July 22, 1941. P. H. BONNET ET AL 2,250,148

SOFA OR DIVAN

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Fig.1.

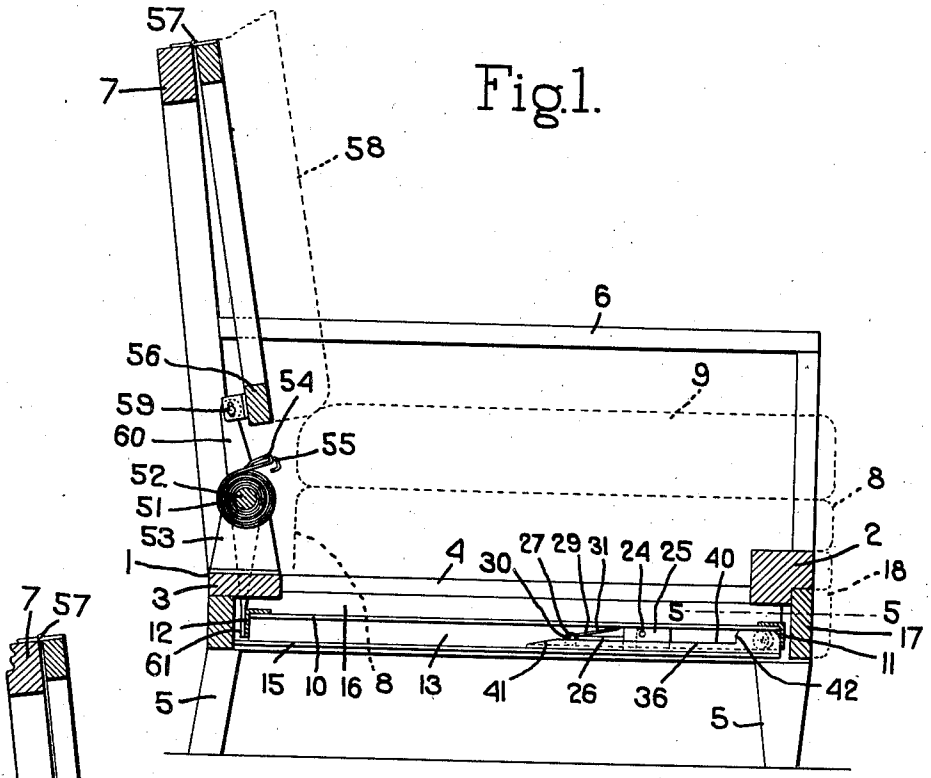
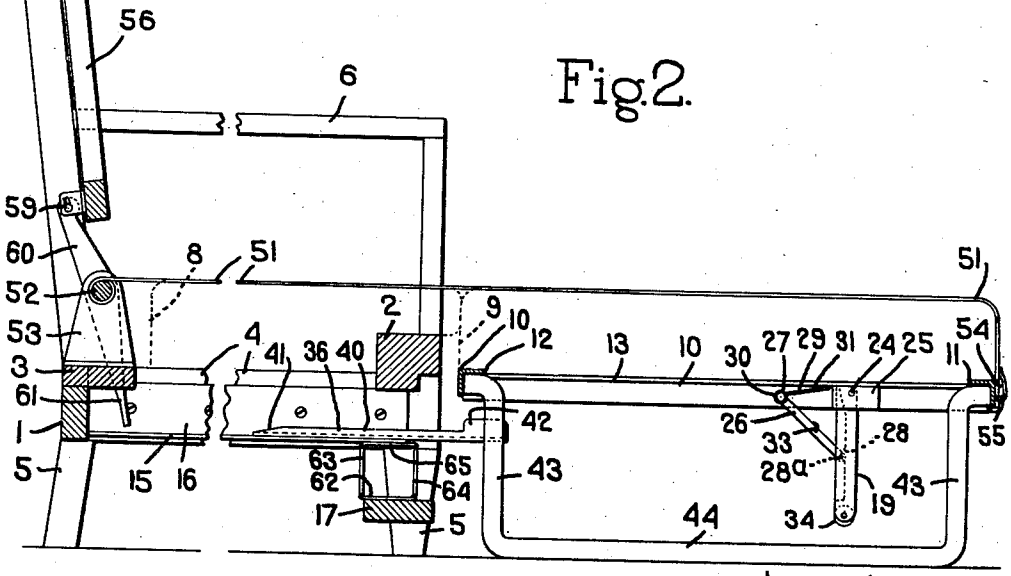


Fig.2.



