

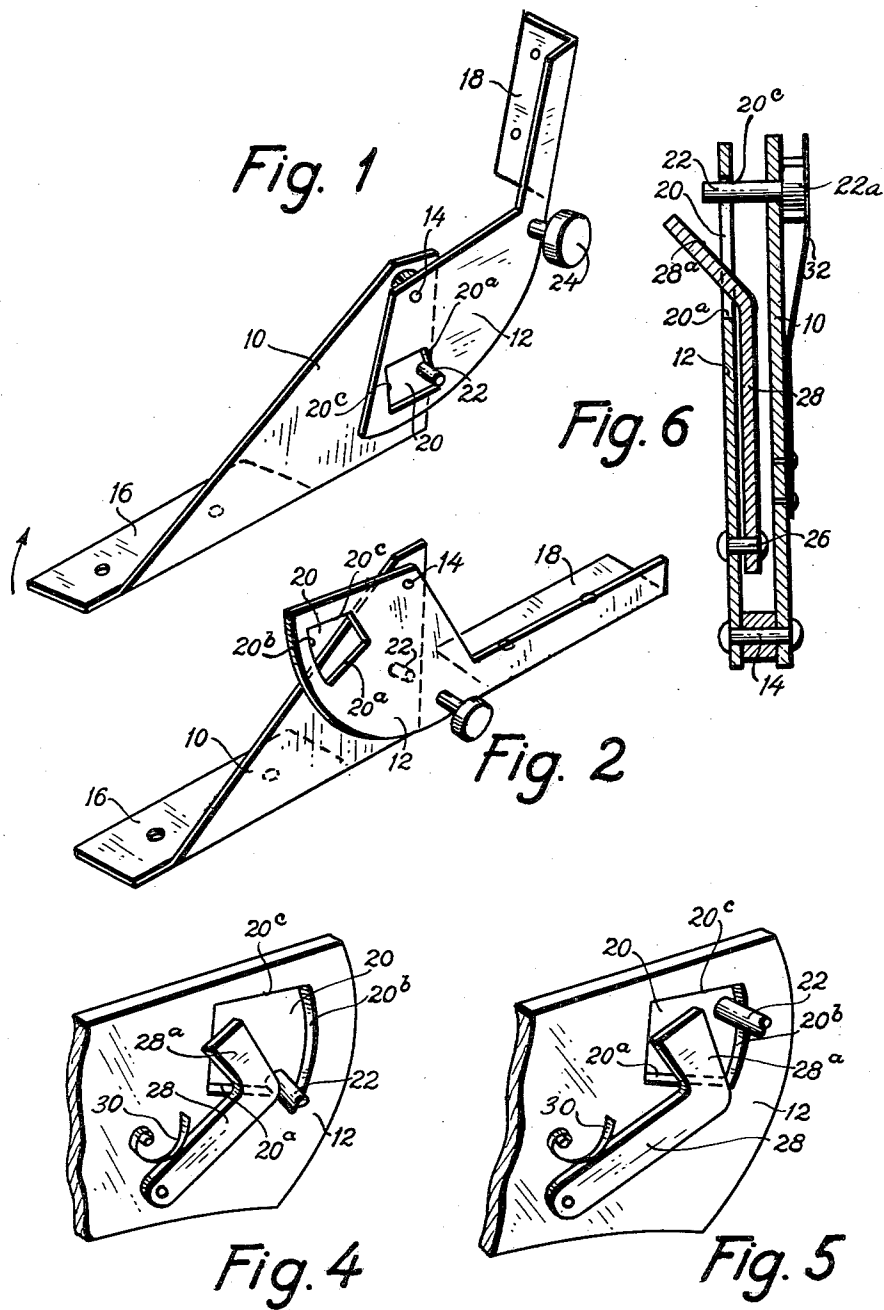
July 10, 1962

K. D. NIELSEN
CONVERTIBLE SOFAS

3,042,935

Filed Feb. 5, 1959

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

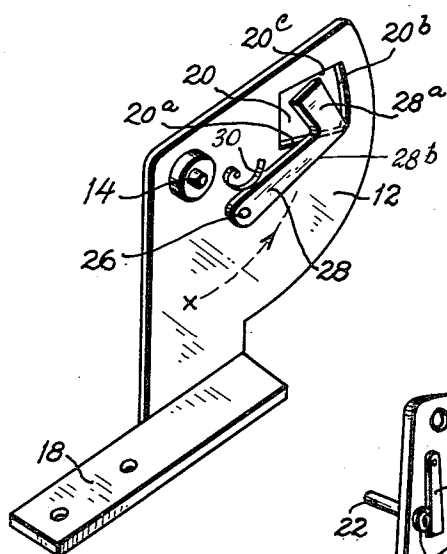


Fig. 3

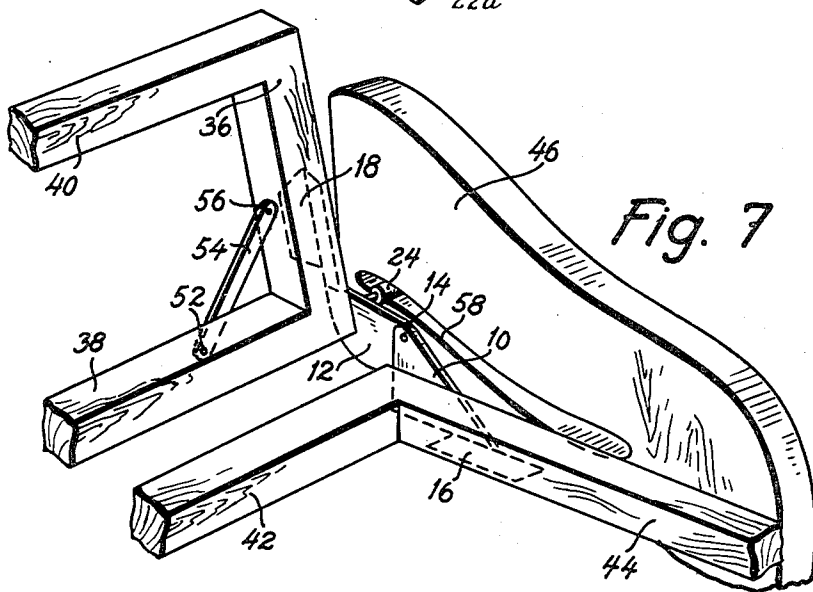
