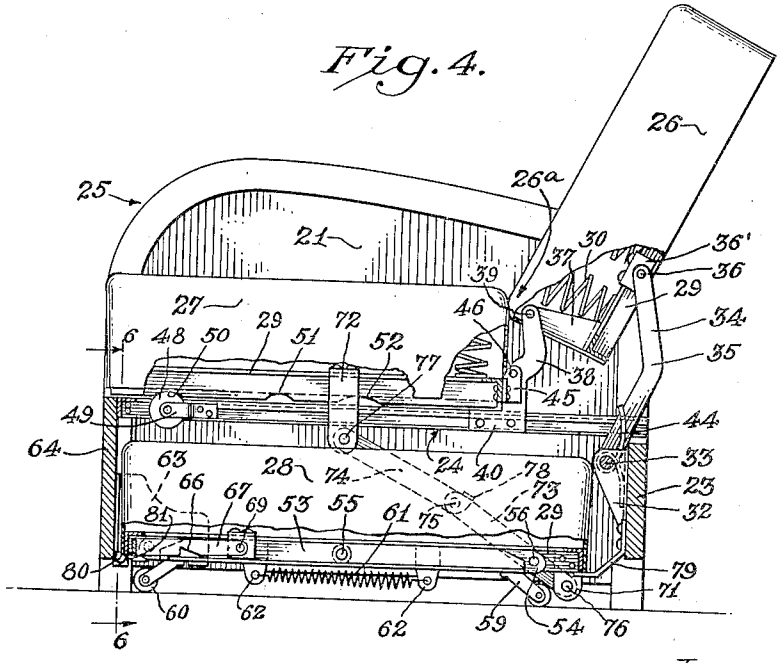


Fig. 4.



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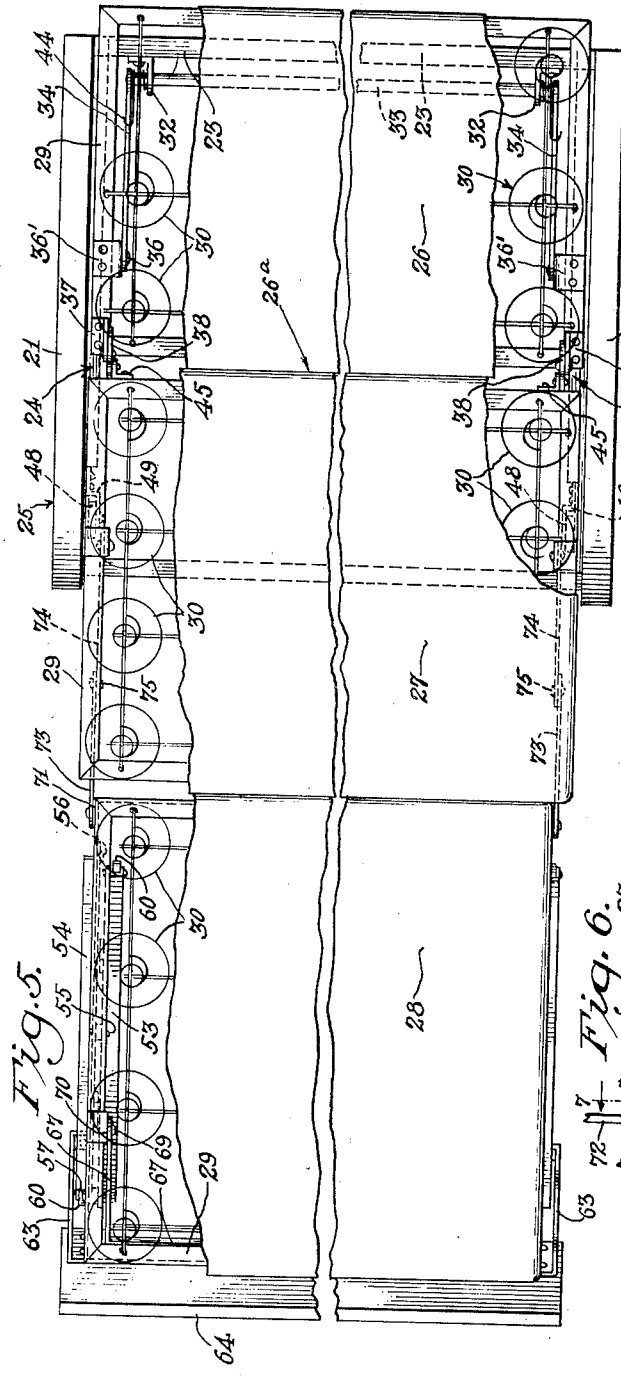


Fig. 5.