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Fig. 3.

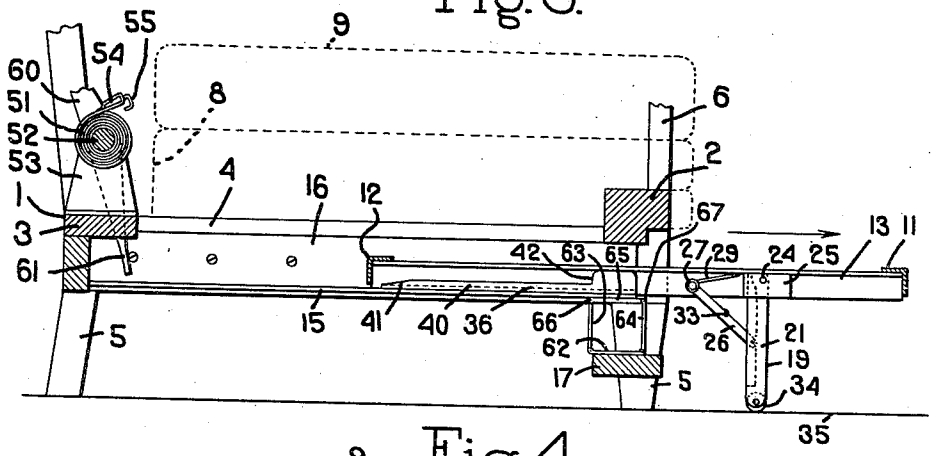
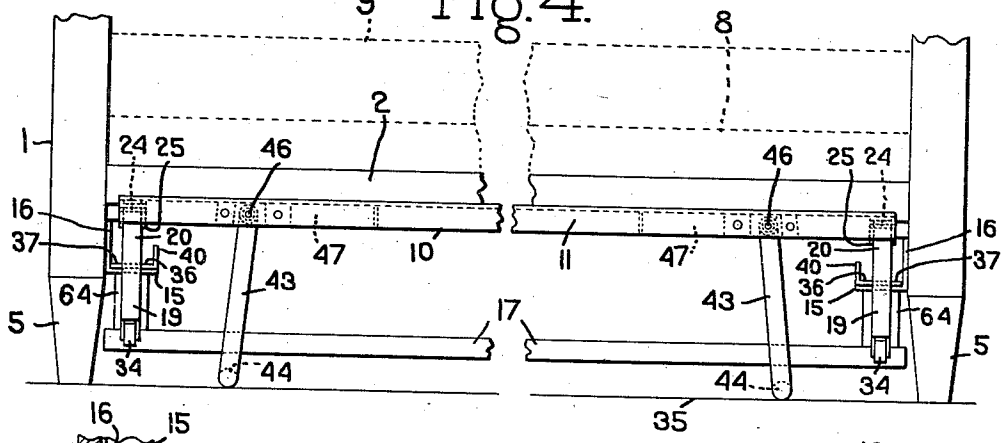


Fig. 4.



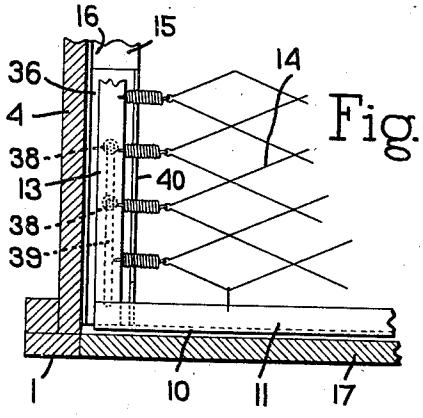
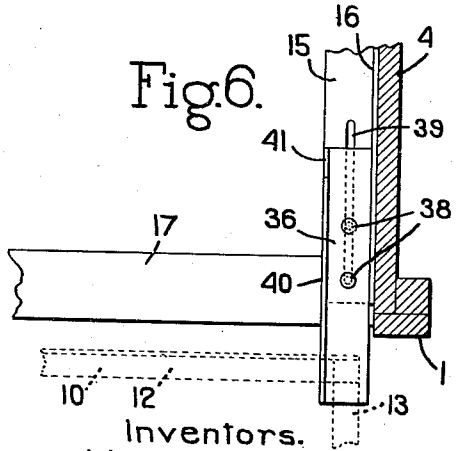


Fig. 5.