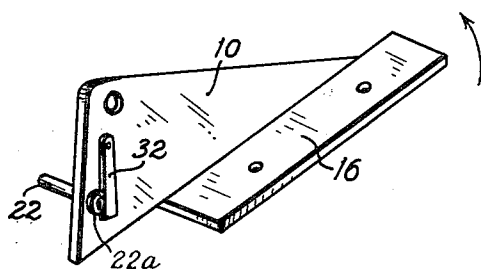


Fig. 7

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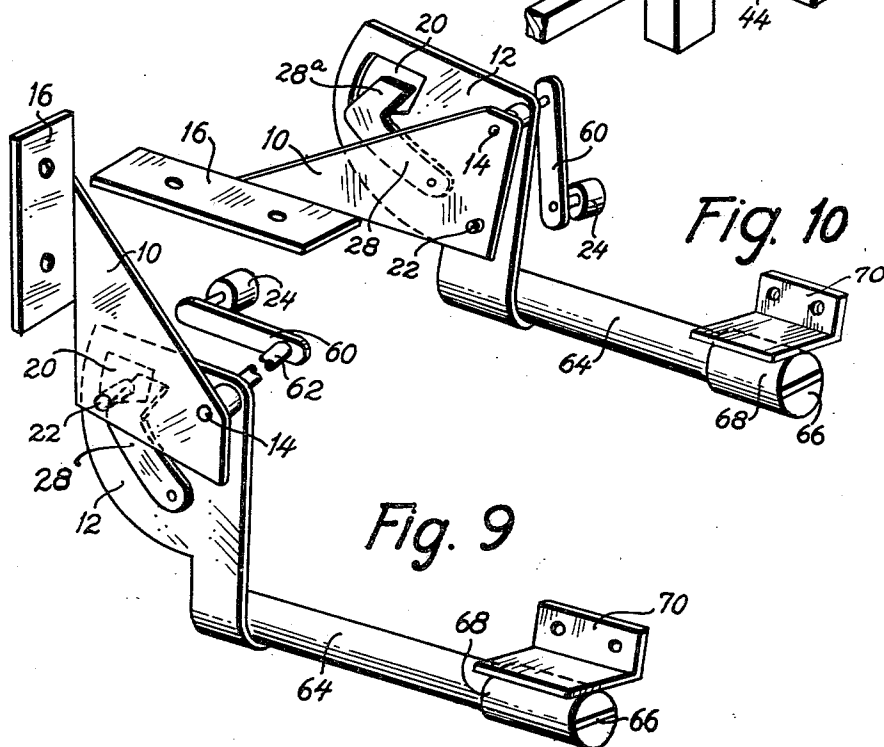
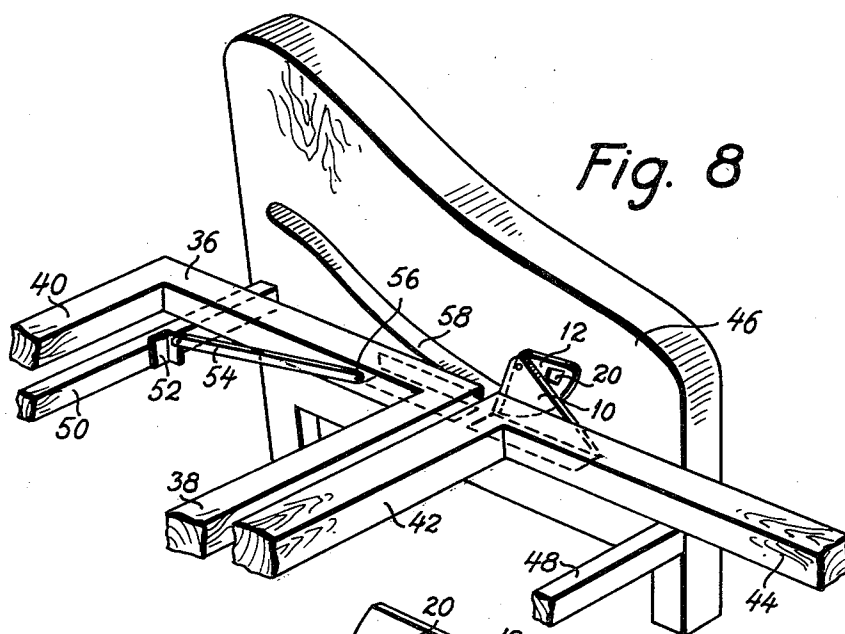
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4 Sheets-Sheet 3



