Sept. 22, 1953 L. F. CLERC 2,652,573

CONVERTIBLE BED

Filed Nov. 3, 1949 12 Sheets-Sheet 1

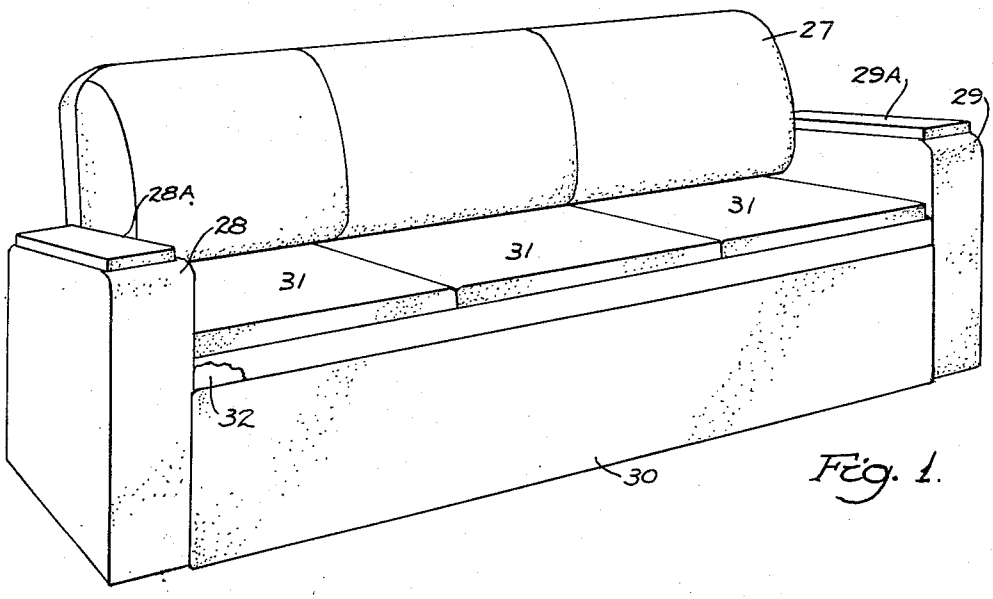


Fig. 1.

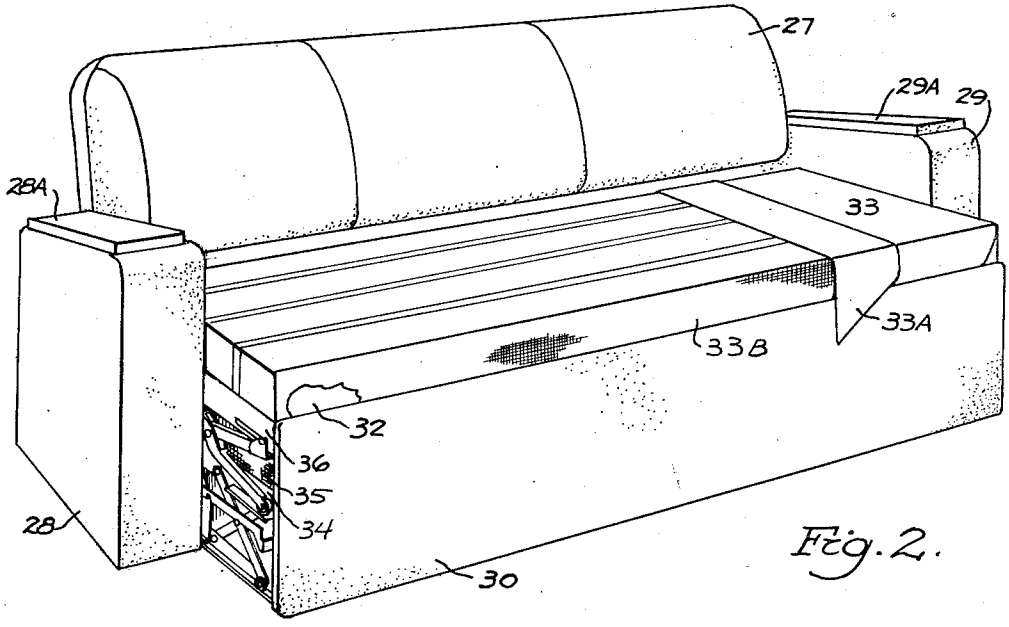


Fig. 2.

INVENTOR.
Leonard F. Clerc
BY
Edward M. Apple
Attorney.

Sept. 22, 1953 L. F. CLERC 2,652,573

CONVERTIBLE BED

Filed Nov. 3, 1949

12 Sheets-Sheet 2

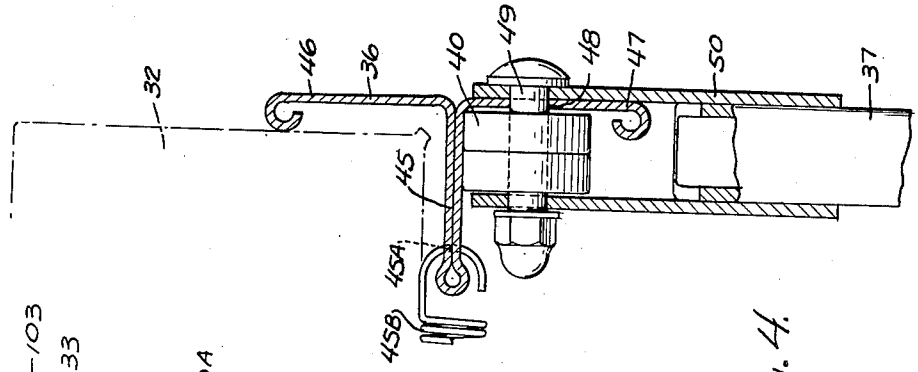


Fig. 4.