Fig. 6.



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Fig.7.

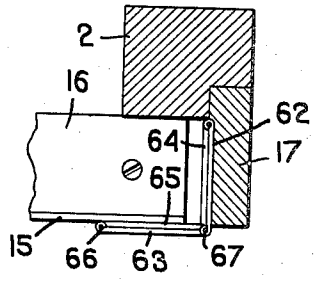


Fig.8.

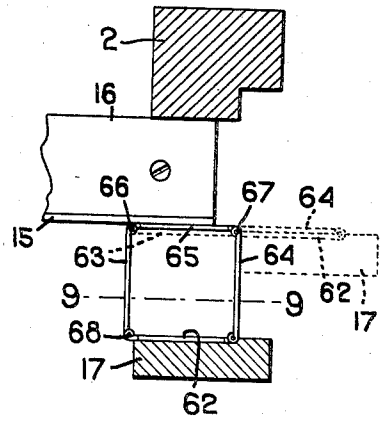


Fig.9.

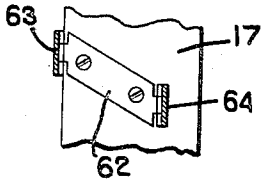


Fig.10.

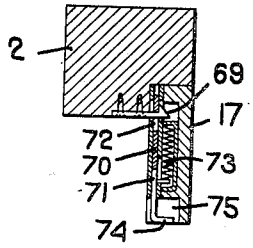


Fig.11.

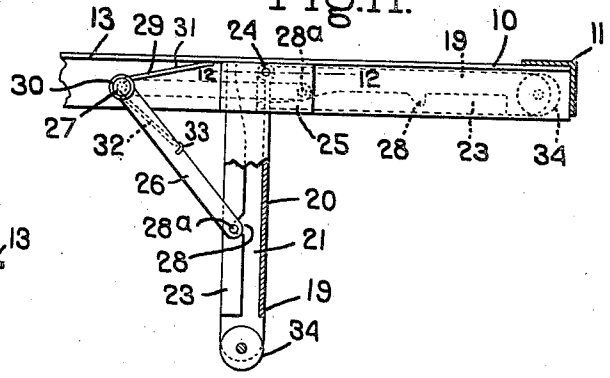


Fig.12.

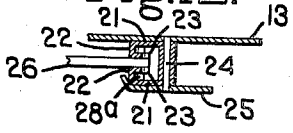


Fig.13.

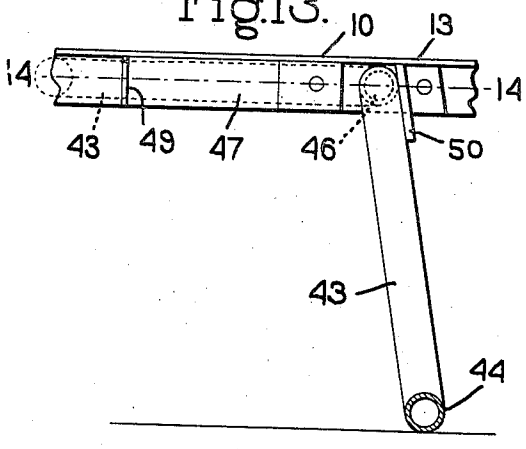


Fig.14.

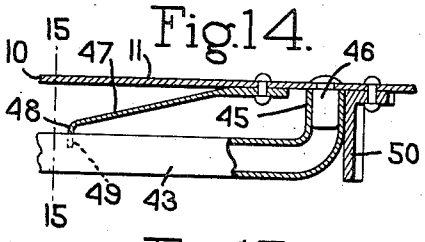
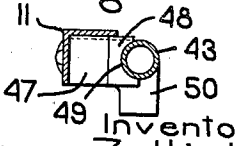


Fig.15.