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4 Sheets-Sheet 4

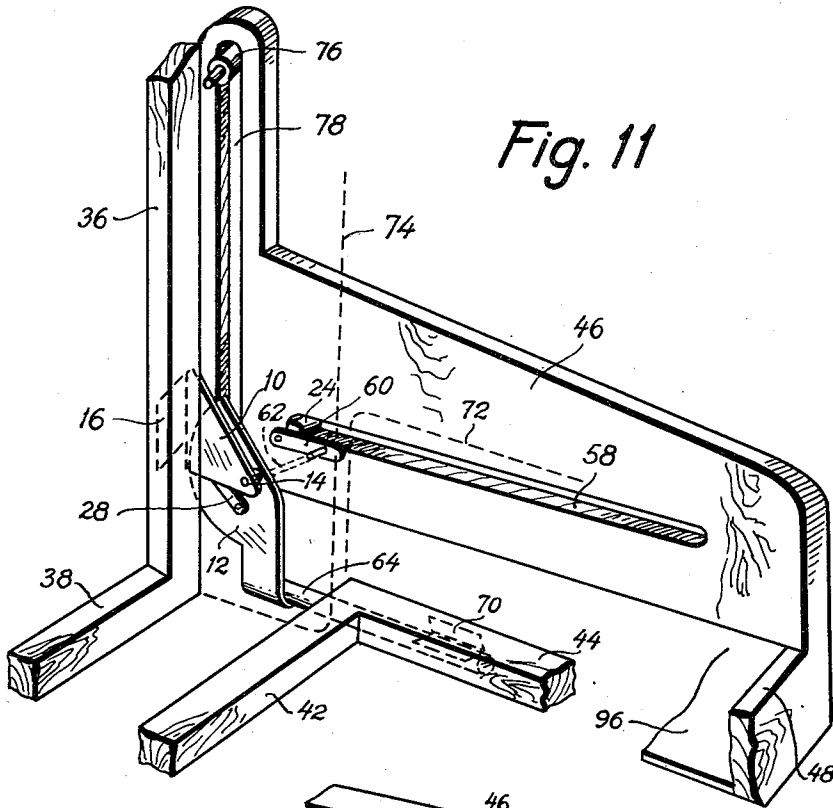


Fig. 11

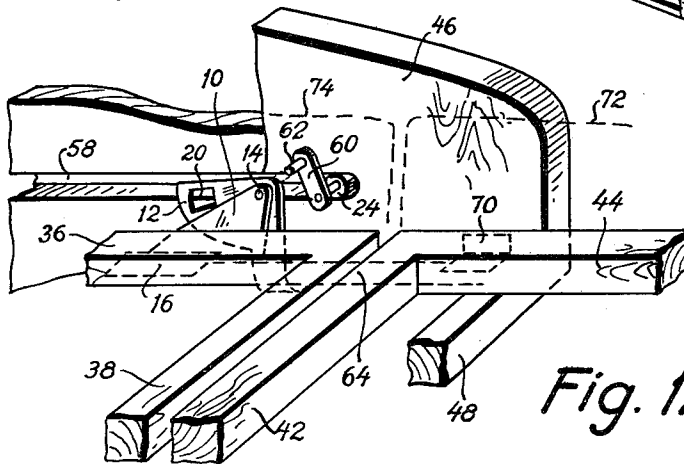


Fig. 12

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1

3,042,935

CONVERTIBLE SOFAS

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Claims priority, application Denmark Feb. 6, 1958

12 Claims. (Cl. 5—57)

The present invention relates to a convertible furniture which can be easily transformed at will into an ordinary sofa with seat and back rest, or into a bed by lowering the back to horizontal position in juxtaposed position relatively to the seat.

It is an object of the invention to provide a bed-sofa having a back rest secured to a pair of hinge parts and a seat secured to a pair of hinge parts which is simple in construction and reliable in operation.

It is a further object of the invention to provide a bed-sofa of the type hereabove mentioned in which the hinge structures containing the seat and back rest have no projecting parts which can damage the upholstery.

It is a further object of the invention to provide a bed-sofa of the type hereabove specified in which the hinge structures are relatively flat.

It is still a further object of the invention to provide a bed-sofa of the type specified in which the hinge structures can be of relatively small dimensions so as to enable the entire sofa to be constructed with relatively thin upholstery thereby having a light and elegant appearance.

The invention will be further described in the following with reference to the accompanying drawing, in which—

FIGURE 1 is a perspective view of a part of a hinge structure for a sofa according to the invention showing the latch means only in the "sofa position,"

FIGURE 2 is the hinge structure shown in FIGURE 1 in the "bed position,"

FIGURE 3 is an exploded view of the hinge structure shown in FIGURES 1 and 2,

FIGURES 4 and 5 are details of the hinge structure in latch position and release position respectively,

FIGURE 6 is a section through the complete hinge structure shown in FIGURES 1 and 2 including the latch release means,

FIGURE 7 is a perspective view of a corner of a sofa according to the invention in the "sofa position,"

FIGURE 8 is the same corner in the "bed position,"

FIGURE 9 is another embodiment of the hinge structure shown in FIGURE 1 in the same position as FIGURE 1,

FIGURE 10 is a structure shown in FIGURE 9 in a position corresponding to FIGURE 2,

FIGURE 11 is a corner of a sofa showing the structure according to FIGURES 9 and 10 in the "sofa position," and

FIGURE 12 is a sofa corner shown in FIGURE 11 in the "bed position."