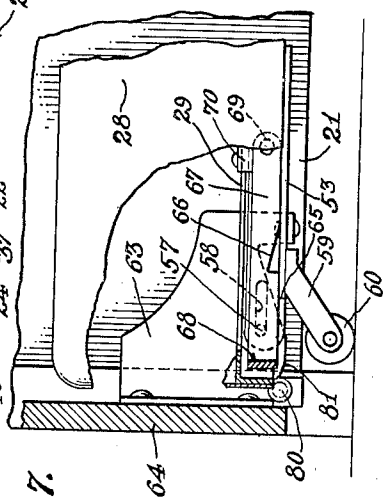


Fig. 7.

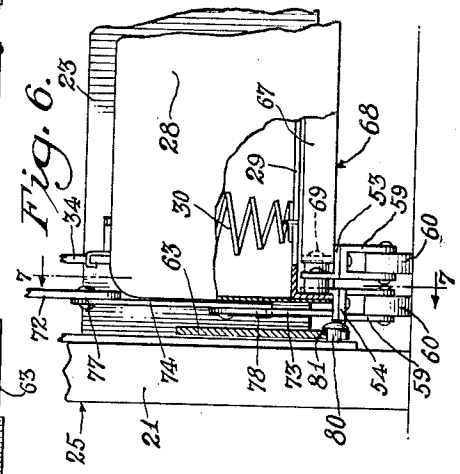


Fig. 6.

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Fig. 8.

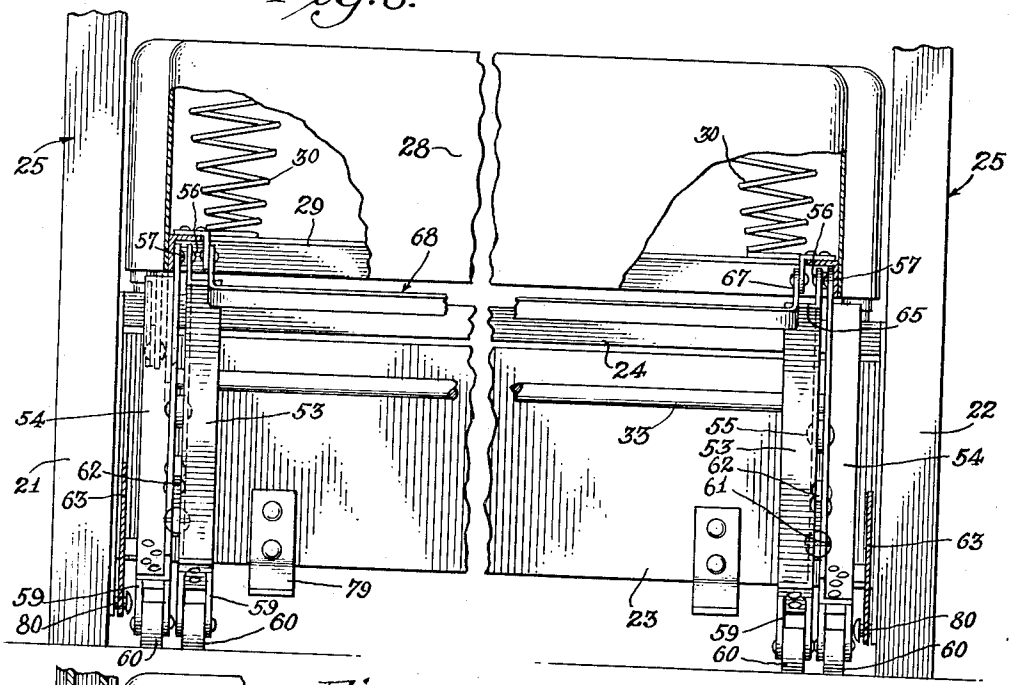


Fig. 9.