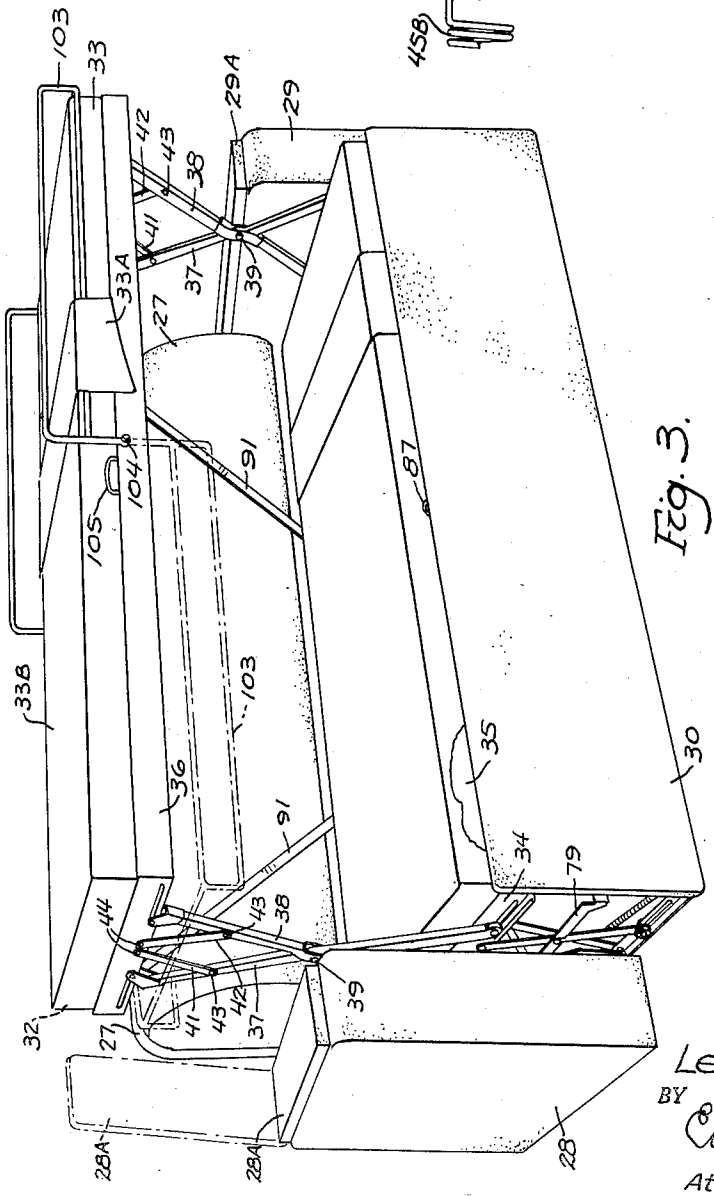


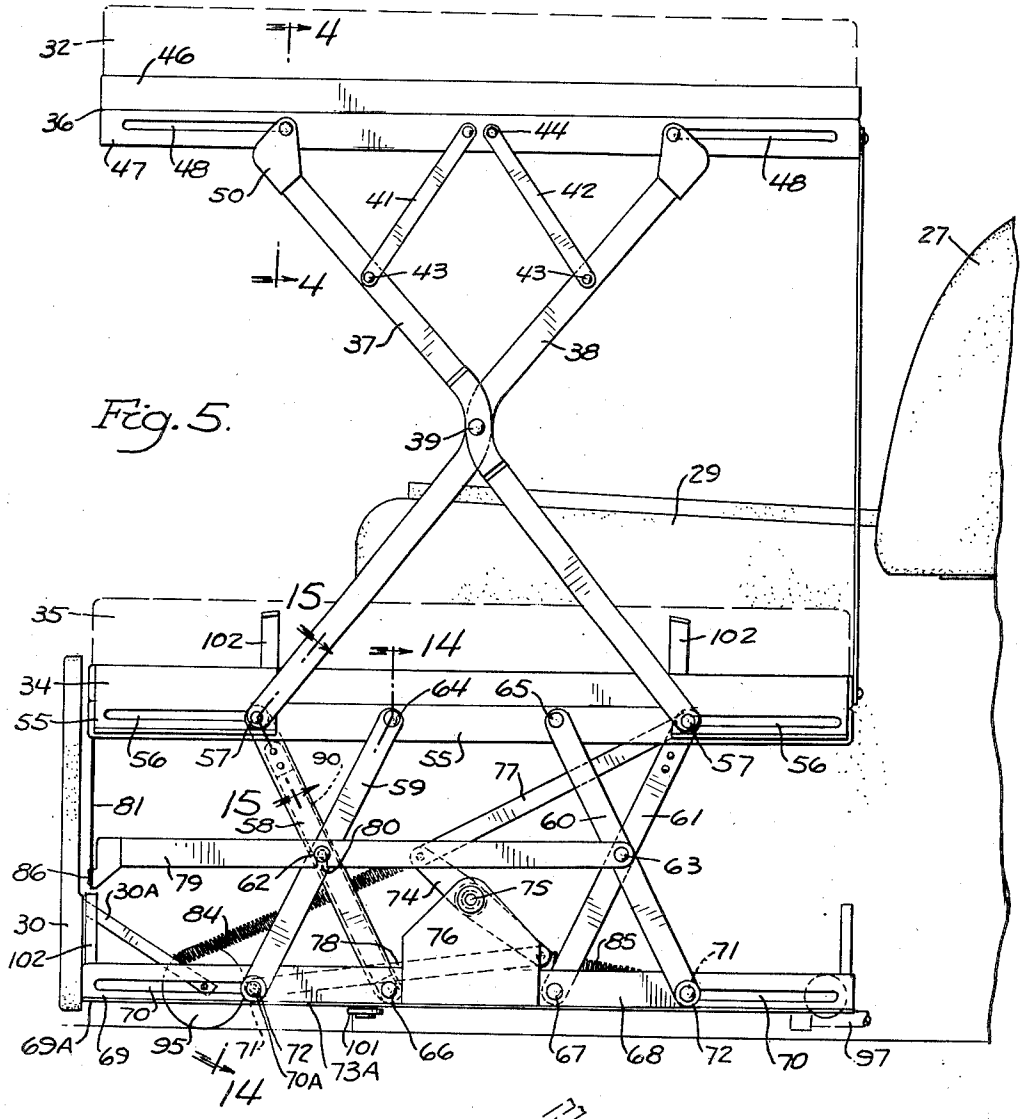
Fig. 3.

INVENTOR.
Leonard F. Clerc
BY
Edward M. Apple
Attorney.

Sept. 22, 1953 L. F. CLERC 2,652,573

CONVERTIBLE BED

Filed Nov. 3, 1949 12 Sheets-Sheet 3



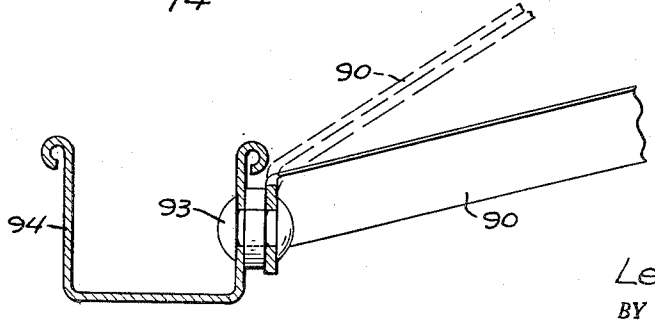


Fig. 6.

INVENTOR.
Leonard F. Clerc
BY
Edward M. Apple
Attorney.

Sept. 22, 1953 L. F. CLERC 2,652,573

CONVERTIBLE BED

Filed Nov. 3, 1949 12 Sheets-Sheet 4

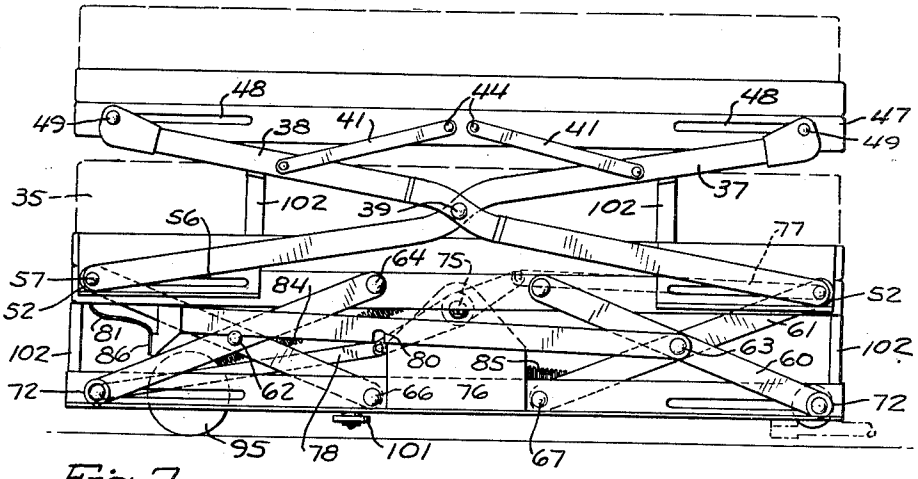
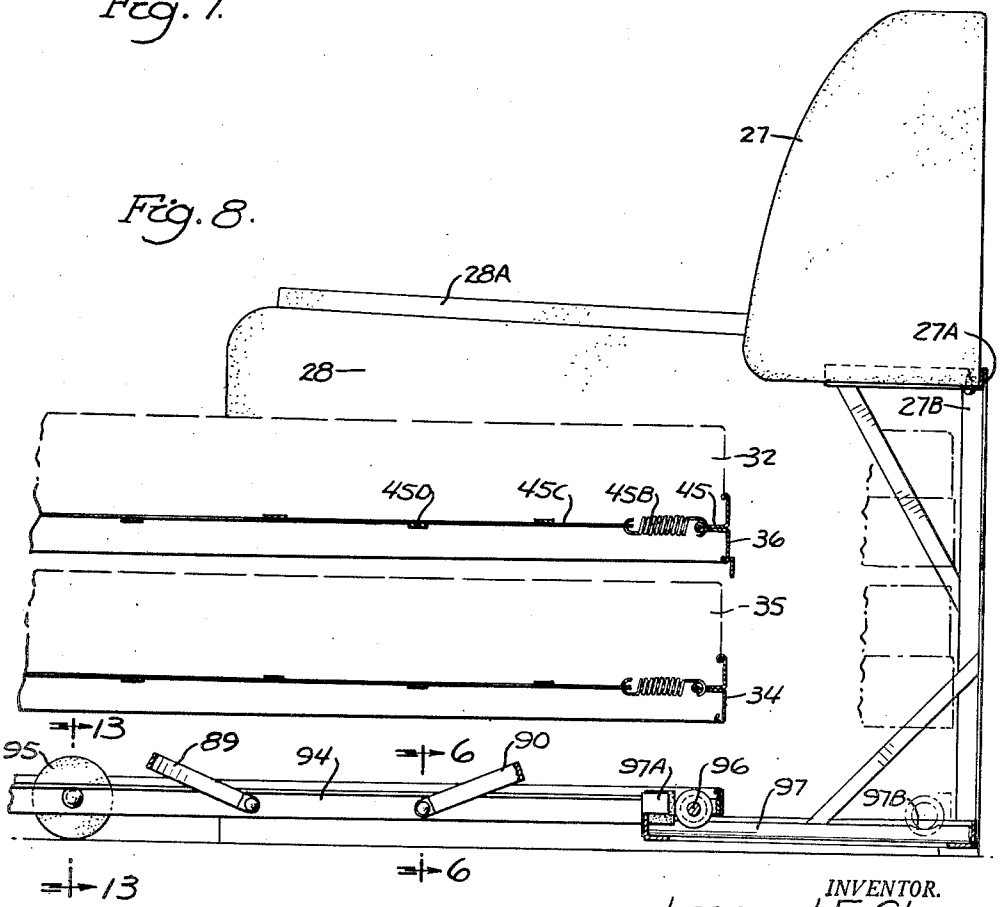


Fig. 7.