The hinge structure shown in FIGURES 1–6 includes two plate formed members 10 and 12 which can be swung relatively to each other about a hinge pin 14. The plate 10 has a flange 16 to which, as shown in FIGURES 7 and 8, the frame of the seat is secured and the plate 12 has a flange 18, to which the frame of the back rest is secured.

In the plate 12 an aperture 20 is provided having an edge 20a, which in the "sofa position" as shown in FIGURE 1 is in engagement with a latch pin 22 on the plate 10. The pin 22 extends through the aperture 20 and is mounted in the member 10 for reciprocation in its axial direction against the action of a spring 32, see FIGURE 3. When the pin 22 is reciprocated as it will be explained nearer with reference to FIGURES 3–6, the plate formed members 10 and 12 can be swung to a position

2

shown in FIGURE 2 in which the flanges 16 and 18 are in the same plane, i.e. the "bed position."

A hinge structure of this kind is provided at each end of the seat and back rest. The two hinge portions are provided with a pin or guide roller referred to by 24 in FIGURE 1. The roller 24 is guided in a slot in the side pieces of the sofa so that when the seat is pulled in forward direction, the roller 24 will run in the slot.

As it appears from FIGURES 1 and 2 each of the plate formed members 10 and 12 has an area covering or lying opposite the other plate formed member, and as appears from FIGURE 2 this area is increased when the angle between the flanges 16 and 18 is increased.

As shown in FIGURES 3–6 a lever or arm 28 is swingingly supported on the plate 12 about a pin 26 and located in the space between the plates 10 and 12. The arm 28 is of substantially linear configuration until the edge 20a of the aperture 20. Beyond this edge the arm 28 has an end 28a which forms an angle with the longitudinal direction of the arm and furthermore, as most clearly seen in FIGURE 6, is bent so as to form an angle with the plane of the arm and the plane of the plate 12 so that the extension 28a of the arm extends through the aperture 20 and defines a cam surface. A spring 30 serves to retain the arm 28, 28a in such a position that its extension 28a engages an edge 20b of the aperture 20 remote from the hinge pin 14.

The latch pin 22 is supported in a hole in the plate 10 and at the rear side thereof the pin 22 has a head 22a to prevent the pin from being pushed through the hole. The pin is retained in the projecting position shown in FIGURES 1 and 3 by means of a leaf spring 32 on the rear side of the plate 10, see FIGURE 3.

The pin 26 about which the arm 28 can swing is located so much nearer to the hinge pin 14 than the latch pin 22 that, during swinging of the plate 10, the pin 22 which is moved through a circular path as indicated in dotted lines in FIGURE 3 will engage the lower edge 28b of the arm 28 and thereby cause the arm 28 to be swung from the position shown in FIGURE 3 to the position shown in FIGURE 4.

Such movements of the parts is caused when it is desired to transform the furniture from bed to sofa by swinging the front end of the seat upwardly. When the hinge parts have reached the position shown in FIGURE 4 a "click" will be heard which is an indication that the latch pin 22 has latched behind the edge 20a. In this position the seat is pressed down and the pin 22 will remain in engagement with the edge 20a whereby the back rest will be raised.

When, from this position, it is desired to transform the sofa to a bed, the front edge of the seat is lifted. Hereby the hinge parts are swung relatively to each other from the position shown in FIGURE 4 to the position shown in FIGURES 5 and 6. Due to the inclination of the extension 28a of the arm 28 the engagement between the arm 28 and the pin 22 is thereby released, and the arm 28 is under influence of the spring 30 swung to a position shown in FIGURES 3 and 5, i.e. into engagement with the edge 20b of the aperture 20. Hereby the hinge parts can be swung back relatively to each other from the position shown in FIGURE 1 to the position shown in FIGURE 2. The surface of the extension 28a which faces the plate 10 acts as an inclined cam and causes the latch pin 22 to be pushed back against the action of the spring 32. As apparent from FIGURES 5 and 6 the relative movement of the hinge members 10 and 12 in a direction to disengage the latch pin 22 from the latching edge 20a releases the pivotable arm 28 with the cam surface 28a from its engagement with the latch pin, and the bias provided by the spring 30 pivots the arm 28 until it engages the edge 20b which thereby

3

provides a stop for the arm 28 in such a mutual position to the end of the latch pin 22 that relative movement of the hinge parts 10 and 12 in an opposite direction will cause the latch pin 22 to engage the inclined cam surface 28a whereby the latch pin will be reciprocated or pushed back against the action of the spring 32.

As will be appreciated from FIGURES 5 and 6 the relative swinging movement between the hinge parts 10 and 12 in the direction of disengagement between the latch pin 22 and the edge 20a is limited by the edge 20c of the aperture 20 opposite the edge 20a, the edge 20c providing a stop for the latch pin.

In the corner of the sofa as shown in FIGURES 7 and 8 having a hinge structure as described here above, the flange 18 of the plate is secured on an end piece 36 of a back rest frame having horizontal frame pieces 38 and 40 and the flange 16 of the plate 10 is secured on an end piece 44 of a seat frame the rear frame member being referred to by 42.