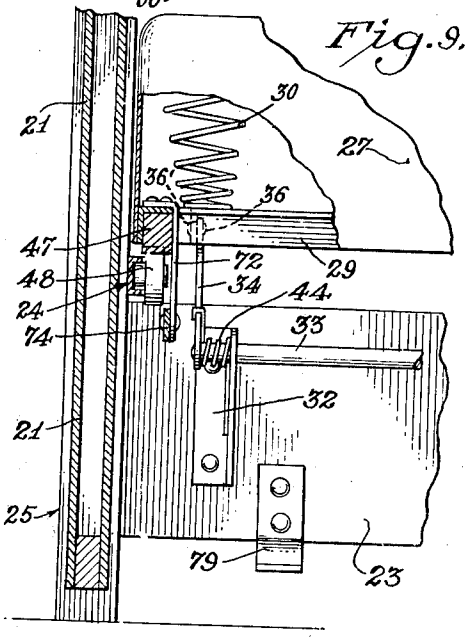
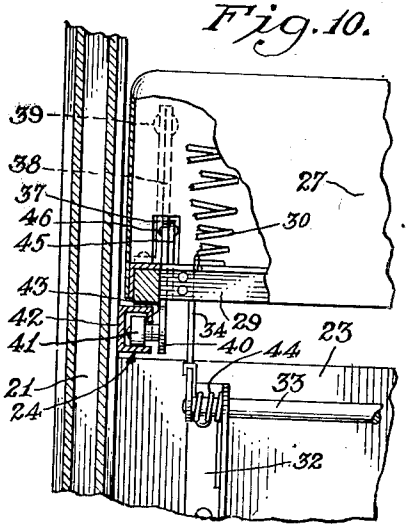


Fig. 10.



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UNITED STATES PATENT OFFICE

2,328,411

CONVERTIBLE COUCH STRUCTURE

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Application August 2, 1940, Serial No. 349,935

5 Claims. (Cl. 5—48)

The invention relates to couch structures of the type which are capable of conversion into a bed and the general aim of the invention is to provide a simplified structure which may be arranged as desired to form various articles of furniture such as a couch, a chaise longue or a bed.

In structures of the class to which the present invention relates, the so called "convertible couch" structures have had a length dimension approximately equal to that of a bed and when converted, the resulting bed was made up with its longest dimension extending lengthwise of the couch. This arrangement obviously fixed the minimum permissible couch length as being that of the bed to be formed therefrom.

An object of the present invention is to provide a new and improved structure of this nature in which the length dimension of the couch determines the width dimension of the bed, and in which the length dimension of the bed extends transversely of the length dimension of the couch.

Another object is to provide a novel structure in which the couch may be of any desired length and which includes correlated seat and back sections arranged to be shifted into a common plane and another section normally concealed beneath the seat section when the structure is used as a couch and arranged to be shifted into the plane of the seat and back sections to complete the conversion of the structure into a bed.

In conjunction with the foregoing, another object is to provide novel means for arranging the several sections to form a chaise longue.

Other objects and advantages will become apparent as the following description proceeds, taken in connection with the accompanying drawings in which:

Figure 1 is a side view of a convertible couch structure embodying the invention with an end of the structure omitted, the view being partially in section and showing the structure made up as a bed.

Figs. 2, 3 and 4 are views similar to Fig. 1 respectively showing two intermediate positions of the parts and the couch relation thereof.

Fig. 5 is a plan view of the extended structure.

Figs. 6 and 7 are detail sectional views taken respectively along the lines 6—6 of Fig. 4 and 7—7 of Fig. 6.

Figs. 8, 9 and 10 are fragmentary sectional views taken transversely of the structure as indicated by the lines 8—8, 9—9 and 10—10 respectively in Fig. 1.

In the exemplary form of structure which has been selected for purposes of illustration, the numeral 20 designates a couch frame structure for the convertible couch or seat and includes spaced side members 21, 22 and a back member 23 that extends between the lower portions of the side members. A U-shaped reenforcing member 24 preferably extends across the sides and front approximately on the plane of the upper edge of the back. The member 24 generally divides the frame into upper and lower sections, the upper section being the space between the upper portions or arms 25 of the side members, and the lower portion being the space defined by the sides and the back. The front of the structure is open. The length of the frame, i. e., the dimension between the sides is not limited to a minimum dimension determined by the length of the bed, but may be as short as the width of an easy chair. The present construction is eminently suitable for that class of couch structures known as "love seats."