Fig. 8.



INVENTOR.
Leonard F. Clerc
BY
Edward M. Apple
Attorney.

Sept. 22, 1953 L. F. CLERC 2,652,573

CONVERTIBLE BED

Filed Nov. 3, 1949 12 Sheets-Sheet 5

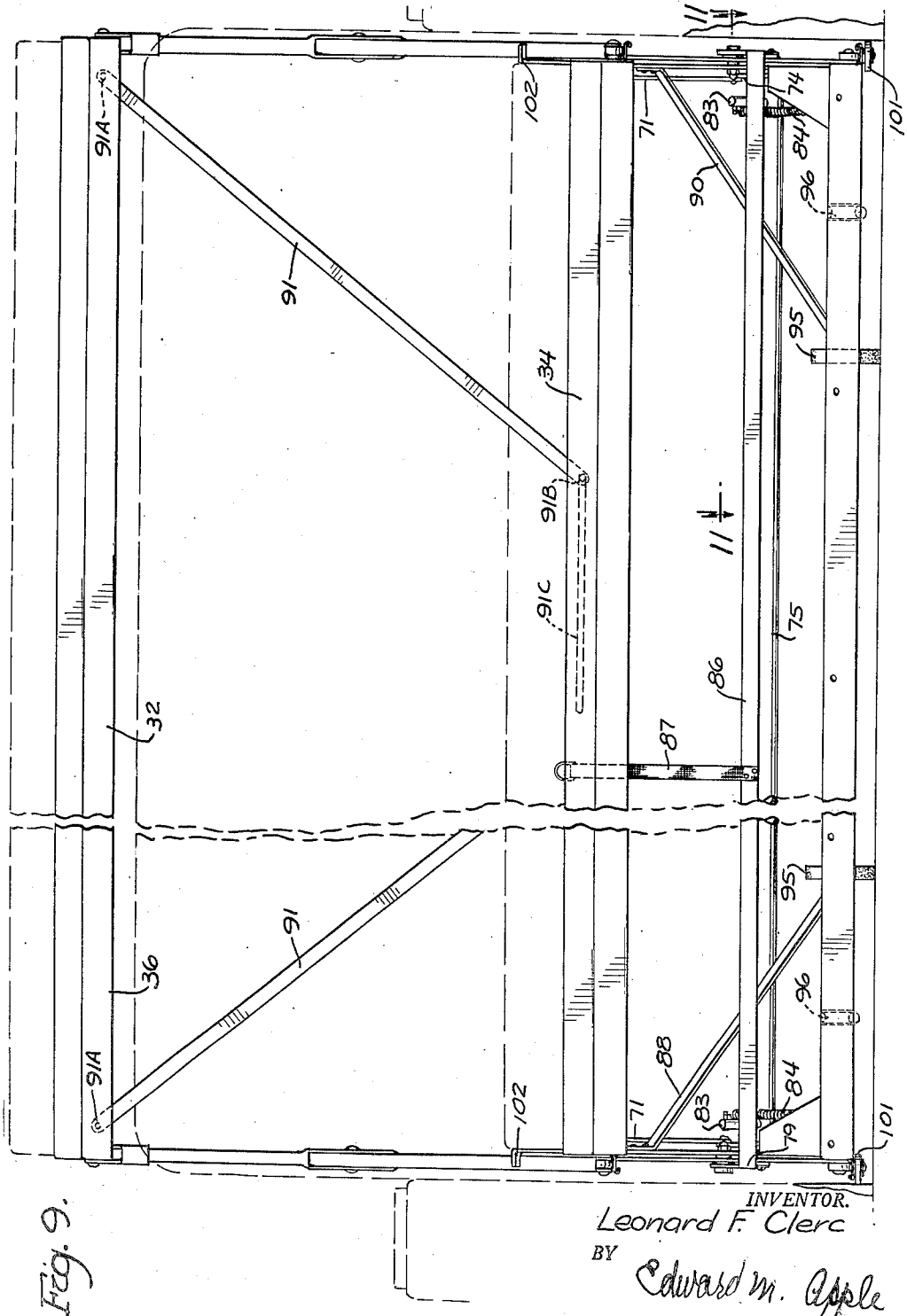


Fig. 9.

INVENTOR.
Leonard F. Clerc
BY
Edward M. Apple
Attorney.

Sept. 22, 1953 L. F. CLERC 2,652,573

CONVERTIBLE BED

Filed Nov. 3, 1949 12 Sheets-Sheet 6

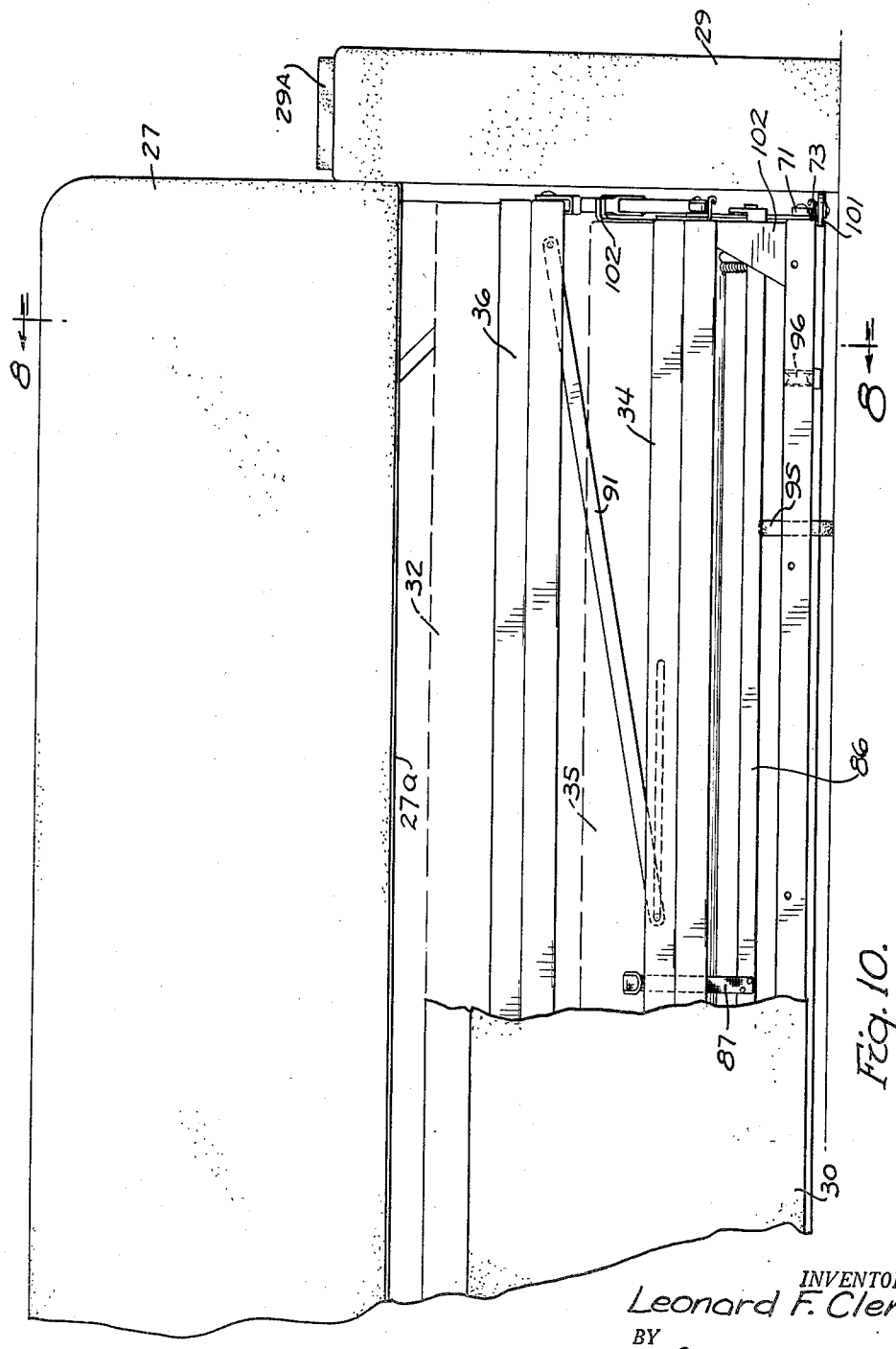


Fig. 10.