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UNITED STATES PATENT OFFICE

2,250,148

SOFA OR DIVAN

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Application October 20, 1939, Serial No. 300,308

4 Claims. (Cl. 5—18)

This invention relates to a sofa or divan of that type which is constructed so that it can be converted into a bed.

These convertible sofas are commonly made with a sofa portion and with an extensible section that is usually stored beneath the sofa portion when the piece of furniture is being used as a sofa or divan, but is adapted to be withdrawn from beneath the sofa portion when the furniture is to be converted into a bed.

One of the objects of the present invention is to provide a sofa of this type having a novel method of supporting and guiding the extensible section when the latter is being pulled out from under the sofa portion to make a bed or is being returned to its stored position beneath the sofa portion.

A further object of the invention is to provide novel means for supporting the extensible section when it has been entirely withdrawn from its stored position.

A further object of the invention is to provide a convertible sofa with a swinging back which is placed in an inclined position when the extensible member is stored beneath the sofa portion and the piece of furniture is being used as a sofa, but which is swung into a more nearly vertical position when the extensible member has been withdrawn, thereby to convert the piece of furniture into a bed. By this construction, the back is given a proper position to provide a comfortable back for the sofa, but the swinging of the back into its more nearly vertical position when the extensible section is withdrawn provides a wider bed.

When the extensible section is pulled out to convert the piece of furniture into a bed, the cushions of the sofa portion are used as the mattress for the extensible section, and in the construction herein shown, a cover is provided which is normally rolled up on a spring roller and which can be unrolled from the spring roller and drawn across the mattress elements of the bed when the furniture is to be converted into a bed.

Further objects of the invention are to improve generally devices of this type in the manner hereinafter more fully set forth and then pointed out in the claims.

In the drawings, wherein we have illustrated a selected embodiment of our invention;

Fig. 1 is a vertical sectional view through a sofa embodying our invention, the extensible section being shown in its stored position beneath the sofa portion and the upholstery being omitted in order to simplify the drawings.

Fig. 2 is a similar sectional view showing the extensible section pulled out into its position for converting the article of furniture into a bed.

Fig. 3 is a partial section similar to Figs. 1 and 2 but illustrating the operation of withdrawing the extensible section.

Fig. 4 is a front view of Fig. 2.

Fig. 5 is a section through one corner of the sofa on the line 5—5, Fig. 1.

Fig. 6 is a fragmentary sectional view showing the operation of the supporting slide by which the extensible section is supported as it is withdrawn from beneath the sofa portion.

Fig. 7 is a fragmentary vertical section through the front rail of the frame of the sofa portion showing the skirt member which conceals the extensible section in its operative position.

Fig. 8 is a similar view showing the skirt member in its lowered or inoperative position which it assumes when the extensible section is to be withdrawn.

Fig. 9 is a section on the line 9—9, Fig. 8.

Fig. 10 is a fragmentary sectional view showing means for locking the skirt portion in its operative position.

Fig. 11 is a fragmentary sectional view illustrating the supporting legs for supporting the front edge of the extensible section as it is being withdrawn.

Fig. 12 is a section on the line 12—12, Fig. 11.

Fig. 13 is a fragmentary view showing the means for supporting the extensible section when the furniture is being used as a bed.

Fig. 14 is a section on the line 14—14, Fig. 13 showing the leg folded.

Fig. 15 is a section on the line 15—15, Fig. 14.

The fixed or sofa portion of my improved sofa is indicated generally at 1 and the frame thereof comprises the front rail 2 and rear rail 3 which are connected by end rails 4, said frame having the legs 5 and also having the frame portion 6 for the arms of the sofa and a back portion 7 supporting the back of the sofa.

It will be understood, of course, that the arms and back are provided with the usual upholstery, the upholstery of the arms being omitted from the drawings in the interests of clearness.

The seat of the sofa comprises the spring mattress or padding shown in dotted lines at 8, this being conveniently supported on burlap strips which are secured to the side and end rails of the frame, as usual in furniture of this nature. There is shown at 9 in dotted lines in Fig. 1 a seat cushion which is placed on the mattress or bedding 8, and it is a common expedient to divide the entire seat cushion of a sofa into two, three or more sections.