Mounted on the couch frame is a plurality of upholstered sections which, for convenience, are herein designated as a back section 26, a seat section 27, and an under or third section 28. Each of these sections is of more or less conventional construction and, as shown in Fig. 1, includes a rectangular bottom frame 29 of angle iron which supports a plurality of coiled springs 30 suitably covered by upholstery 31. These sections are supported for movement relative to the frame by means which permits the sections to be variously associated in the conversion of the structure from one type of furniture to another.

Referring particularly to Figs. 1 to 4, inclusive, the back wall 23 has secured thereto a pair of spaced brackets 32 which support a rock shaft 33 in inwardly spaced relation to the back wall near the upper edge thereof. The rock shaft near each end has an elongated arm 34 mounted thereon. The arms are bent between their ends, as indicated at 35, and are pivotally secured as at 36 to brackets 36' on the side members of the bottom frame 29 of the back section 26. These arms in part support the back section 26 and guide its movement from an upright to a horizontal position. The location of the axis of the pivots 36 is toward the side (designated 26a) of the seat section that is down or forward depending on the position of said section. The angularity of the bends in the arms is such that when the rear side of the seat section is resting on the upper edge of the back in the horizontal position of the section, the end portions of the arms remote from the rock shaft 33 will extend along the end members of the bottom frame 29.

Cooperating with the arms in support of the back section are brackets 37 secured to the end members of the bottom frame to extend therefrom to positions adjacent to the corners of the section side 26a and within the upholstery. The upholstery adjoining the brackets is slotted to permit the offset upper ends of carriers 38 to extend into positions alongside the brackets, and studs 39 pivotally secure the brackets and carriers together near their upper ends. The lower ends of the carriers have angular portions 40 each supporting a pair of horizontally spaced rollers 41 or similar antifriction members engaging a track provided, in this instance, by the side legs 42 of the reenforcing member 24 (Fig. 10) which extend along the frame sides 21, 22. These legs are formed as inwardly facing channel members having overhanging lips 43 (Fig. 10) for holding the rollers in the channel. In the horizontal position of the back section, it is carried by the horizontal portions of the arms 34 and its front end is supported by the carriers. When upright the pivots 36, 39 are generally horizontally spaced to support the back section. The movement of this section between its two positions is guided by the horizontally traveling carriers and by the swinging arms. If desired such means as spring members 44 coiled about the rock shaft and bearing between the frame back and the arms 34 to swing the arms upwardly may be employed to counterbalance the weight of the back section.

The seat section is horizontally shiftable between retracted and advanced positions and is linked to the back section for movement therewith. Thus brackets 45 are secured to and extend outwardly beyond the rear side member of the seat frame and are pivotally connected, as at 46, to intermediate points on the carriers. The angular frame of the seat section faces inwardly and downwardly of the section, as shown in Fig. 9, and elongated rails 47 or the like are secured in the frame angle to rest on antifriction rollers 48 mounted on supports 49 (see Fig. 1) extending inwardly from the side walls near the front side of the frame. Longitudinally spaced recesses or notches 50, 51 and 52 are provided in the rails to receive the rollers 48 and these notches determine the positions of the seat section (and of the back section as well). Thus, as shown in Fig. 4, the rollers are seated in notches 50 when the seat is retracted and the structure is arranged as a couch or chair. In Fig. 2 the rollers engage notches 52 to maintain the seat and back sections in horizontal, bed-forming alinement. The intermediate notches 51 are engaged by the rollers to hold the seat section partially advanced and the back section at an angle thereto (see Fig. 3) to provide a reclining relation such as that in a chaise longue. A lift on the front edge of the seat section, as permitted by the pivots 46, frees any pair of notches from the rollers.

The under, or third, section is one which may be located in and out of the way position beneath the seat section when the structure is used as a couch or chair, or be readily drawn therefrom for use as a foot rest. The under section moreover embodies means for supporting it in an elevated position in horizontal alinement with the seat section to form a bed or to complete the chaise longue relation. To this end, the under section is similar to the seat and back sections, but may, if desired, be somewhat wider within the limit of the front to rear dimension of the frame.