INVENTOR.
Leonard F. Clerc
BY
Edward M. Apple
Attorney.

Sept. 22, 1953 L. F. CLERC 2,652,573

CONVERTIBLE BED

Filed Nov. 3, 1949 12 Sheets-Sheet 7

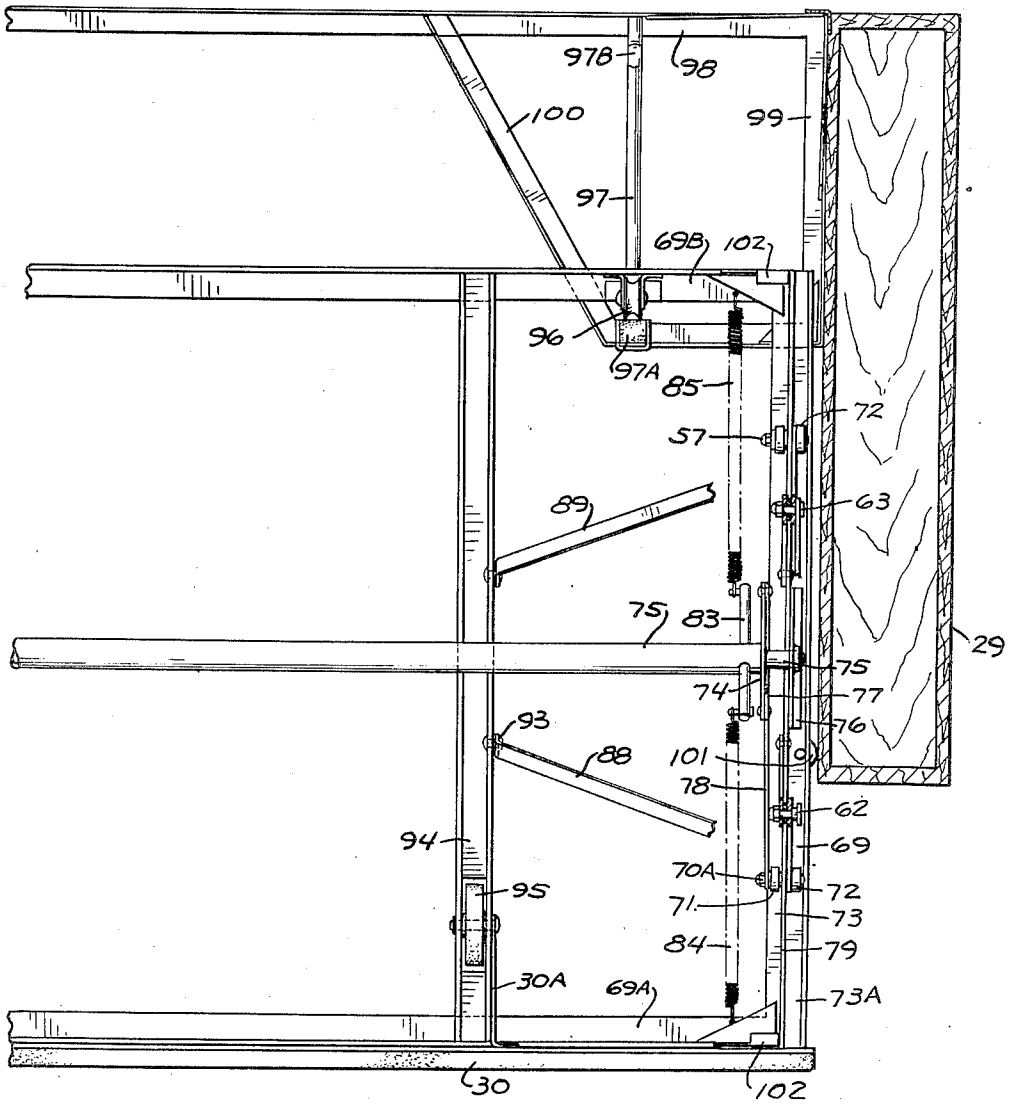


Fig. 11.

INVENTOR.
Leonard F. Clerc
BY
Edward M. Apple
Attorney

Sept. 22, 1953 L. F. CLERC 2,652,573

CONVERTIBLE BED

Filed Nov. 3, 1949 12 Sheets-Sheet 8

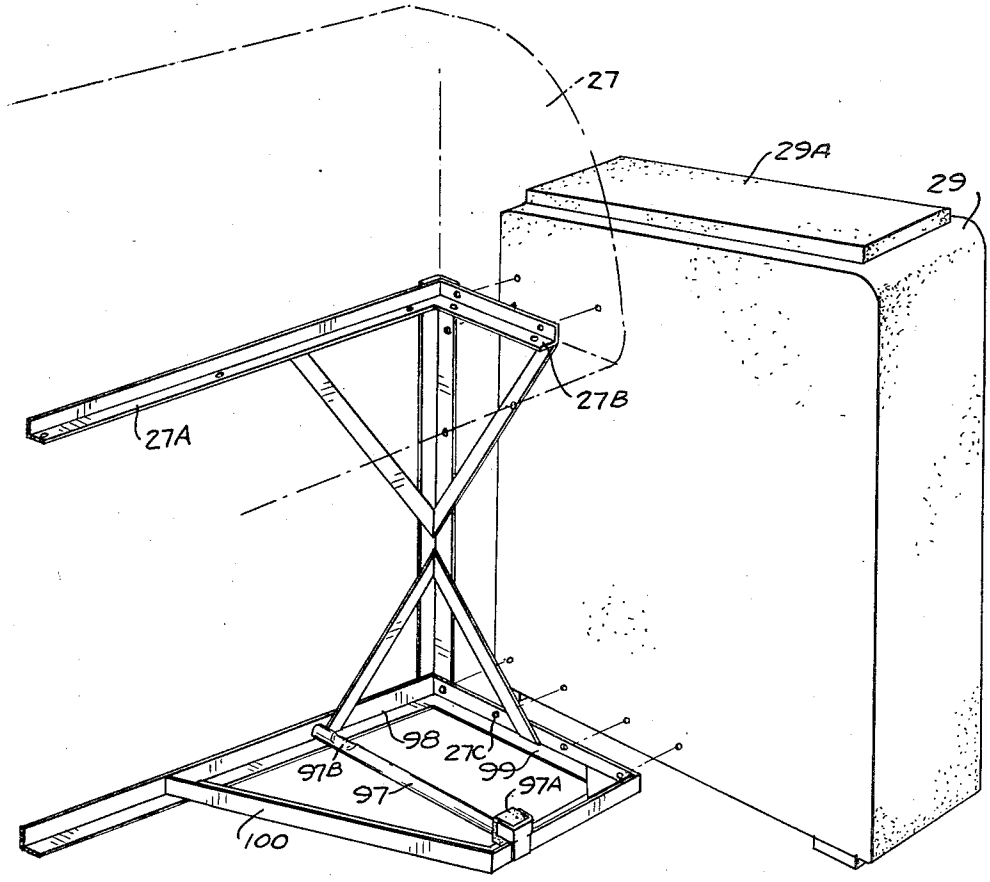


Fig. 12.

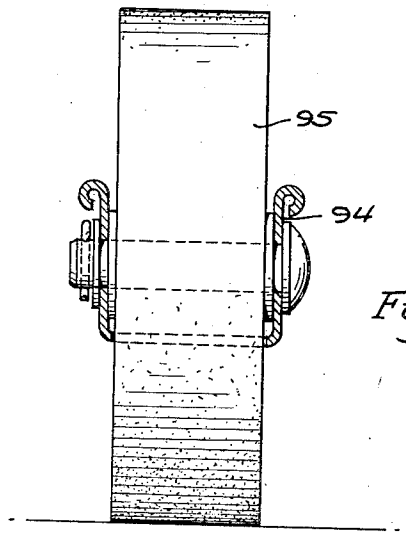


Fig. 13.