The extensible section which is normally stored beneath the seat of the sofa portion when the piece of furniture is being used as a sofa, but which can be withdrawn or extended to form with the sofa a bed, is indicated generally at 10. This extensible section comprises the front rail 11, the

rear rail 12 and the two end rails 13 which connect the front and rear side rails. This frame comprising the front and rear rails and the end rails supports a bed bottom spring structure 14 which may have any suitable or usual construction.

When the extensible section is in its stored position beneath the seat of the sofa portion, as shown in Fig. 1, the end rails 13 of the extensible section rest on and are supported by the horizontal flanges 15 of two angle iron members 16 that are secured to the end rails 4 of the sofa frame.

The sofa frame has at its front a removable skirt member 17 which is provided with appropriate upholstery, as indicated by the dotted lines 18, and which normally occupies a position in front of the extensible section 10, and thereby conceals the latter when the furniture is being used as a sofa.

When the extensible section 10 is to be withdrawn into the position shown in Fig. 2, the skirt 17 is swung downwardly into its inoperative position shown in Fig. 2 beneath the extensible section 10, so that the latter is free to be drawn forward along the horizontal flanges 15 of the angle iron members 16.

The extensible section 10 is provided with folding supporting legs which are in their folded position when said extensible section is in its stored position shown in Fig. 1, but are automatically swung downwardly into open position for supporting the extensible section as the latter is withdrawn from beneath the sofa frame.

There are two such folding supporting legs, one pivoted to each end rail 13 of the extensible section. These folding supporting legs are shown at 19, and each is pivotally secured at its upper end to its end rail 13. Each leg 19 is shown as formed of sheet metal which is bent to provide the front face 20 of the leg and the two side faces 21, and the edges of the side faces are bent inwardly as indicated at 22 and then bent backwardly toward the front face as indicated at 23. Each leg is pivotally mounted on a pivotal pin 24, one end of which is carried by the vertical leg of the angle iron end piece 13, and the other of which is carried by the plate 25 that is secured to the horizontal leg of the angle iron 13.

Cooperating with each supporting leg 19 is a brace member 26 which is pivoted to the end rail 13 at 27 and the free end of which enters between the two inturned flanges 23 as best seen in Figs. 11 and 12. Each flange 23 is provided with a notch 28 and the brace 26 is formed with a transversely extending pin 28a adapted to be seated in said notches when the leg 20 is in its operative position. 29 indicates a spring element having two arms connected by a coil 30. One arm 31 bears against the horizontal flange of the end rail 13 and the end of the other arm 32 is provided with a hook portion 33 which hooks over the brace 26. The tendency of the spring is to swing the brace 26 downwardly into its operative position shown in Fig. 1. This leg 19, however, can be folded up against the horizontal arm of the angle iron end rail 13, as shown in dotted lines, Fig. 11, and when so folded, the spring 29 will be placed under increased tension.

When the extensible section 10 is in its stored position, as shown in Fig. 1, the two legs 19 are in their folded position lying on the horizontal flange 15 of the angle iron supporting member 16.

When the extensible section 10 is pulled outwardly to convert the sofa into a bed, the legs 19 will slide along the angle iron member 16 until said legs have been carried beyond the front edge of said supporting member 16, and when the extensible section reaches this position, the spring 29 acting on the brace 26 will swing the leg downwardly into its operative position shown in Fig. 3. At this time, while the extensible section is thus partially withdrawn, the front edge thereof will be supported by the legs 19 while the rear edge is still being supported by the angle iron member 16. Each of the legs 19 is preferably provided at its lower end with a roll 34 which rests on the floor 35 and makes a rolling support for the extensible section 10. These legs 19 thus relieve the operator from the necessity of carrying the weight of the front edge of the extensible section while the latter is being extended, all that is necessary for the operator to do being to pull forwardly on the extensible section to withdraw it.

