

March 9, 1954

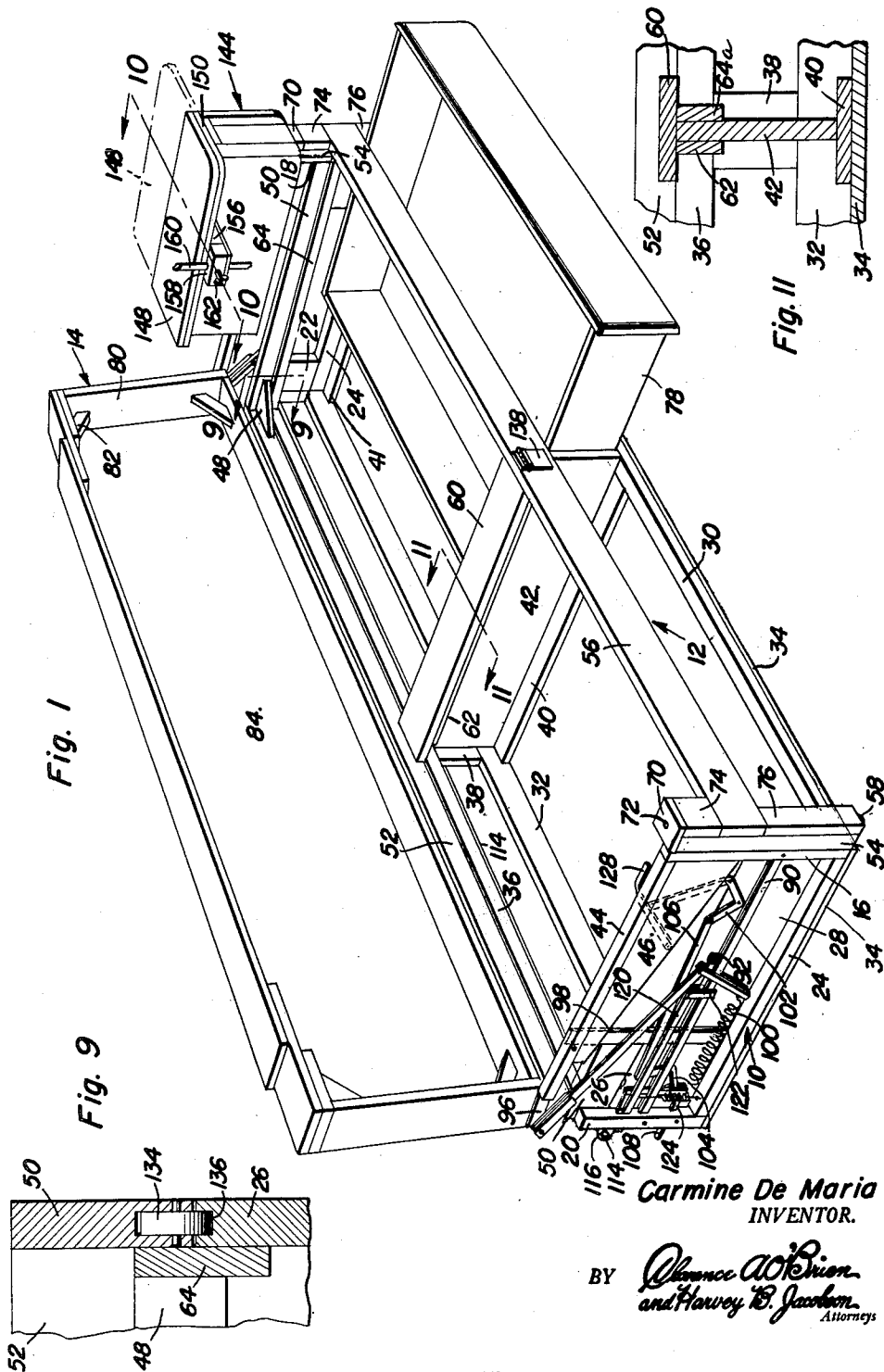
C. DE MARIA

2,671,228

REVERTING BACK SOFA BED

Filed March 27, 1950

4 Sheets-Sheet 1