INVENTOR.
Leonard F. Clerc
BY Edward M. Apple
Attorney.

Sept. 22, 1953 L. F. CLERC 2,652,573

CONVERTIBLE BED

Filed Nov. 3, 1949 12 Sheets-Sheet 9

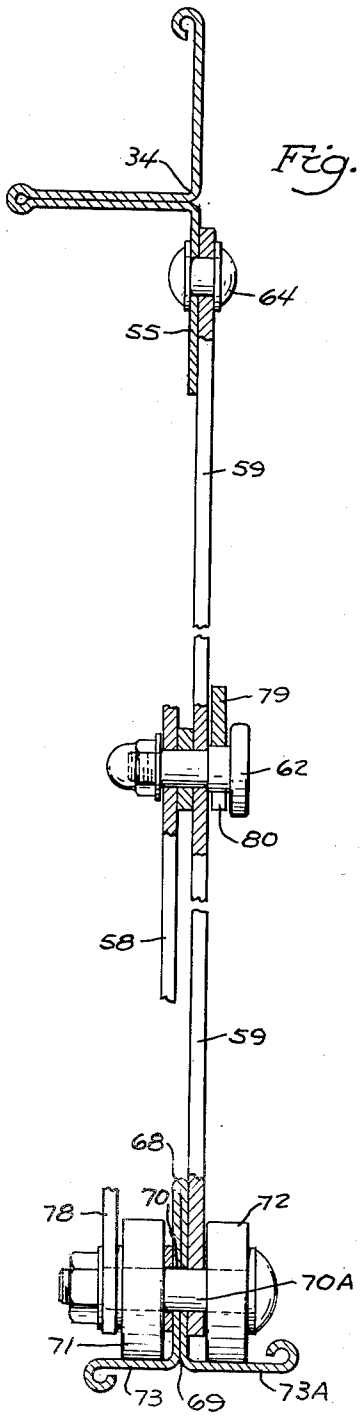


Fig. 14.

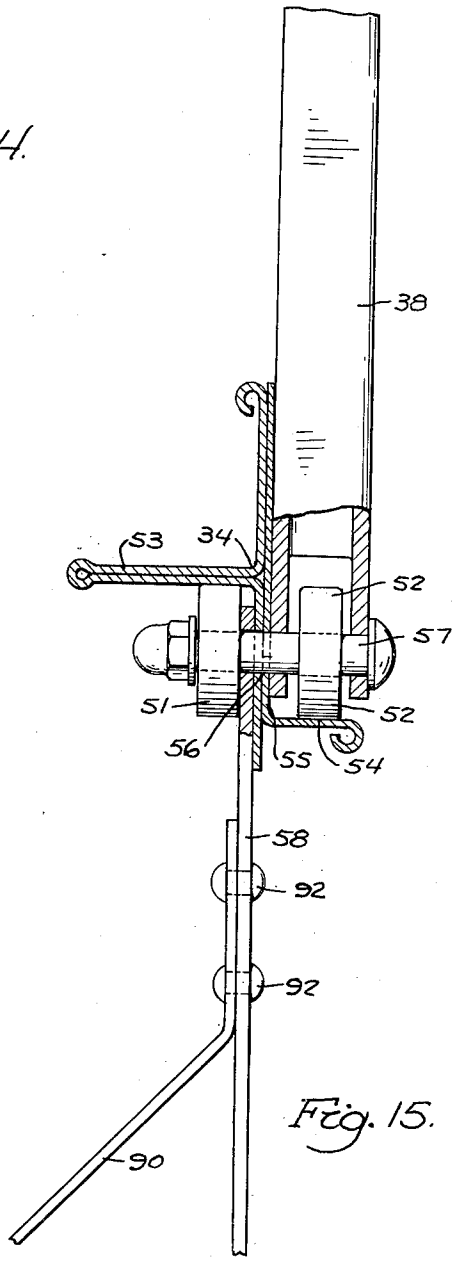


Fig. 15.

INVENTOR.
Leonard F. Clerc
BY
Edward M. Apple
Attorney.

Sept. 22, 1953 L. F. CLERC 2,652,573

CONVERTIBLE BED

Filed Nov. 3, 1949 12 Sheets-Sheet 10

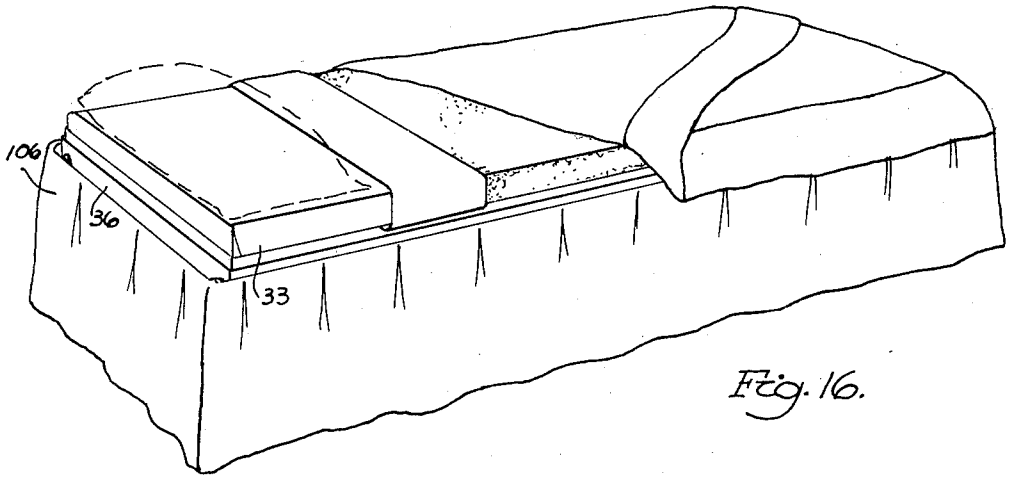


Fig. 16.

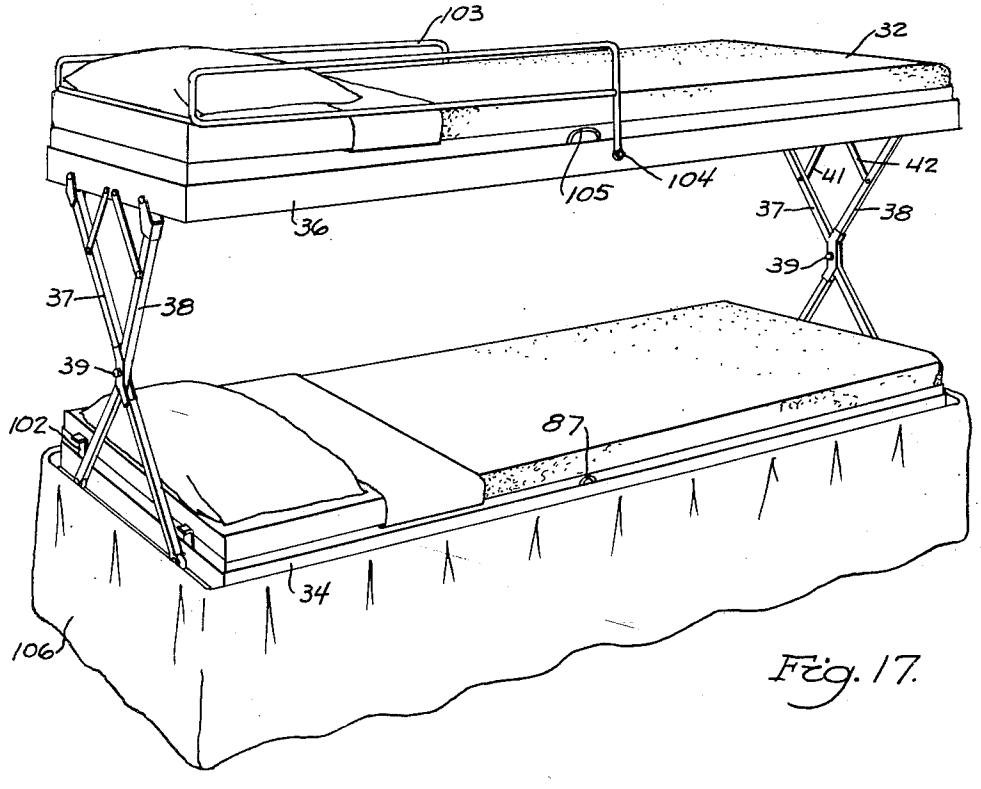


Fig. 17.