The sofa has a side member 46 connected with another side member, not shown, at the other end by means of a front frame 48 and a rear frame piece 50 such as shown in FIGURE 8. As also shown in FIGURE 8 a bracket 52 or the like is secured on the rear frame piece 50. An arm 54 is swingingly connected to the bracket 52 as well as to the frame end piece 36 at 56.

It will be appreciated that by the connection with the two hinge parts the seat frame and the back rest frame form a unitary structure in which a relative swinging movement of the seat frame and back rest frame is possible. The two frames are, however, movable in the stationary sofa frame including the side members as a unit with the roller 24 guided in a slot 58 and with the movement of the back rest governed by the swinging of the arm 54 when the roller moves in the slot 58.

When it is desired to transform the sofa from the "sofa position" as shown in FIGURE 7 to the "bed position" as shown in FIGURE 8, the front edge of the seat frame is lifted until the "click" is heard in the mechanism as mentioned here above corresponding to the latch position of the pin 22 as shown in FIGURE 4, behind the edge 20a. When in this position the front edge of the seat is pulled out, the roller 24 will, guided in the slot 58, cause the seat and back structure to be moved as a unit. Since the part 56 is bound to move in a circular path with its centre in the point of connection between the arm 54 and the bracket 52, this will result in lowering the back rest frame to a position engaging the top of the stationary frame piece 50.

It will be understood that the lower front end of the slot 58 must be located in such a manner that in the "bed position" the roller 24 is in a position so that the back rest as well as the seat are in horizontal position, the seat being supported on the top of the stationary frame member 48.

As seen in FIGURE 1 the roller 24 is secured to the hinge part 12 in spaced relationship relatively to the hinge point 14. As it will be appreciated when comparing FIGURE 1 and FIGURE 2, this results in a lowering of the hinge pin 14 relatively to the roller 24 when the parts are raised to the "sofa position." This lowering can be used to give the seat a desired sloping position by suitable selection of the configuration of the slot 58.

The hinge structures shown in FIGURES 9 and 10 are designed to be connected with the seat frame in such a manner that the hinge pin 14 is spaced behind the seat frame, i.e. behind the seat upholstery, such as shown in FIGURES 11 and 12. By suitable dimensioning of the hinge structure it is hereby possible that the lower edge of the back rest can be lowered behind the surface of the seat when the furniture is transformed to the "sofa position." This is of specific advantage in the case that both the seat and the back rest are of substantial width so as to use the sofa as a twin-bed. If, in the case of such a sofa the axis about which the back rest and

4

seat are swung relatively to each other is located in the line of intersection between the back rest and seat the back rest will be raised in its full width which gives the furniture a clumsy appearance.

The hinge structure shown in FIGURES 9 and 10 differs from the structure shown in FIGURES 1 and 2 by being "inverted" i.e. so that the part 12 is nearest the side of the sofa and connected with the seat frame, while the part 10 on which the latch pin 22 is located is arranged remote from the side of the sofa.

The latch arrangement and the release arrangement are identical with the embodiment shown in FIGURES 1 and 2, and therefore corresponding parts in FIGURES 9 and 10 are referred by the same reference numerals.

In order to raise and lower the hinge pin 14 relatively to the guide roller 24 so as to enable the seat to assume a sloping position in the "sofa position" of the furniture the roller 24 is, according to the embodiment shown in FIGURES 9 and 10, supported on the end of an arm 60 which is rigidly secured on a pin 62, the other end of which is rigidly secured to the hinge portion 10 and extends through a bushing or the like on the hinge portion 12 so that this portion can swing on the pin 62 as hinge pin. It will be appreciated that this has the same effect as if the roller 24 were secured directly on the plate 10 in spaced relationship relatively to the hinge pin 14.

The hinge portion 12 is provided with an extension 64 which in the embodiment shown is in the form of a tubular member to the front end of which a second tubular member 68 is secured, for example by a screw or the like 66. The tubular member 68 carries a flange 70 by means of which the end of the extension 64 is secured to the seat frame. The extension 64 may within the scope of the invention also be in the form of an L-iron. Since, as it will appear from the following, the arm represented by the extension 64 is subjected to a substantial load it should have a certain rigidity and for this reason it is convenient to use a tubular member.

In the views FIGURES 11 and 12 showing the connection of the hinge structure according to FIGURES 9 and 10 with the parts of the sofa, the limits of the seat upholstery is indicated by dotted lines 72 and the limits of the back rest upholstery is indicated by dotted lines 74.

The extension 64 of the hinge part 12 and its connection to the seat frame is so adapted that the hinge point is spaced relatively to the rear side of the seat a distance substantially corresponding to half of the thickness of the back rest including upholstery. Preferably the hinge point is also located at a height above the underside of the seat frame which substantially corresponds to half of the thickness of the seat including upholstery provided that the thickness of seat and back rest is the same. It will be appreciated from FIGURES 11 and 12 that when the back rest is swung to be lowered, the lower front edge of the upholstery of the back rest and the lower rear edge of the back rest frame will move in circular paths about the hinge point 14 in such a manner that in the "bed position" the back rest frame will be in the same horizontal plane as the seat frame and in juxtaposed relationship thereto, while the top surfaces of the upholstery will be in horizontal alignment.