At each end of the under section are legs 53, 54 arranged cross-wise and pivotally joined, as at 55, at the point of crossing to provide extensible supports for the section. Each leg at its upper end is pivoted to the section frame, the leg 54 having a fixed pivotal connection 56 with the frame near the rear side thereof and the other leg 53 having a stud 57 engaging an elongated slot 58 in the section frame near the front side thereof. On the lower end of each leg is a bracket 59 supporting a caster or the like 60. Preferably the legs are formed of angle iron and are so dimensioned and related to each other and to the section frame that they may be swung into a folded or retracted position as shown in Figs. 2 and 6 in which the legs are parallel to and adjacent the ends of the section frame. This relationship alines the several pivots and maintains the folded relation against release by the force of elevating tension springs 61 connected between brackets 62 on opposed portions of the legs 53, 54.

At the front ends of the legs 54 are forwardly extending plates 63 to support therebetween a front panel 64. This panel is dimensioned to fit in and close the front opening in the couch frame when the under section is beneath the seat section. The panel is spaced above the floor level in advance of the front casters so that by depressing the panel slightly the legs may be moved out of their folded alined holding relation and allow the springs 61 to elevate the under section.

For latching the under section in elevated position, outwardly facing shoulders on the front ends of the legs 53 may be provided by cutting away end portions of the horizontal parts of the angle irons, as indicated at 65 (Fig. 1). These shoulders are engageable by rearwardly facing shoulders in downwardly opening notches 66 formed in the ends 67 of a U-shaped latch bar 68 that is pivoted as at 69, through its ends to brackets 70 on the ends of the section frame. The ends of the latch bar rest on and ride over the shoulders 65 on the legs 53 and the base portion of the latch bar extends across the section frame beneath and just rearwardly of the front side thereof. The latch bar is therefore conveniently located for manipulation to release the latching engagement of the notches and shoulders, which engagement is automatically established when the legs extend to elevate the under section.

Brackets 71 depending from the ends of the under section near the rear side thereof and brackets 72 depending from the ends of the seat section frame between its front and rear sides are connected by means which guides the movements of the under section into and out of the space beneath the seat section, as well as upwardly into operative association with the seat section. This means, moreover, connects the seat and under sections for movement together and maintains the under section when elevated closely adjacent to the seat section. In this instance this means comprises pairs of links 73, 74 pivotally connected to each other, as at 75, and to the brackets 71, 72 as at 76, 77 respectively. Stops 78 prevent the links from swinging to a dead center alinement of the pivots. The links permit the under section to move independently with respect to the seat section and are so dimensioned that when fully opened by forward movement of the

under section, elevation of the under section will locate it closely adjoining the seat section. A forward pull on the under section will also advance the seat section, thereby swinging the back section downwardly to its inclined or its horizontal position. The retracted under section serves as a foot rest while the elevated under section completes the chaise longue or the bed. Movement of the under section rearwardly will move the seat section similarly.

The under section is, in its rearward position, connected with the frame to permit the couch to be lifted and carried about as a unit. Referring to Fig. 4, fingers 79 project forwardly from the back wall in positions to underlie the rear edge of the frame of the under section in the rearward position thereof. Headed studs 80 extending inwardly from near the front of the couch side walls engage downwardly facing recesses 81 in the plates 63. The fingers 79 and studs 80 support the under section in position when the couch is lifted. The studs 80 also serve to retain the under section against accidental forward movement from the space below the seat section. The studs 80 may, if desired, be mounted on the lower ends of bars connected to the reenforcing member 24 to extend downwardly along the inner faces of the sides 21, 22.

It will be evident, from the foregoing that a new and improved structure has been provided in which the width from side to side may be that of any type of chair or couch. Regardless of this width dimension, the structure may be converted into a full length bed because of the novel arrangement whereby the length of the sections extends transversely of the length of the bed. The present structure, moreover, permits the arrangement of the sections in various combinations whereby the single structure has a wide range of usefulness.