INVENTOR.
Leonard F. Clerc
BY
Edward M. Apple
Attorney.

Sept. 22, 1953 L. F. CLERC 2,652,573

CONVERTIBLE BED

Filed Nov. 3, 1949 12 Sheets-Sheet 11

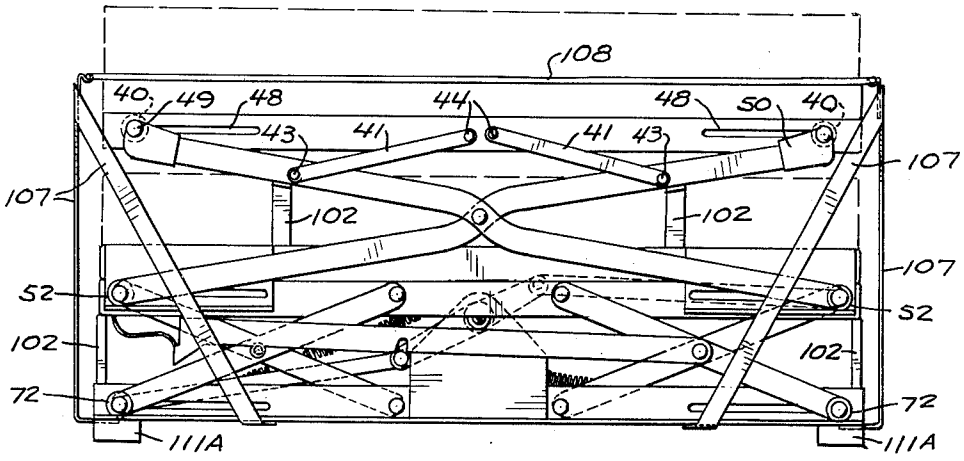


Fig. 18.

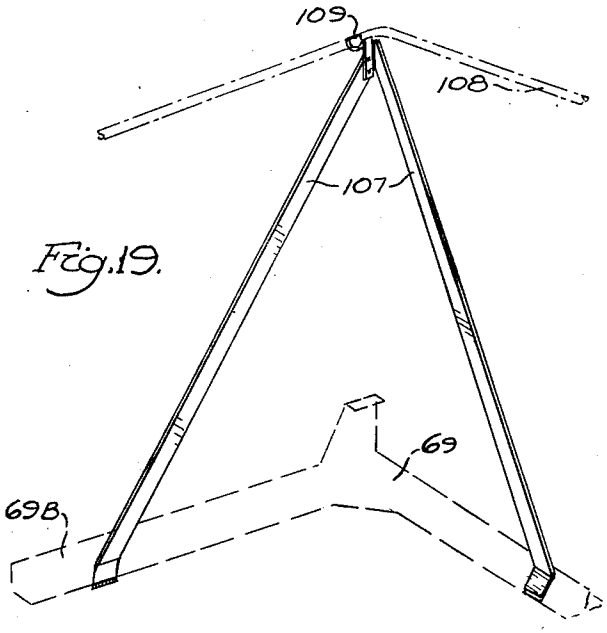


Fig. 19.

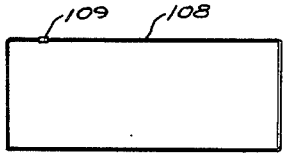


Fig. 20.

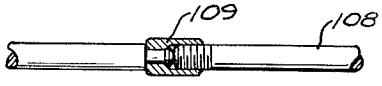


Fig. 21.

INVENTOR.
Leonard F. Clerc
BY
Edward M. Apple
Attorney.

Sept. 22, 1953 L. F. CLERC 2,652,573

CONVERTIBLE BED

Filed Nov. 3, 1949 12 Sheets-Sheet 12

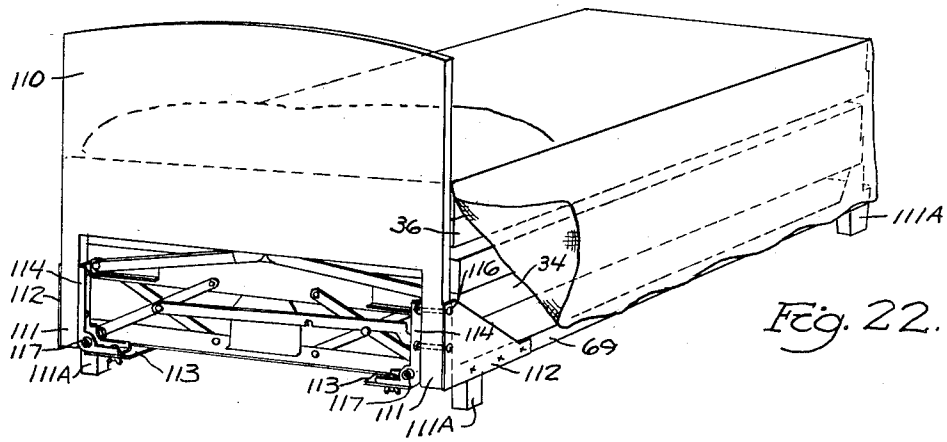


Fig. 22.

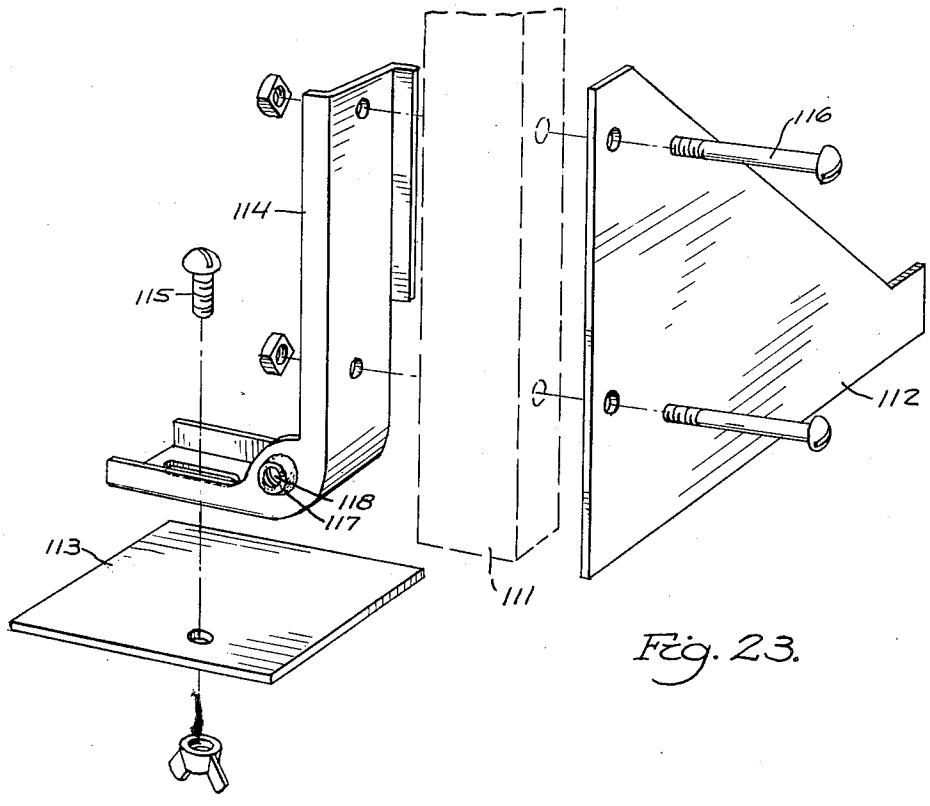


Fig. 23.

INVENTOR.
Leonard F. Clerc
BY
Edward M. Apple
Attorney.

Patented Sept. 22, 1953

2,652,573

UNITED STATES PATENT OFFICE

2,652,573

CONVERTIBLE BED

Leonard F. Clerc, Detroit, Mich.

Application November 3, 1949, Serial No. 125,341

8 Claims. (Cl. 5—9)

1

This invention relates to household furniture and has particular reference to convertible beds.

The primary object of the invention is to provide a piece of furniture which may be employed as a sofa, a single bed, a day bed, or a Hollywood bed, and may readily be converted into a double-deck bed and vice versa.

Another object of the invention is to provide a double-deck bed which may be completely concealed in a structure simulating another piece of furniture.