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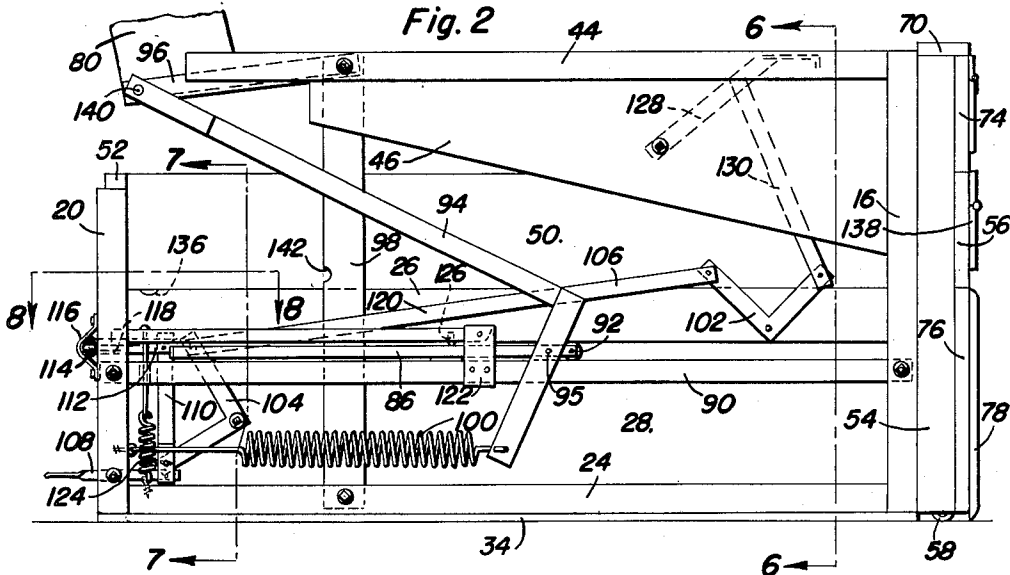
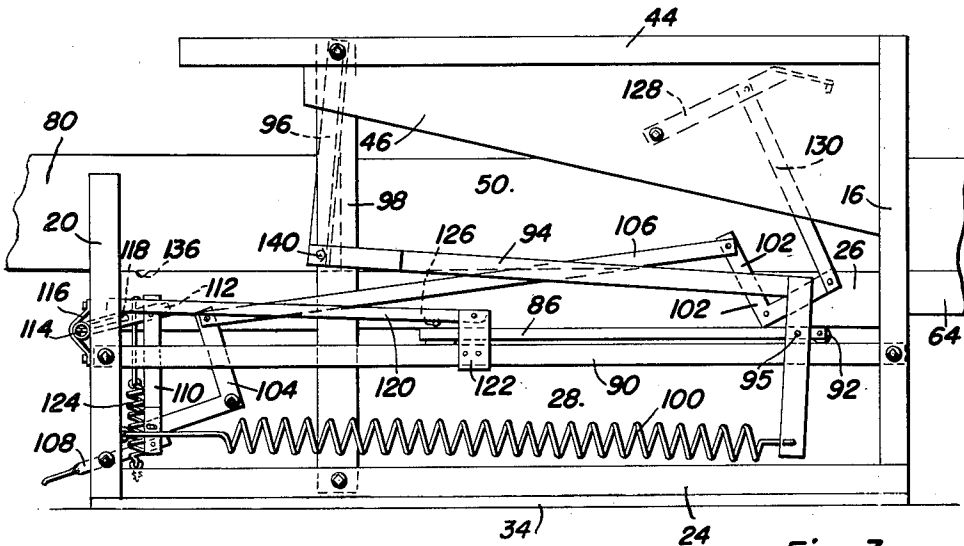
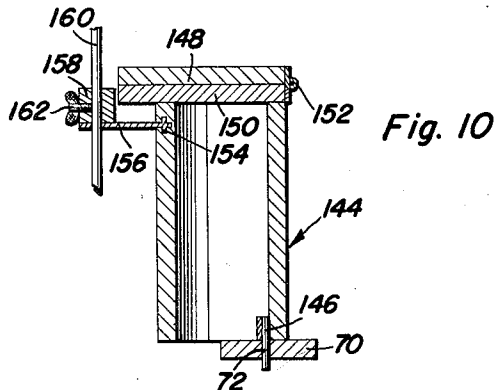
C. DE MARIA