I claim as my invention:

1. In a convertible couch structure, the combination having an upright frame, a back section, means supporting said back section on said frame for movement between an upright position and a horizontal position, a seat section, means supporting said seat section on said frame for horizontal movement from an advanced bed-forming position to a retracted chair-forming position conjointly with movement of said back section from horizontal to upright positions, means releasably holding said sections in their chair-forming and bed-forming positions and in an intermediate chaise longue-forming position, a third section, vertical adjustable supporting means carrying said third section in lowered condition for movement between a position within said upright frame below said seat section and a position outside said frame and in front of said seat section, said supporting means being operative to raise said third section in the forward position thereof to the height of said seat section and in horizontal alinement therewith, and means interconnecting said seat and third sections for guiding said third section with respect to said seat section during movement of said third section as aforesaid, the interconnecting means providing for conjoint movement of said third and seat sectons to effect converting movements of said seat and back sections as an incident to horizontal movement imparted manually to said third section.

2. In a convertible structure of the character described the combination of a frame, three supporting sections adapted for conjoint movement into a plurality of positions with respect to said frame, a carrier horizontally slidable in said frame, one of said sections being pivotally supported on said carrier and being connected by linkage to said frame for swinging movement from a horizontal position to an upright position, the second section being supported on said carrier for horizontal movement therewith between a retracted chair-forming position when said first section is upright to an advanced bed-forming position in the plane of said first section when horizontal, releasable means for holding said sections in chair-forming and bed-forming positions and in an intermediate chaise longue-forming position, supporting means carrying said third section in lowered condition for movement between a position within said frame below said second section and a position outside said frame and in front of said second section, said supporting means being vertically extensible to raise said third section from its lowered condition in the forward position thereof to the height of said second section and in horizontal alinement therewith, and means interconnecting the third section and said second section for guiding said third section with respect to the first two sections during movement of said third section as aforesaid, the interconnecting means being effective to impart converting movements to said first two sections as an incident to the movement of said third section between its positions below said second section and forwardly thereof.

3. In a convertible structure of the character described, the combination of a frame, three supporting sections adapted for conjoint movement into a plurality of positions with respect to said frame, a carrier horizontally slidable on said frame, one of said sections being pivotally supported on said carrier and being connected by linkage to said frame for swinging movement from a horizontal position to a substantially vertical position, the second section being pivotally supported on said carrier for horizontal movement between a retracted position when said first section is substantially vertical to an advanced position in the plane of said first section when horizontal, vertically adjustable supporting means carrying said third section in lowered condition from a position within said frame below said second section to a position outside the said frame and in front of said second section, said supporting means being operative to raise said third section in the forward position thereof to the height of said second section and in horizontal alinement therewith, and means interconnecting said second section with said third section for guiding the movement as aforesaid of said third section in its lowered condition, the interconnecting means being effective to impart converting movements to said second section as an incident to the guided movement of said third section.

4. In a convertible structure of the character described, the combination having a supporting frame, seat and back sections, means for supporting said sections for conjoint movement on said frame between an angular relation and a substantially horizontally alined relation, a third section supported independent of said frame, and extensible means interconnecting said seat section and said third section, said extensible means when extended to its limit in one direction cooperating with said seat section to locate said third section in front of said seat section, sup-

porting means for said third section operative to raise said third section in the forward position thereof to the height of said seat section, said extensible means when extended in the other direction being effective to locate said third section in a retracted position beneath said seat section.

5. In a convertible couch structure, the combination having a supporting frame, a seat section, means for slidably supporting said seat section on a horizontal plane for movement between a retracted position and an advanced position on said frame, a back section, means supporting said back section for swinging movement between an upright position when said seat section is retracted and a horizontal position substantially in the plane of said seat section when said seat section is in an advanced position, a third section, vertically adjustable means supporting said third section in lowered condition for movement between a position immediately below said seat section and a position in front of said seat section, said vertically adjustable means being operative to raise said third section in the forward position thereof to the height of said seat section and in horizontal alinement therewith, a pair of pivotally joined links pivoted respectively to said seat and third sections for guiding said third section during its aforesaid movements in the lowered position thereof, said links being effective to impart converting movements to said seat section as an incident to the guided movements of said third section, and means for preventing said links from swinging to a dead center alinement of their pivot points.

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