By the embodiments shown in FIGURES 11 and 12 the guide slot 58 is of linear configuration. Furthermore the sofa shown in FIGURES 11 and 12 differs from the sofa shown in FIGURES 7 and 8 thereby that instead of guiding the movement of the back rest by the swingingly arranged arm 54, shown in FIGURES 7 and 8, the back rest has adjacent its top end a roller 76 guided in a substantially vertical slot 78 in the side piece of the sofa. The lower end of the slot 78 terminates in spaced relationship from the rear end of the slot 58 so as to provide stop for the roller 76 in the lowered position of the back rest.

It will be understood that the invention is not limited to the embodiments described hereabove, and that further

5

modifications will be possible within the scope of the invention.

I claim:

1. A convertible sofa having two frame sections and a hinge structure at each end of said frame sections operable to swing said frame sections relatively to each other between a mutual bed position substantially in alignment and a mutual sofa position substantially perpendicular to each other, each hinge structure including a first member and a second member, means supporting one of said frame sections on said first hinge member, means supporting the other of said frame sections on said second hinge member, means pivotally connecting said hinge members, a latch pin extending substantially in the direction of the hinge axis, means for mounting said latch pin to reciprocate on said first hinge member between a projecting position and a retracted position, an edge portion of said second hinge member operable to engage with said latch pin in its projecting position when said frame sections are in mutual sofa position, and control means operable to push said latch pin to its retracted position, and means operable to render said control means effective in response to relative movement of said frame sections in a direction to decrease the angle therebetween from the frame sections latched position.

2. A convertible sofa having two frame sections and a hinge structure at each end of said frame sections operable to swing said frame sections relatively to each other between a mutual bed position substantially in alignment and a mutual sofa position substantially perpendicular to each other, each hinge structure including a first hinge member and a second hinge member, means supporting one of said frame sections on said first hinge member, means supporting the other of said frame sections on said second hinge member, means pivotally connecting said hinge members, a latch pin extending substantially in the direction of the hinge axis, means for mounting said latch pin to reciprocate on said first hinge member between a projecting position and a retracted position, an edge portion of said second hinge member operable to engage with said latch pin in its projecting position when said frame sections are in mutual sofa position, a cam member in said hinge structure having an inclined cam surface, means for mounting said cam member to move between a position operative to push said latch pin to its retracted position and an inoperative position, and means operable to move said cam member to said operative position in response to relative movement of said frame sections in a direction to decrease the angle herebetween when from the frame sections latched position.

3. A convertible sofa having two frame sections and a hinge structure at each end of said frame sections operable to swing said frame sections relatively to each other between a mutual bed position substantially in alignment and a mutual sofa position substantially perpendicular to each other, each hinge structure including a first hinge member and a second hinge member, means supporting one of said frame sections on said first hinge member, means supporting the other of said frame sections on said second hinge member, means pivotally connecting said hinge members, a latch pin extending substantially in the direction of the hinge axis, means for mounting said latch pin to reciprocate on said first hinge member between a projecting position and a retracted position, resilient means operable to move said latch pin to its projecting position, an edge portion of said second hinge member operable to engage with said latch pin in its projecting position when said frame sections are in mutual sofa position, a cam member in said hinge structure having an inclined cam surface, means for mounting said cam member to move between a position operative to push said latch pin to its retracted position and an inoperative position, means operable to move said cam member to said operative position in response to relative movement of said frame sections in a direction to decrease the angle therebetween

6

from the latched sofa position, the operative position of said cam surface being opposite to said latch pin so as to engage said latch pin with said cam surface and push said latch pin back against the action of said resilient means in response to mutual swinging of said frame sections in the direction of bed position.

4. A convertible sofa having two frame sections and a hinge structure at each end of said frame sections operable to swing said frame sections relatively to each other between a mutual bed position substantially in alignment and a mutual sofa position substantially perpendicular to each other, each hinge structure including a first hinge member and a second hinge member, means supporting one of said frame sections on said first hinge member, means supporting the other of said frame sections on said second hinge member, means pivotally connecting said hinge members, a latch pin extending substantially in the direction of the hinge axis, means for mounting said latch pin to reciprocate on said first hinge member between a projecting position and a retracted position, an edge portion of said second hinge member operable to engage with said latch pin in its projecting position when said frame sections are in mutual sofa position, a lever pivotally supported on said second hinge member having an inclined cam surface extending beyond said edge of said second hinge member, resilient means operable to move said lever and said cam surface into a position operative to push said latch pin to its retracted position, said latch pin being positioned relatively to said lever to be engaged thereby and to retain said cam surface in an inoperative position in the latching position of said latch pin in engagement with said edge, the mutual position of said latch pin and said cam surface further being so as to release said lever from its engagement with said latch pin in response to swinging of said hinge members relatively to each other in a direction to decrease the angle between said frame sections whereby said resilient means is rendered effective to move said lever to the operative position of said cam surface.

5. A convertible sofa having two frame sections and a hinge structure at each end of said frame sections operable to swing said frame sections relatively to each other about a hinge axis between a mutual bed position substantially in alignment and a mutual sofa position substantially perpendicular to each other, each hinge structure including a first hinge member and a second hinge member, means supporting one of said frame sections on said first hinge member, means supporting the other of said frame sections on said second hinge member, means pivotally connecting said hinge members, a latch pin extending substantially in the direction of the hinge axis, means for mounting said latch pin to reciprocate on said first hinge member between a projecting position and a retracted position, an edge portion on said second hinge member defining an abutment operable to engage with said latch pin in its projecting position when said frame sections are in mutual sofa position, a pivotable member mounted on said second hinge member having an inclined cam portion extending beyond said edge in the direction away from said first hinge member, means operative to bias said pivotable member against said latch pin and to pivot said member further to assume an operative position opposite to said latch pin in response to mutual swinging of said hinge parts in the direction of disengaging said latch pin from said edge so as to render said inclined cam portion effective to push said latch pin back in response to mutual swinging of said hinge members in opposite direction, and stop means on said second hinge member for said pivotable member in said operative position.