Each of the angle iron supporting members 16 is provided with a sliding support 36 which is movable from its retracted position shown in Fig. 3 to its extended or operative position shown in Fig. 6 and which, when in its operative position, provides a support for the rear edge of the extensible section 10 during the final withdrawing movement of the latter. There are two of these sliding supports 36, one associated with each of the angle iron supporting members 16. Each sliding support has a horizontal base portion 37 resting on the horizontal flange 15 of the angle iron member 16 and each base 37 has one or more headed studs 38 which operate in a slot 39 formed in the horizontal flange 15 of the angle iron member 16. Each sliding support 36 is also provided with a vertical flange 40 having an inclined rear end 41 and also having a shoulder 42. During the latter part of the forward movement of the extensible section 10, the rear rail 12 thereof will ride up the inclined portion 41 of the vertical flange 40 and just before the extensible section has reached the limit of its forward movement, said rear rail 12 will engage the shoulder 42, so that during the final withdrawing movement of the section 10, the sliding support 36 will be moved forwardly from the position shown in Fig. 3 into the position shown in Fig. 6, and thereby will form a support for the rear edge of the extensible section 10 when the latter has been fully withdrawn.

The folding legs 19 and the sliding supports 36 form a temporary support for the extensible section 10 when it is completely withdrawn from beneath the sofa portion. The permanent support for the extensible section, when the piece of furniture is being used as a bed, is provided by the supporting legs 43 which are pivoted to the front and rear rails 11 and 12 and are normally folded up into a closed position directly beneath the bed bottom 14, as shown in Fig. 13. There are two pairs of legs 43, one adjacent each end of the extensible section and in the preferred construction, the lower ends of the legs of each pair are connected by a cross member 44. These permanent legs can conveniently be made of a length of tubing which is bent into the general U-shape shown in Fig. 2, and while any suitable pivotal connection between the legs and the front and back rails may be provided, we prefer to employ that shown best in Figs. 13 and 14. The upper end of each leg portion 43 is bent laterally, as shown at 45, and the laterally bent portion is pivotally mounted on a stud 46 which is anchored in the front rail or back rail. These permanent legs 43 may thus

be swung into their inoperative position shown in dotted lines, Fig. 13, or may be swung downwardly into their operative position shown in Figs. 2, 4, and 13. These permanent legs may be retained in their inoperative or folded position by means of spring retainers 47 which are secured to the front rail 11, the free end 48 of each spring retainer being bent laterally and provided with a concave seat 49 in which one of the legs 43 may be received. These retainers yieldingly hold the legs 43 in their folded position, but by applying sufficient downward pull on the legs, they may be released from the retainers and swung downwardly into their operative positions. These legs 43 are longer than the temporary supporting legs 19 and when the extensible section has been pulled forwardly free from the sofa section, then the operator releases the legs 43 and raises each end of the extensible section to permit the legs to swing downwardly into their operative supporting position. The front rail 11 and rear rail 12 of the extensible section are each provided with stop flanges 50 with which the legs 43 have engagement when they are in their operative position. These flanges are slightly inclined, so that the operative position of the permanent supporting legs 43 is an inclined position, as shown best in Fig. 4. The legs 43 at the opposite ends of the extensible section, therefore, incline downwardly and away from each other so that the weight on the extensible section will maintain the legs firmly against the inclined stop flanges 50, thus obviating any possibility that the legs will collapse when the piece of furniture is being used as a bed.

When the extensible section has been withdrawn into its operative position shown in Fig. 2, and is properly supported on the permanent legs 43, then the bed is completed by shifting the seat cushions 9 from the pad 8 onto the bed bottom 14 of the extensible section, also shown in Fig. 2. The thickness of the seat cushions 9 is such that when they are placed on the bed bottom 14, the upper surface thereof comes flush with the spring or mattress structure 8 of the sofa.

51 indicates a pad or cover which may be drawn across the mattress member 8 and the cushions 9 to provide a smooth bed bottom. This pad 51 is normally wound up on a spring roller 52 which is journaled in two brackets 53 carried by the sofa frame 1 at its back side, there being one bracket at each end of the sofa frame. The pad 51 is normally rolled up on the spring roller 52 as shown in Figs. 1 and 3, but it can be unrolled from the roller and pulled across the mattress member 8 and cushions 9 when the extensible section has been extended, as seen in Fig. 2. This pad or cover is provided at its free edge with a stick 54 similar to the stick in an ordinary shade, and it is also provided at its edge with one or more hooks 55 adapted to hook over the edge of the vertical leg of the front rail 11, as shown in Fig. 2, thereby to retain the cover or pad in its operative position.