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REVERTING BACK SOFA BED

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4 Sheets-Sheet 2



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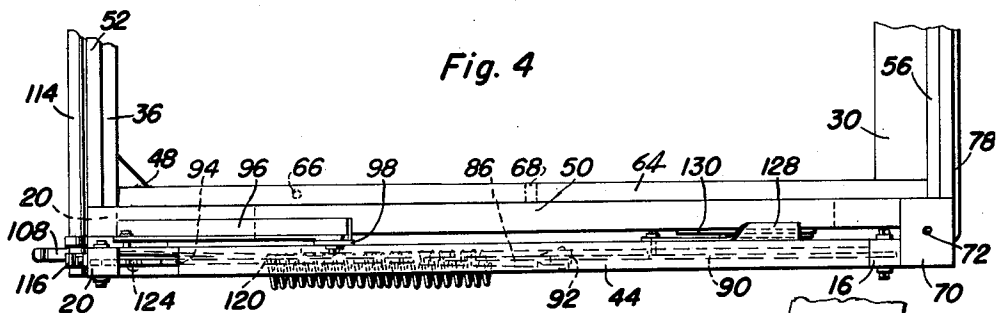
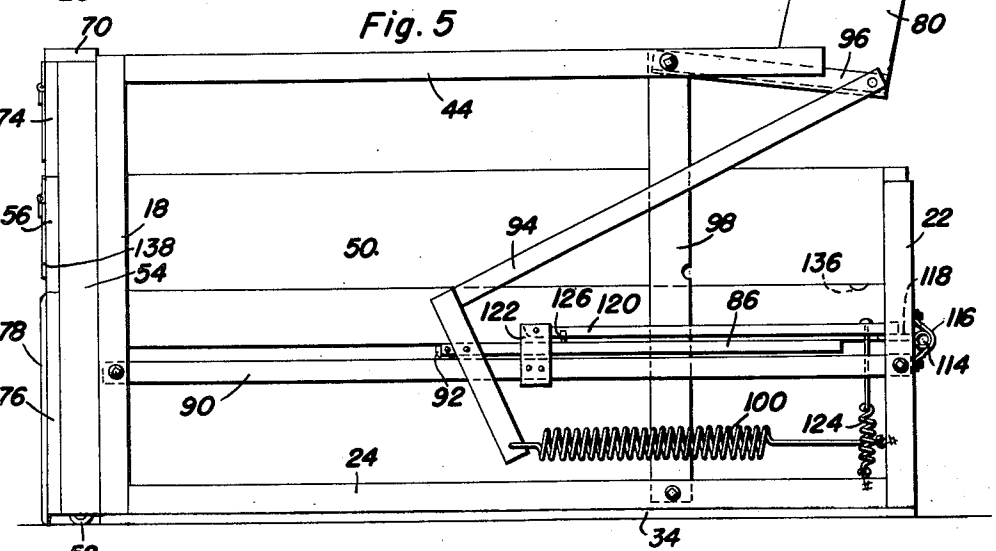
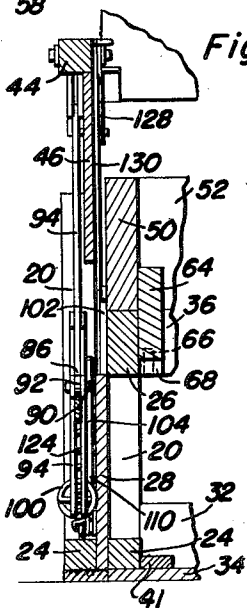
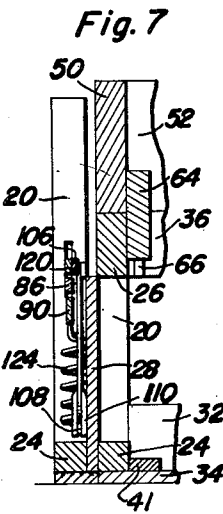
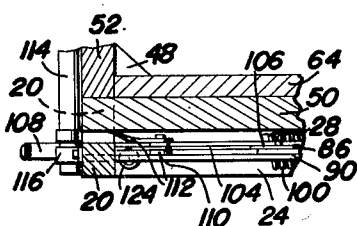
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REVERTING BACK SOFA BED