6. In a bed-sofa having an elongated seat frame and an elongated back-rest frame, a hinge structure including a pair of hinges each having a first hinge member including supporting means for the seat frame section, and a second hinge member including supporting means for the back-rest frame section, means pivotally connecting each of said hinge members in substantially parallel spaced relationship to enable said frame sections to swing mutually

about an axis substantially parallel with the longitudinal direction of said frame sections, each of said hinges having a latch pin having an extending end and mounted substantially parallel with the direction of said pivot axis, means for mounting said latch pin in one of said hinge members for reciprocation between a retracted position and a projecting position with said latch pin and extending beyond the other of said hinge members, an aperture in said other hinge member for receiving said extending latch pin end and having a first edge for engagement with said latch pin operable to latch said hinge member in a predetermined mutual position in which said frames are in sofa position, an arm swingingly mounted on said other hinge member on the side thereof which faces said first hinge member, said arm having an inclined portion extending through said aperture in said second hinge member, resilient means for engaging said arm with said latch pin in its extending position when said latch pin is in engagement with said first edge of said aperture, a second edge of said aperture operable to limit movement of said arm under influence of said resilient means to a position with said inclined portion of said arm opposite the end of said latch pin when said plate members are swung mutually to disengage said latch pin from said first edge of said aperture, a third edge of said aperture operable to engage with said latch pin for limiting said mutual swinging, whereby upon mutual swinging of said plate members in opposite direction said inclined portion of said arm will act as a cam pressing said latch pin to its retracted position and thereby cause unlatching of said hinge structure to enable said sofa frames to be swung to the bed position.

7. In a bed-sofa having an elongated seat frame and an elongated back-rest frame, a hinge structure including a pair of hinges each having a first plate member including supporting means for the seat frame section, a second plate member including supporting means for the back-rest frame section, means pivotally connecting said plate members in substantially parallel spaced relationship to enable said frame sections to swing mutually about an axis substantially parallel with the longitudinal direction of said frame sections, a latch pin having an extending end and mounted substantially parallel with the direction of said pivot axis, means for mounting said latch pin in one of said plate members for reciprocation between a retracted position and a projecting position, an aperture in said second plate member for receiving said extending end of said latch and having a first edge for engagement with said latch pin operable to latch said plates in a mutual position in which said seat frame and said back rest frame are in sofa position, an arm pivotally mounted on said second plate member on the side thereof which faces said first plate member, said arm having an inclined portion extending through said aperture in said second plate member, resilient means operable to engage said arm with said latch pin in its extending position when said latch pin is in engagement with said first edge of said aperture, a second edge of said aperture operable to provide a stop for said arm when pivoted by means of said resilient means to a position with said inclined portion of said arm opposite the end of said latch pin when said plate members are swung mutually in a first direction to disengage said latch pin from said first edge of said aperture so as to reciprocate said latch pin in response to engagement of the end thereof with said inclined portion of said arm when said plate members are swung mutually in opposite direction of said first direction, said arm having an edge operable to be engaged by said latch pin to swing said arm away from the path thereof when said hinge plates are swung back to said sofa position in said first direction.

8. For use with a convertible sofa having a relatively stationary frame structure, a back-rest frame and a seat frame and means supporting said back-rest frame and said seat frame in said relatively stationary frame structure movable between a bed-position substantially in align-

ment and a sofa-position substantially perpendicular to each other, a hinge structure comprising a first, substantially plate formed member, a second, substantially plate formed member, means pivotally connecting said plate members in spaced relationship, means for mounting said back-rest frame on said first plate member, means for mounting said seat frame on said second plate member, latch means for latching said plate member in a mutual position corresponding to the sofa-position of said back-rest frame and said seat frame comprising a latch pin mounted on said first plate member for reciprocation, resilient means operable to engage said latch pin with said second plate member as well as to project therebeyond, an edge on said second plate member operable to provide a latching abutment for said latch pin when said plate members are swung relatively to a position in which said latch pin has passed beyond said abutment edge and under influence of said resilient means is projected beyond said second plate member, cam means operable to unlatch said latching means by reciprocating said latch pin in a direction against the action of said resilient means, means actuatable by said latch pin for retaining said cam means in inoperative position when said latch pin is in engagement with said latching edge, and means for rendering said cam means effective to unlatch said mechanism in response to a relative movement of said plate members in a direction of disengagement between said latch pin and said latching edge.