Another object of the invention is the provision of a double-deck bed which is ideal for use in homes, apartments, hotels, trains, boats, trailers, and the like, where floor space is at a premium.

Another object of the invention is the provision of a device of the character indicated, which is economical to manufacture, simple in construction, light in weight, and readily transported from place to place.

Another object of the invention is to provide a convertible double-deck bed which may be partially concealed and attractively draped for daytime use as a seating unit.

Another object of the invention is to provide a convertible double-deck bed which is constructed so that the bed clothes may be arranged and supported thereon ready for immediate use while at the same time, outwardly presenting the appearance of a piece of daytime furniture.

The further object of the invention is to provide a convertible double-deck bed, which is constructed and arranged so that the upper and lower decks may be moved into operating position and rigidly locked against vertical, longitudinal, or lateral movement.

Another object of the invention is to provide a convertible double-deck bed, the upper deck of which is provided with a guard rail to prevent an occupant from rolling off.

A further object of the invention is to provide a device of the character indicated which is constructed and arranged so that the lower mattress section may be pulled forwardly, whereby the bed clothes may be more easily arranged.

Another object of the invention is to provide a convertible double-deck bed which is constructed to simulate a conventional sofa with space provided in the arms for the storage of pillows and the like.

A still further object of the invention is to provide a device of the character indicated which is constructed and arranged to simulate a sofa, the side arms, back rest, and front closure panel of which are readily removable for storage purposes.

2

The foregoing and other objects and advantages of the invention will become more apparent as the description proceeds, reference being made from time to time to the accompanying drawing forming part of the within disclosure, in which drawings:

Fig. 1 is a perspective view of a device embodying the invention and shown in closed position simulating a sofa.

Fig. 2 is a perspective view of the device illustrated in Fig. 1, arranged for use as a single bed.

Fig. 3 is a perspective view of the device illustrated in Fig. 1, arranged for use as a double-deck bed.

Fig. 4 is an enlarged, fragmentary detail in section, taken substantially on the line 4—4 of Fig. 5.

Fig. 5 is an end view of the device, as shown in Fig. 3, with parts removed to illustrate the elevating mechanism.

Fig. 6 is a fragmentary detail in section taken substantially on the line 6—6 of Fig. 8.

Fig. 7 is an end view of the structure, as shown in Fig. 5, with the elevating mechanism in lowered position.

Fig. 8 is a section taken substantially on the line 8—8 of Fig. 10, illustrating the position of certain of the parts when arranged for use as a single bed.

Fig. 9 is a front elevational view of the device in elevated position and with the sofa arms and front panel elements removed.

Fig. 10 is a fragmentary, front elevational view of the device made up as a single bed with parts broken away to illustrate the arrangement of other parts.

Fig. 11 is a horizontal section taken substantially on the line 11—11 of Fig. 9.

Fig. 12 is an enlarged perspective view, one end of the sofa frame section and arm with the back rest indicated by broken lines.

Fig. 13 is a section taken substantially on the line 13—13 of Fig. 8.

Fig. 14 is a section taken substantially on the line 14—14 of Fig. 5, illustrating certain details of the elevating and supporting mechanism.

Fig. 15 is a section taken substantially on the line 15—15 of Fig. 5.

Fig. 16 is a perspective view of a modified form of the device converted from a day-type bed to a single bed.

Fig. 17 is a perspective view of the day-type bed, shown in Fig. 16, in raised position to form a double-deck bed.

Fig. 18 is an end view of the day-type bed, shown in Fig. 16, with the drapery removed and illustrating the elevating mechanism in lowered

position with the drapery supporting elements attached thereto.

Fig. 19 is an enlarged fragmentary perspective view of one corner of the day-type bed drapery support.

Fig. 20 is a reduced plan view of the drapery rod used on the day-type bed shown in Fig. 16.

Fig. 21 is a fragmentary detail, partly in section, showing the drapery rod connector.

Fig. 22 is a perspective view of the device with a head board attached for converting it into a Hollywood bed.

Fig. 23 is an enlarged perspective view of the bracket and parts used to attach the head board to the structure as shown in Fig. 22.

Referring now more particularly to the drawings, it will be understood that in the embodiment shown in Fig. 1, the device is arranged to simulate a sofa having a back rest 27, arms 28 and 29, and a front closure panel 30, all of which are upholstered to match the seat cushions 31. The back rest 27 is preferably formed of a plywood panel which is padded and then covered with any suitable upholstery material.

The back rest 27 (Fig. 12) is secured to the framework 27A and 27B, and the side arms 28 and 29 are secured to the framework 27B and to a sub-base member 27C by means of bolts or other suitable means. The front panel 30 is secured by bolts or other suitable means to the base member 69A (Figs. 5 and 11) and is reinforced by braces 30A (Figs. 5 and 11) which connect to the base reinforcing members 94. The side arms 28 and 29 are preferably formed as boxes which are open at the top, so that pillows, bed clothes, and the like may be stored therein. Suitable lids 28A and 29A which are also upholstered serve as closures for the openings in the hollow side arms 28 and 29.

When it is desired to use the device as a single bed, as shown in Fig. 2, the seat cushions 31 are first removed and the bed frames carrying the front closure panel 30, and other elements as hereinafter described, are moved forwardly as shown in Fig. 2, so that the full width of the mattress 32 is exposed. Suitable bed clothes 33 may be used to cover the mattress 32 with top sheet 33A and blanket 33B and the device is ready for single occupancy.

When it is desired to utilize the device as a double-deck bed, the device is adjusted to the position shown in Fig. 3. In this position it will be seen that the mattress 32 is now elevated and becomes the mattress for the upper deck.

I will now describe the mechanical structures which make possible the several conversions illustrated in Figs. 2 and 3. Broadly speaking the device consists of a lower rectangular bed frame 34 which is adapted to carry a mattress 35 and an upper bed frame 36, which is adapted to carry the mattress 32.

The bed frame 36 (Fig. 3) is supported at either end by means of a pair of arms 37 and 38 (Figs. 3 and 5). The arms 37 and 38 are pivoted at their center, as at 39, and at their respective ends are provided with rollers 40 (Fig. 4). The arms 37 and 38 are also connected to the bed frame 36 by means of pairs of arms 41 and 42, which are pivoted to the arms 37 and 38, as at 43, and to the bed frame 36 as at 44.

The bed frame 36 is rectangular in shape and is formed of stock having a substantially T shaped cross section (Fig. 4). This member may be formed by bending and rebending a continuous piece of stock to form the mattress supporting portion 45, and the mattress retainer 46, and the guide member 47, or it may be formed by welding together lengths of right angular stock to form the same elements. When the frame is formed by bending and rebending a single sheet of metal, I prefer to roll the edges (as shown in Fig. 4) to provide strength. By so doing, I am enabled to use a lighter gauge metal without sacrificing strength.

The mattress supporting element 45 of each bed frame is perforated near the inner edge, as at 45A to accommodate springs 45B (Figs. 4 and 8), to which springs are secured flat steel straps 45C, which are inner-woven as at 45D to form a further support for the mattress and obviates the necessity of using conventional box springs under the mattress. The guide member 47 is slotted, as at 48, to accommodate the roller axle 49, which also extends through suitable bores formed in the channel-like member 50 secured to the upper ends of the arms 37 and 38. Thus, it will be seen that the rollers 40 carried at the upper end of each arm 37 and 38 provide frictionless but movable supports for the upper bed frame 36. The travel of the rollers 40 is limited by the lengths of the slots 48 and the arms 41 and 42. This structure helps to prevent any weaving between the upper and lower bed frame.

The lower ends of the arms 37 and 38 are likewise provided with rollers 51 and 52 (Fig. 15). The roller 51 is adapted to engage the under side of the mattress support 53 of the lower bed frame member 34 and the roller 52 is adapted to contact the upper surface of the outwardly extending flange 54 of the guide member 55 of the bed frame 34 and serves as a track for the rollers 52. The guide member 55 is slotted, as at 56, to accommodate the roller axle 57, which slot limits the distance of travel of the rollers 51 and 52 as previously described with reference to slot 48. Thus, it will be seen that the arms 37 and 38 will function to raise and lower the bed frame 34 as a result of a corresponding movement of the upper bed frame 36.