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4 Sheets-Sheet 3



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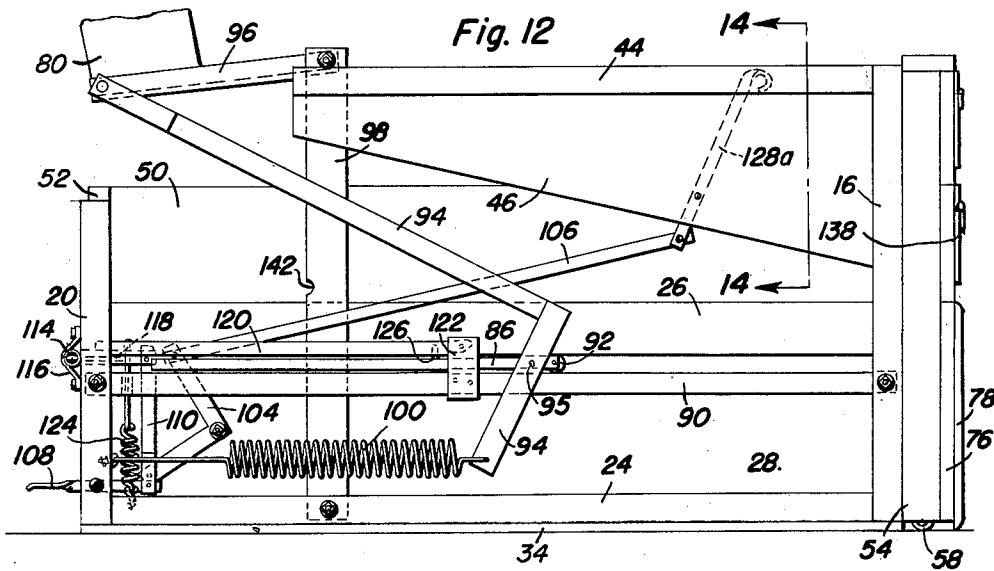
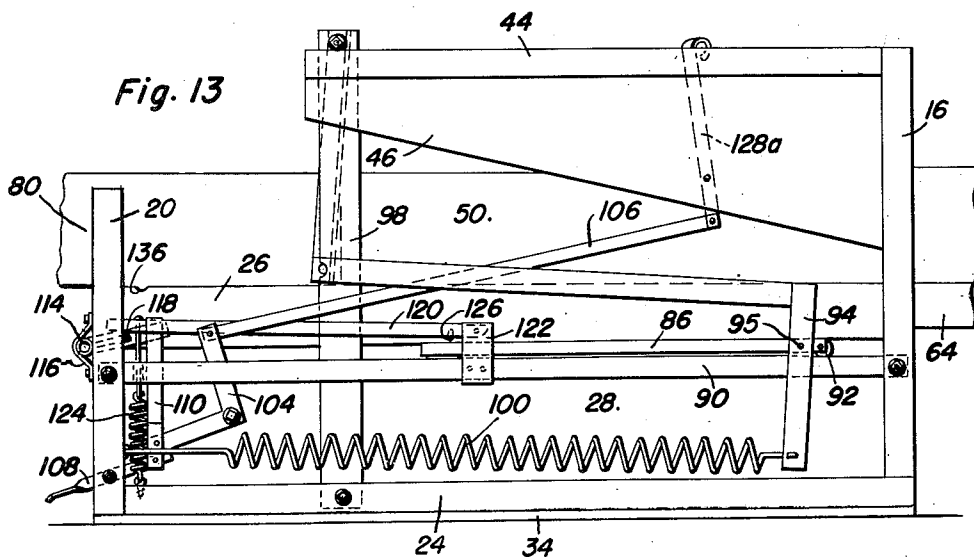
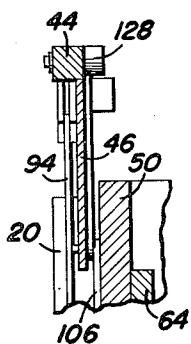
C. DE MARIA