9. For use with a convertible sofa having a relatively stationary frame structure, a back-rest frame and a seat frame and means for supporting said back-rest frame and said seat frame in said relatively stationary frame structure movable between a bed-position substantially in alignment and a sofa-position substantially perpendicular to each other, a hinge structure comprising a first, substantially plate formed member, a second, substantially plate formed member, means pivotally connecting said plate members in spaced relationship, means for mounting said back-rest frame on said first plate member, means for mounting said seat frame on said second plate member, latch means for latching said plate member in a mutual position corresponding to the sofa-position of said back-rest frame and said seat frame comprising a latch pin mounted on said first plate member for reciprocation, resilient means operable to move said latch pin to a projecting position beyond said second plate member, an edge on said second plate member operable to provide a latching abutment for said latch pin in a mutual position of said plate members when swung relatively to each other to enable said latch pin to project beyond said second plate member, cam means operable to unlatch said latch means by reciprocating said latch pin in a direction against the action of said resilient means, said cam means including means operable to be actuated by said latch pin in response to mutual swinging of said plate members to said latching position for rendering said cam means inoperative in the position of said latch pin in engagement with said latching edge, and means for rendering said cam means effective to unlatch said mechanism in response to a relative movement of said plate members in a direction of disengagement between said latch pin and said latching edge.

10. For use with a convertible sofa having a relatively stationary frame structure, a back-rest frame and a seat frame and means supporting said back-rest frame and said seat frame in said relatively stationary frame structure movable between a bed-position substantially in alignment and a sofa-position substantially perpendicular to each other, a hinge structure comprising a first, substantially plate formed member, a second, substantially plate formed member, means pivotally connecting said plate members in spaced relationship, means for mounting said back-rest frame on said first plate member, means for mounting said seat frame on said second plate member, latch means for latching said plate member in

a mutual position corresponding to the sofa-position of said back-rest frame and said seat frame comprising a latch pin mounted on said first plate member for reciprocation, resilient means operable to move said latch pin to a projecting position beyond said second plate member, an edge on said second plate member operable to provide a latching abutment for said latch pin in a mutual position of said plate members when swung relatively to each other to enable said latch pin to project beyond said second plate member, cam means operable to unlatch said latch means by reciprocating said latch pin in a direction against the action of said resilient means, supporting means for said cam means, means movably carrying said supporting means on said second plate member, said cam means being in a position relatively to said latch pin to be engaged by said latch pin in response to mutual swinging of said plate members to said latching position for rendering said cam means inoperative in the position of said latch pin being in engagement with said latching edge, and means for rendering said cam means effective to unlatch said mechanism in response to a relative movement of said plate members in a direction of disengagement between said latch pin and said latching edge.

11. In a convertible sofa having a back-rest frame, a seat frame and a relatively stationary frame structure including end pieces in combination, a hinge structure adjacent each end of said back-rest frame and said seat frame, each hinge structure comprising means for supporting the back-rest frame, means for supporting the seat frame, a first hinge portion, a second hinge portion, means pivotally connecting said hinge portions to enable said back-rest frame and seat frame to pivot about an axis parallel with and adjacent the underside of said back-rest frame, said hinge portions being in the form of substantially flat plates in parallel relationship defining a space therebetween, a latch pin mounted for reciprocation in the plate portion nearest said frames, resilient means operable to move said latch pin to a projecting position, an aperture in said other plate portion for receiving said pin in said projecting position and having an edge providing a latching abutment for engagement with said latch pin in mutual sofa-position of said back-rest frame and said seat frame, a pivotable arm mounted on said second plate member in the space defined between said plate members and having an inclined cam portion extending through said aperture in said second plate member beyond said latching edge thereof, resilient means operable to engage said pivotable arm with said latch pin in its latching position, said aperture having a second edge portion opposite said latching edge positively providing a stop for said latching pin when said plate members are swung relatively to each other to disengage said latching pin from said latching edge of said aperture, said aperture having a third edge extending between said first and said second edge operable to positively provide a stop for said pivotable arm with said inclined surface when it is disengaged from said latch pin so as to position said inclined surface opposite said latch pin to render it effective to reciprocate said latch pin in response to relative swinging of said plate members in the opposite direction, a guide roller secured to each

of said hinge structures, a groove in each of said sofa end-pieces for receiving said guide rollers on said hinge structures operable to enable said seat to be reciprocated from a retracted sofa-position to a projecting bed-position, and guide means operatively connecting said back-rest frame with said stationary sofa frame structure operable to swing said back-rest frame from a substantially vertical sofa-position to a substantially horizontal bed-position about the pivot axis of said hinge structures in response to movement of said seat frame to the bed-position.

12. For use with a convertible sofa having a relatively stationary frame structure, a back-rest frame and a seat frame and means supporting said back-rest frame and said seat frame in said relatively stationary frame structure movable between a bed-position substantially in alignment and a sofa-position substantially perpendicular to each other, a hinge structure comprising a first, substantially plate formed member, a second, substantially plate formed member, means pivotally connecting said plate members in spaced relationship, means for mounting said back-rest frame on said first plate member, means for mounting said seat frame on said second plate member, latch means for latching said plate member in a mutual position corresponding to the sofa-position of said back-rest frame and said seat frame comprising a latch pin mounted on said first plate member for reciprocation, resilient means operable to move said latch pin to a projecting position beyond said second plate member, an edge on said second plate member operable to provide a latching abutment for said latch pin in a mutual position of said plate members when swung relatively to each other to enable said latch pin to project beyond said second plate member, cam means operable to unlatch said latch means by reciprocating said latch pin in a direction against the action of said resilient means, said cam means including means operable to be actuated by said latch pin in response to mutual swinging of said plate members to said latching position for rendering said cam means inoperative in the position of said latch pin in engagement with said latching edge, and means for rendering said cam means effective to unlatch said mechanism in response to relative movement of said plate members in a direction of disengagement between said latch pin and said latching edge.

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