The lower bed frame 34 (Fig. 5) is supported at either end by pairs of cross arms 58, 59, 60, and 61, which pairs of cross arms are pivoted at their centers as at 62 and 63. The cross arms 59 and 60 are pivoted, as at 64 and 65, to the guide member 55 of the bed frame 34, and the upper ends of the arms 58 and 61 are pivoted to the roller axles 57 and are arranged to travel therewith. The lower ends of the arms 58 and 61 are pivoted, as at 66 and 67, to the guide portion 68 of the member 69, which comprises part of the base of the device. The guide member 68 is slotted, as at 70 (Figs. 5 and 14), to accommodate the axles 70A of the rollers 71 and 72 carried at the lower ends of the arms 59 and 60. The rollers 71 and 72 are arranged to ride on outwardly extending track portions 73 and 73A (Fig. 14) formed on the base member 69. A rocker arm 74 (Fig. 5) is pivoted at its upper end to a link 77, which in turn is pivoted at its upper end to the lower end of the arm 37, as at 57, and the lower end of the rocker arm 74 is pivoted to a link 78, which in turn is pivoted to the lower end of the cross arm 59 as at 70A. This arrangement insures the synchronous travel of the rollers 71 and 72 at the ends of the arms 59 and 60, and the rollers carried at the ends of the arms 37 and 38. A rocker arm 74 is mounted at each end of a shaft 75, which pivots in either end in a bracket 76 mounted on the base member 69.

Extending through the shaft 75 (Fig. 11) and

in alignment with the rocker arm 74 is a torsion bar 83, to the ends of which are pivotally secured the springs 84 and 85, which in turn are secured at their opposite ends to the base members 69A and 69B. The torsion bar 83 and the springs 84 and 85 serve to counter-balance all of the moving parts employed in supporting the upper and lower bed frames, so that the bed frames may be moved upwardly and downwardly with a minimum of effort.

A locking bar 79 (Figs. 5 and 11) is pivoted to the cross arms 60 and 61, as at 63, and is provided with a slot 80, which is adapted to engage the pivot 62 of the cross arms 58 and 59. When the slot 80 is engaged with the pivot 62, the pairs of arms 58, 59, 60, and 61 are locked against movement, which in turn secures the bed frames 34 and 36 against vertical movement. The locking bars 79 at either end of the structure are tied together by means of a bar 86 (Fig. 9). The locking bars 79 may be simultaneously lifted out of locking position by means of a lift strap 87 which connects to the tie bar 86 and extends upwardly behind the front panel 30. Although I have herein illustrated and described fully only one end of the bed frame support, control, and locking mechanisms, it will be understood that similar structures and arrangement are provided at both ends of the bed frames.

In order to support the pairs of cross arms 58, 59, 60, and 61 in a vertical plane, I provide braces 88, 89, and 90 (Figs. 9, 11, and 15). The brace 90 is rigidly secured, as at 92 (Fig. 15) to the movable arm 58 and is pivotally secured, as at 93 (Fig. 11), to a channel-shaped cross member 94 which extends between the base members 69A and 69B. It will be understood that each pair of cross arms is provided with a similar brace. In order to further steady the upper bed frame and to prevent its longitudinal movement when in elevated position, I provide braces 91 which are pivoted, as at 91A (Fig. 9) to the upper bed frame 32 and are supported on rollers, as at 91B, which travel in slots 91C formed in the lower bed frame 34. The movement of the braces 91 is limited by the length of the slots 91C. The rear portion of the base member 69B (Figs. 11 and 12) is supported on rollers 96 which travel on tubular members 97 which in turn are supported by the sub-base framework 98, 99, and 100. The front portion of the base member 69A is supported on rollers 95, which in turn are supported by the floor. The forward movement of the base members 69A and 69B is limited by the stops 97A. When the base members 69A and 69B are moved to the rear, the rollers 96 rest in depressions 97B formed in the tubular members 97, so that the base member 69 may not accidentally be shifted forwardly.

When the device is used as a sofa the forward movement of the bed frames is guided by rollers 101, which ride against the inside surfaces of the arm members 28 and 29. When the device is in folded position, as shown in Figs. 7 and 18, the bed frames rest on rigid stop members or spacers 102. This takes all of the strain off of the moving parts. The upper bed frame 36 (Fig. 3) is provided with a guard rail 103 which is pivoted, as at 104, and when not in use, is swung into the position shown by the dotted lines 103 and is nested in an out of sight position when the bed frames are in lowered position. A hand grip 105 is provided on the upper bed frame 36, so that the device may be easily manipulated.

In Fig. 16 I illustrate the use of the device as a day bed. In this embodiment the frames are removed from the framework 27A and 27B and the sub-base members 97, 98, 99, and 100. This is accomplished by simply lifting the back rollers 96 from their tracks 97 (Fig. 11).

When using the device as shown in Fig. 16, I employ a drapery or skirt 106 to conceal the working parts. The skirt is secured to the base 69 (Fig. 19) by means of corner brackets 107, which brackets support a rod 108, which encircles the lower bed frame. The rod 108 (Figs. 20 and 21) is provided with a threaded coupling 109, so that the skirt 106 may readily be assembled or detached. In Fig. 17 I illustrate the manner in which the day bed may be converted into a double-deck bed as previously described.

In Fig. 22 I illustrate the manner in which the device may be employed as a Hollywood bed by attaching bed legs 111A to the base member 69 and to the headboard 110. The legs 111 of the head board 110 are secured to triangular shaped brackets 112 (Figs. 22 and 23) which are preferably welded to the base members 69. Rest plates 113 are welded to the bottom of the base members 69 and are adapted to support L shaped brackets 114 which are attached thereto by means of wing nuts and bolts 115. The members 111 and 112 and 114 are then secured together by means of nuts and bolts 116. Rubber stops 117 are secured to brackets 114 by means of nuts and bolts 118. The rubber stops 117 prevent the bed or its headboard from marring the walls when being moved.

From the foregoing it will be seen that I have devised a piece of furniture which has great utility and which may readily be converted into either a sofa, single bed, day bed, double-deck bed, or a Hollywood bed.

Having described my invention what I claim and desire to secure by Letters Patent is:

1. In a device of the character described, the combination of a pair of bed frames, a base frame, pairs of cross arms positioned between the ends of said base frame and the ends of one of said bed frames, the ends of said arms being pivoted to said frames and the arms of each pair being pivoted to each other and a pair of arms pivoted together at the center positioned between the ends of said bed frames and pivoted thereto, certain of the end pivots of said first named pairs of arms being longitudinally movable on said base and said first named bed frame, and the end pivots of said other pairs of arms being longitudinally movable on said bed frames.

2. The combination defined in claim 1, in which the ends of certain of said arms are provided with rollers adapted to engage tracks carried by the end members of said bed frames and said base frame.

3. The combination defined in claim 1, including braces secured to certain of said pairs of arms, and to said base frame, for securing said bed frames against longitudinal or lateral movement when said bed frames are in elevated, spaced relation.

4. The structure of claim 1, there being rollers at the ends of certain of said arms arranged to movably engage tracks formed on the end members of said frames, and longitudinal guides formed in the end members of said frames and adapted to limit the movement of said pivotable arms.

5. The structure of claim 1, and there being braces secured to one of said frames and to certain of said pairs of arms for preventing the

longitudinal or lateral movement of said bed frames when said bed frames are in elevated, spaced relation.

6. The combination defined in claim 1, including locking bars pivotally secured to certain pairs of said cross arms and having slots arranged to engage the pivot pins of other pairs of said cross arms and arranged to prevent the downward movement of said bed frames when said bed frames are in elevated and spaced relation.

7. The combination defined in claim 1, including rocker arms secured to supports on said base frame and having linkages pivotally connected thereto and to the ends of certain of said arms, a torsion bar rotatable with said rocker arms, said torsion bar having arms thereon, and springs connected respectively to said last mentioned arms and to fixed abutments carried on said base frame.

8. The combination defined in claim 1, including a sub-base frame extending rearwardly from said base frame, said sub-base frame having

tracks thereon adapted to accommodate rollers carried at the rear corners of said base frame, there being larger rollers pivotally secured near the front of said base frame and adapted to rest on the floor.

LEONARD F. CLERC.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
850,744	Flanders	Apr. 16, 1907
881,071	Hall	Mar. 3, 1908
1,201,635	Ryder	Oct. 17, 1916
1,319,459	Brown	Oct. 21, 1919
2,299,136	Feldman	Oct. 20, 1942
2,553,297	Brumbaugh	May 15, 1951

FOREIGN PATENTS

Number	Country	Date
218,387	France	Dec. 30, 1891
336,474	Germany	May 3, 1921