2,671,228

REVERTING BACK SOFA BED

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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

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REVERTING BACK SOFA BED

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Application March 27, 1950, Serial No. 152,213

5 Claims. (Cl. 5-41)

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This invention relates to new and useful improvements in articles of furniture and the primary object of the present invention is to provide a sofa including a horizontally sliding seat structure, a vertically swinging back rest and novel and improved manually actuated means for swinging the back rest to convert the sofa into a bed with the back rest coplanar with the seat structure.

Another object of the present invention is to provide a sofa that is quickly and readily converted into a bed and which includes a sliding seat structure that slidably supports a pair of drawers.

Another object of the present invention is to provide a sofa convertible into a bed and including a frame, a seat structure slidably mounted on the frame and having wheel supporting legs to prevent sagging of the seat structure when the seat structure is extended from the frame.

Yet another object of the present invention is the provision of a sofa including arm rest having hinged extensions for accommodating lamps, books and the like that are accessible from the sofa.

A further object of the present invention is to provide a sofa composed of a sliding seat structure and a vertically swinging back rest cooperating with the seat structure to form a bed together with a means for retaining the back rest in a selected inclined position for the comfort of a user.

A still further aim of the present invention is to provide a sofa that is simple and practical in construction, strong and reliable in use, neat and attractive in appearance, inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of the present invention, the upholstering being removed for the convenience of explanation, and showing the back rest raised, the seat structure in its position for use as a sofa seat, and a drawer extended from the seat structure;

Figure 2 is a side elevated view of Fig. 1;

Figure 3 is a view similar to Fig. 2 but showing the sofa converted into a bed after the sliding of the seat structure and back rest forwardly;

Figure 4 is a fragmentary top plan view of Fig. 2, the back rest removed;

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Figure 5 is a side elevational view of Fig. 1, taken at the opposite end of the sofa from Figures 2 and 3;

Figure 6 is a vertical sectional view taken substantially on the plane of section line 6-6 of Fig. 2;

Figure 7 is a vertical sectional view taken substantially on the plane of section line 7-7 of Fig. 2;

Figure 8 is a horizontal sectional view taken substantially on the plane of section line 8-8 of Fig. 2;

Figure 9 is a vertical sectional view taken substantially on the plane of section line 9-9 of Fig. 1;

Figure 10 is a vertical sectional view taken substantially on the plane of section line 10-10 of Fig. 1;

Figure 11 is a vertical sectional view taken substantially on the plane of section line 11-11 of Fig. 1;

Figure 12 is a side elevational view of the sofa in slightly modified form to show the back rest raised;

Figure 13 is a view similar to Fig. 12 but showing the back rest lowered; and

Figure 14 is a vertical sectional view taken substantially on the plane of section line 14-14 of Fig. 12.

Referring now to the drawings in detail, wherein for the purpose of illustration, there is described a preferred embodiment of the present invention, the numerals 10, 12 and 14 represent a frame, a seat structure or section and a back rest or section respectively which comprise the essential elements forming the present sofa and which permit the sofa to be converted into a bed.

Frame

The frame 10 includes forward pairs of uprights 16, 18 and rear pairs of uprights 20, 22. The lower ends of the uprights 16 and 18 are connected to the lower ends of the uprights 20, 22 by lower pairs of horizontal end members 24 and the upper portions of the uprights 16 and 18 are connected to the upper portions of the uprights 20 and 22 by upper horizontal end members 26.

Side panels 28 are fixed between each of the lower end members 24 and terminate at the upper end members 26, as shown best in Figures 6 and 7 of the drawings.