The back of the sofa has a pivoted back section 56 which section is hinged at its upper edge to the back 7 of the sofa frame, as shown at 57. This swinging back member 56 is provided with the usual upholstery 58. Means are provided whereby when the extensible section 10 is in its stored position, the lower end of the swinging back 56 will be swung forwardly, thus providing a back for the sofa which is properly inclined to provide a comfortable sofa back. When the extensible member 10 is pulled forwardly, the lower end of the back section 56 swings backwardly so that said back section has a more vertical position, thereby providing additional width to the bed. At each of the ends the lower edge of the hinged back section 56 is pivotally connected by a pin and a slot joint 59 to the upper end of a lever 60 which is pivoted to the brackets 53. The lower end 61 of each lever extends into a position to be engaged by the rear rail 12 of the extensible section when the latter is in its stored position, as shown in Fig. 1. The engagement of the rear rail 12 with the lower end 61 of each lever 60 swings the levers in a clockwise direction from the position shown in Fig. 2, thereby swinging the lower end of the back section 56 forwardly into its operative position.

When the extensible section 10 is pulled forwardly out of engagement with the lower end 61 of the lever 60, then the weight of the back section 56 causes the lower end to swing backwardly into the position shown in Fig. 2, thereby giving increased width to the bed.

We have referred above to the removable skirt 17. This skirt is supported by a special hinge construction which permits it to swing from its operative vertical position shown in Figs. 1 and 7 into a lowered horizontal position beneath the extensible section 10, as shown in Figs. 2 and 8. This skirt 17 has two plates 62 secured to the inside thereof, one at each end, and each plate has two links 63 and 64 pivoted thereto at its opposite ends. These links 63 and 64 are also pivoted to another plate 65 secured to the underside of the angle iron member 16. The length of the link 63 is the same as the distance between the pivotal connections 66 and 67 of said links 63 and 64 with the plate 65. When the skirt 17 is in its lowered position, shown in Figs. 2 and 8, the operation of swinging said link into its operative position shown in Figs. 2 and 7 consists in first swinging the skirt forwardly about the two parallel links 63, 64, into the dotted line position, Fig. 8. This brings the pivotal point 68 between the link 63 and the plate 62 into axial alinement with the pivotal connection 67 between the link 64 and the plate 65, and also folds the link 64 against the inside of the skirt 17. Said skirt may then be turned about the alined pivotal points 67, 68, as an axis, and swung into its operative position shown in Figs. 1 and 7.

The skirt may be held in its operative position by any suitable means, and we have herein shown for this purpose a catch 69 carried by the front rail 2 of the sofa frame, and a spring-pressed latch plate 70 carried by the skirt 17. This latch plate is slidably mounted in a suitable housing 71 and is provided with an opening 72 to receive the catch 69. The latch member 70 is acted on by a spring 73 tending to hold it in locking engagement with the catch and the lower end 74 of the latch member operates in a recess 75 formed in the lower edge of the skirt 17. When the skirt is swung into its operative position, the pointed end of the catch 69 will pass through the opening 72 in the latch member and the upper edge of said opening will ride up the inclined face of the catch and then drop behind the shoulder of the catch under the action of the spring 73, thereby locking the skirt in its operative position. When the skirt is to be released, the operator pushes upwardly on the lower end 74 of the latch member, thereby releasing the latch member from the catch 69. The skirt may then be swung forwardly into the dotted line position, Fig. 8, from which position it

will swing by gravity to its lowered position shown in full lines, Fig. 8.

The skirt 17 extends the full length of the sofa from one end to the other thereof, as shown in Fig. 4, and is, therefore, somewhat longer than the extensible section 10.

When the extensible section is pulled forwardly, it passes over the lowered skirt 17, and the folding legs 19 do not drop down into their operative position shown in Fig. 3 until after they have passed forwardly to a position in front of the lowered skirt 17. During the forward movement of the extensible section, the permanent legs 43 are in their folded position shown in dotted lines Fig. 13, and hence the lowered skirt does not in any way interfere with the movement of the extensible section from its stored position to its operative position.