The lower ends of the uprights 16 and 18 are connected by a forward longitudinal cross-strip 30 and the lower ends of the uprights 20 and 22

are connected by rear longitudinal cross-strips 32. A base panel 34 underlies the frame 10 and is secured to the undersides of the strips 30 and 32 as well as the end members 24 to reinforce and strengthen the entire structure and to prevent dust from entering the frame from the bottom thereof.

The upper ends of the uprights 20 and 22 are connected by an upper longitudinal cross member 36 that is spaced from and braced to the cross-member 32 by a support 38 or a suitable number of the supports 38. A transverse cross-member 40 overlies and is suitably secured to the base panel 34 and supports an upstanding center beam 42 that is terminally secured to the central portions of the members 30, 32 and 36.

The upper portions of the uprights 16 and 18 support rearwardly extending horizontal arms 44 from which there depend brace members 46 that are secured to the upper end portions of the uprights 16 and 18. Corner braces 48 join the adjacent ends of the end members 50 and cross-members 52.

Seat-structure

The seat structure 12 includes a pair of parallel end members 50 that are slidably received on the end members 26 of the frame 10. The rear ends of the end members 50 are joined by a longitudinal cross-member 52 and the forward ends of the end members 50 support depending legs 54 that are joined by a forward longitudinal cross-member 56. The lower ends of the legs 54 support casters or rollers 58 that will ride upon a surface supporting the frame 10.

The central portions of the members 52 and 56 are joined and strengthened by a transversely disposed center beam or cross-member 60 that is slidably received on the beam 42 of the frame 10. A pair of spaced parallel guide bars 62 and 64a depend from the member 60 and receive the beam 42 therebetween to restrict longitudinal movement of the seat structure 12 relative to the frame 10.

The inner faces of the end members 50 (see Figures 6 and 7) support depending guide strips 64 that parallel the end members 26 and which are disposed relatively close to the inner faces of the members 26 to restrict longitudinal movement of the seat structure 12 relative to the frame 10. Pins 66 depend from the strips 64 and will engage stop blocks or cleats 68 mounted on the members 26 to limit sliding movement of the seat structure relative to the frame 10.

The upper flat faces of the legs 54 support base blocks 70 having vertical bores 72 for a purpose later to be more fully described. The forward faces of the legs 54 support reinforcing and strengthening strips 74 and 76 for the legs 54, the member 56 and the blocks 70.

Drawers 78 are slidably received on the front cross strip 30 and are located between the end members 24 and the center beam 42. The ends of the drawers 78 slide on the transverse cross member 40 adjacent to the center beam 42 and on the transverse runner 41 adjacent to the member 24. The drawers 78 are of such vertical dimensions that the cross member 56 may readily pass over the drawers 78 when the seat structure is moved to either the extended or retracted position.

Back rest

The back rest 14 includes a substantially rectangular frame member 80 having corner braces 75

82 and an upper panel 84 overlying and secured to the frame member 80.

Carriage

The back rest 14 includes or is associated with a carriage including a pair of rails 86 that overlie horizontal guide tracks 90 carried by the uprights 16, 18, 20 and 22. The rails 86 support rollers 92 that ride upon the guide tracks 90. The rails 86 are not connected directly to the back rest 14 but are connected indirectly to the back rest by linkage which will later be more fully described.

Raising and lowering mechanism

Means is provided for swinging the back rest 14. This mean consists of a pair of substantially L-shaped levers or members 94 having their bifurcated longer legs pivoted to arms 96 carried by the back rest 14 and pivoted to the upper ends of upright bars 98 mounted on the members 24 and 26 as well as the arms 44.

The bifurcated shorter legs of the members 94 are pivoted to the rails 86, as at 95, and are terminally connected to horizontally disposed coil springs 100 which in turn are secured to the uprights 20 to raise the longer legs of the members 94 and to urge the back rest to a raised position and the rails 86 toward the back rest as shown in Fig. 2.

A bell crank 102 is pivoted at its apex to the forward end of one of the members 26 and another bell crank 104 is pivoted at its apex to one of the members 28 below and rearwardly of the bell crank 102. The upper end of the bell crank 104 is connected to the upper and rear end of the bell crank 102 by a pitman or link 106 so that the bell cranks will both swing in response to a manual swinging of but one of the bell cranks.

A foot lever 108 is pivoted to the lower ends of the uprights 20 at the same end of the sofa as the bell cranks and is slidably pivoted to the lower end of a link 110 whose upper end is pivoted to a rearwardly extending link 112.

A longitudinal extending bar 114 is journaled for rotation in bearings 116 carried by the uprights 20 and is fixed to the rear end of the link 112. This bar 114 supports a pair of laterally projecting fingers 118 that overlie the guide tracks 90.

Locking mechanism

Means is provided for locking the rails 86 against sliding and for locking the back rest against swinging movement. This means can also lock the back rest in a selected vertically inclined position. The locking means includes a pair of locking arms 120 the forward ends of which are pivoted to channel brackets 122 carried by and rising from the guide tracks 90.

The channel brackets 122 also function as guides since they slidably receive the rails 86 between their spaced parallel vertical leg portions.

The rear ends of the arms 120 overlie the fingers 118 and are urged downwardly against the fingers 118 by springs 124 that are terminally secured to the rear ends of the arms 120 and the outermost of the end members 24. Friction pins 126 depend from the forward ends of the arms 120 and bear against the rails 86.

A hand lever 128 is pivoted to the brace 46 at the same end of the sofa as the bell cranks 102 and 104. The lever 128 is connected to the forward end of the bell crank 102 by a pitman or link 130.

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After the seat structure has been pulled out, and as either the lever 128 or 108 is depressed, the shaft 116 will be rotated to raise fingers 118 and the fingers will engage and lift the rear ends of arms 120 and move the pins 126 upwardly from the rails 86. Then the back rest 80 may be lowered, the rails 86 moved forwardly. Upon release of the lever being depressed, the springs 124 will force the arms 120, more particularly the pins 126, against the rails 86, at any phase of lowering the back rest, and the back rest will remain in such a position.

When the back rest has been lowered to its horizontal position and the rails 86 moved forwardly, after the seat structure has been pulled forwardly until the stops 66 engage the blocks 68, the sofa is converted to a bed.

By again depressing a selected one of the levers 108 or 128, the locking arms 120 are raised and the springs 100 return the back rest to its normal position as shown in Fig. 2.

Means retaining seat structure against sliding

The end members 50 support rollers 134, see Figure 9, that track upon the upper edges of the end members 26. Recesses 136 are provided in the rear upper edges of the end members 26 for receiving the rollers 134 when the seat structure is in its normal position. Hand gripping means 138 carried by the frame permits a manual pull to be exerted on the seat structure to urge the rollers 134 out of the recesses 136 and to permit the seat structure to slide forwardly.

Operation

The bifurcated upper ends of the members 94 are joined to the arms 96 by pins 140 that will enter notches 142 in the upright bars 98 when the back rest is lowered as shown in Figure 3.

As the back rest is moved to its lowered position, after the seat structure has been moved forwardly, the same will abut the seat structure to form the desired bed. Obviously, the back rest may be locked in a vertically inclined position, since when the lever, either 108 or 128, is released, the locking arms 120 will be urged against the rails 86.

Arm rest

The sofa includes a pair of hollow members or arm rests 144 having lower portions from which pins 146 depend for entering the bores 72 in the blocks 70 and permit the arm rests to be swung around horizontally a full 360°. The arm rests each have two tops or covers 148 and 150, both of which are hinged, as 152, to the main section of the arm rest. When the top cover 148 is folded away from the lower cover 150, the upholstered side of the top cover faces down and the upper surface of the top cover presents a smooth flat surface, parallel with the upper surface of the cover 150, doubles the width of the arm rest and provides sufficient space for its convenient use for writing, playing games, eating or any table purpose.

The space inside the arm rest is a convenient storage compartment reached by lifting the lower cover. Partitions and special containers, ash trays and the like, may be fitted in the arm rests to suit individual taste.