When the extensible section is moved backwardly into its stored position, the braces 26 of the legs 19 will be brought into engagement with the front edge of the angle iron rails 16, and the pressure of the rails against said braces 26 will cause the legs 19 to be folded up against the under side of the extensible section, as shown in Fig. 1.

It will be understood, of course, that before the extensible section is moved backwardly, the supporting legs 43 will have to be folded into their dotted line positions, shown in Fig. 13. When this is done, the rear edge of the extensible section 10 will drop downwardly onto the extended sliding support 40 and the front end of said extensible section will drop down onto the folding legs 19. When the extensible section is in this lowered position, then it can be moved backwardly into its stored position on the angle iron rails 15, and during such backward movement, the legs 19 will be folded as above described, and during the final portion of such backward movement, the front rail 11 will engage the sliding supports 36 thereby returning them to the position shown in Fig. 1. When the extensible section has been thus placed in its stored position, the skirt 17 may be swung upwardly into its operative position also shown in Fig. 1, as described above.

We claim:

1. A convertible sofa comprising a sofa portion having a seat and provided with horizontal supporting flanges at its ends beneath the seat, an extensible section normally occupying a stored position beneath the seat in which it rests on said flanges, said extensible section having a back rail, folding supporting legs pivotally secured to the extensible section for supporting the front part thereof as it is being extended, sliding supports mounted on the supporting flanges at the front thereof, each being slidable on its flange forwardly to carry its front end into an extended position and having an upstanding rearwardly directed shoulder adapted to be engaged by the back rail of the extensible member during the final portion of its movement into operative position, said sliding supports providing means to support the rear edge of the extensible section when the latter is fully extended.

2. A convertible sofa comprising a sofa portion having a seat and also having horizontal supporting flanges beneath the seat, one at each end, an extensible section movable from a stored position beneath the seat in which it is supported on said flanges to an extended operative position, folding legs pivotally secured to the extensible section for supporting the front part thereof as it is being extended, a sliding support carried by each flange at the front end thereof and having a limited forward and backward sliding movement relative thereto, each sliding support having an upstanding rearwardly facing shoulder adapted to be engaged by the rear edge of the extensible section during the final portion of the movement of the latter into its extended position, whereby during such final movement the sliding supports are moved forwardly into position to support the rear portion of the extensible section when the latter has been carried beyond the limits of the supporting flanges.

3. A convertible sofa comprising a sofa portion having a seat and a supporting flange beneath the seat at each end, an extensible section normally occupying a stored position beneath the seat in which it rests on said supporting flanges but movable to an extended operative position, means to support the extensible section in its operative position, a removable panel at the front edge of the sofa portion which, when in operative position, conceals the stored extensible section, a pivotal connection between said panel and each supporting flange, which permits the panel to swing from its operative position downwardly into an inoperative position below the extensible section, each pivotal connection comprising a pair of links of equal lengths pivoted at one end to the supporting portion and at the other end to the panel, the links of each pair being spaced apart in a direction transversely of the panel a distance equal to the length of the links, whereby, when the panel is in operative position, the pivotal connection of the rear link of each pair with the panel is alined with the pivotal connection of the front link of each pair with the supporting flange.

4. A convertible sofa comprising a sofa portion having legs and also having a supporting flange beneath the seat thereof at each end, an extensible section provided with end rails resting on said flanges, said extensible section being slidable on said flanges from a stored position beneath the seat of the sofa portion to an extended operative position, a leg pivoted to each end rail of the extensible section at a point spaced from the front end thereof a distance as great as the length of the leg, each leg being held in a folded position parallel to the end rail and resting on said flange and with its lower end directed forwardly when the extensible section is in its stored position, each leg having an open forwardly facing notch, a brace member pivoted to each end rail at a point in the rear of the pivotal point of the corresponding leg and having its free end in engagement with said leg, and a spring acting on each brace member and yieldingly holding it against the leg, whereby when the extensible section is pulled forwardly to a point where the legs are carried beyond the supporting flanges of the sofa portion, the springs acting through the brace members swing the legs downwardly into a vertical position in which the ends of the brace members enter and have locking engagement with the notches of the legs.

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