One of the arm rests is provided with a slot 154 to hold the arm 156 of a movable socket 158 which may be moved horizontally in either direction. The socket 158 slidably receives a vertical bar 160 that is held in a vertically adjusted

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position by a set screw 162. The bar 160 supports a rack or the like (not shown) for sheet music, newspapers, books, etc.

Modification of raising and lowering mechanism

Figures 12, 13 and 14 show the back rest raising and lowering mechanism in slightly modified form wherein the forward end of the link 106 is pivoted to the lower end of a hand lever 128a that is swingably mounted on one end of the sofa.

Since the operating mechanism is similar in all respects to the previously described operating mechanism, except the bell crank 102 is not used, the same reference numerals are used to represent like parts, and the operation of the lever 128a for rocking the bell crank 104 to effect a lifting of the link 110 and a rotation of the bar 116 is similar to the lever 128 and is shown in Figure 13 wherein the back rest is lowered and the seat structure has been moved forwardly.

Obviously the back rest, seat structure, frame and arm rests are to be covered by any suitable upholstery to add to the attractiveness of the sofa.

Having described the invention, what is claimed as new is:

1. A sofa comprising a frame, a back rest pivoted to the frame for vertical swinging movement, resilient means connecting the frame to the back rest and restricting swinging movement of the back rest, said resilient means also urging the back rest to a substantially vertical position, means carried by the frame for locking the back rest in a selected swung position, and manually operated means on the frame for releasing the locking means, said locking means including an arm pivoted to said frame, said back rest including a sliding carriage underlying said arm, and spring means terminally attached to said arm and said frame yieldingly urging the arm toward and against the carriage.

2. A sofa comprising a frame including a pair of horizontally disposed tracks, a carriage slidable on said tracks, a back rest pivoted on said frame for vertical swinging movement, an L-shaped lever member pivoted at its longer leg to said back rest and at its shorter leg to said carriage to effect a sliding movement of the carriage during vertical swinging movement of the back rest, resilient means connecting the shorter leg of said member to said frame to restrict sliding movement of said carriage and to restrict downward swinging movement of said back rest, means carried by the frame and engaging the carriage to lock the carriage against sliding movement and the back rest against swinging movement, and means mounted on the frame and connected to the locking means for releasing the locking means.

3. A sofa comprising a frame, a seat structure slidably mounted on said frame, a back rest pivoted on said frame for swinging movement, means associated with the frame and acting on the back rest yieldingly urging the back rest to a raised position, a pair of guide tracks mounted on the frame, said back rest including a carriage slidably mounted on the tracks, a pair of arms pivoted to said tracks and overlying said carriage, means yieldingly urging the arms against the carriage to lock the carriage against sliding movement, a means on the frame for simultaneously raising both arms and means for actuating said last mentioned means.

4. A sofa comprising a frame, a seat structure slidably mounted on said frame, a back rest piv-

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oted on said frame for swinging movement, means associated with the frame and acting on the back rest yieldingly urging the back rest to a raised position, a pair of guide tracks mounted on the frame, said back rest including a carriage slidably mounted on the tracks, a pair of arms pivoted to said tracks and overlying said carriage, means yieldingly urging the arms against the carriage to lock the carriage against sliding movement, a horizontal bar journaled for rotation on said frame and disposed perpendicular to said arms, laterally projecting fingers on said bar underlying said arms, and a lever pivoted on said frame and connected to said bar for rotating the bar to lift the arms from the carriage.

5. A sofa comprising a frame, a seat structure slidably mounted on said frame for horizontal movement, a back rest pivoted to said frame for vertical swinging movement, a pair of substantially L-shaped members pivoted at their longer legs to said back rest, means slidably carried by the frame and pivoted to the shorter legs of said L-shaped members, elongated spring members terminally connected to said frame and the shorter legs of said L-shaped members yieldingly

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urging the back rest to a raised position, a hand operated lever pivoted to said frame, a foot operated lever pivoted to said frame, a connection between said levers for swinging movement of one lever in response to swinging movement of the other lever, means mounted on the frame and engaging the first named means to hold the back rest against swinging movement, and means joining said connection to said last mentioned means for releasing said means holding the back rest against swinging movement upon actuation of a selected one of the levers.

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