

Sept. 1, 1953

F. OHLSSON

2,650,656

SITTING FURNITURE OF THE KNOCKDOWN TYPE

Filed Oct. 6, 1949

4 Sheets-Sheet 1

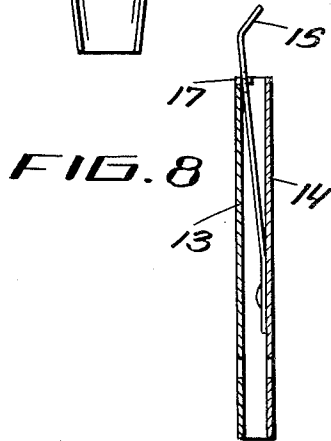
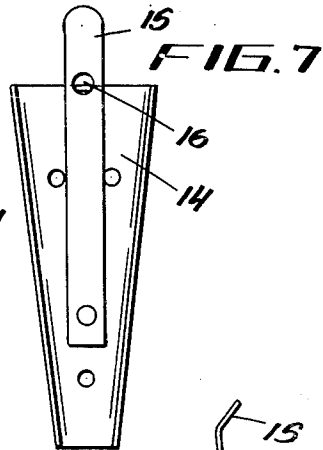
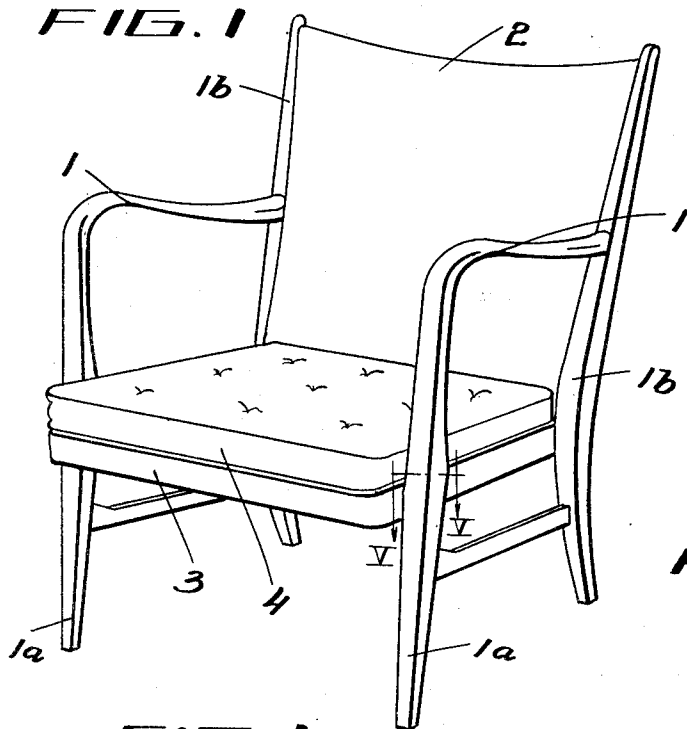


FIG. 4

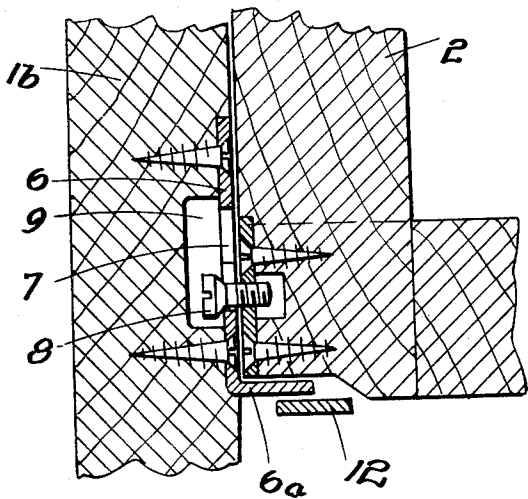
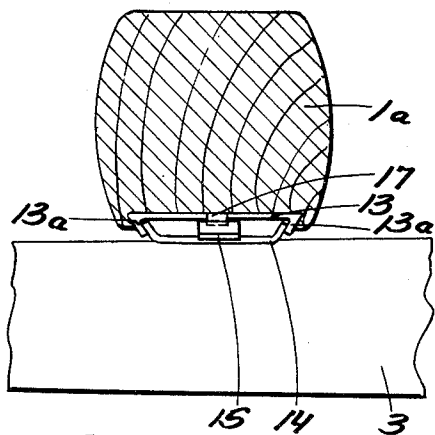


FIG. 5



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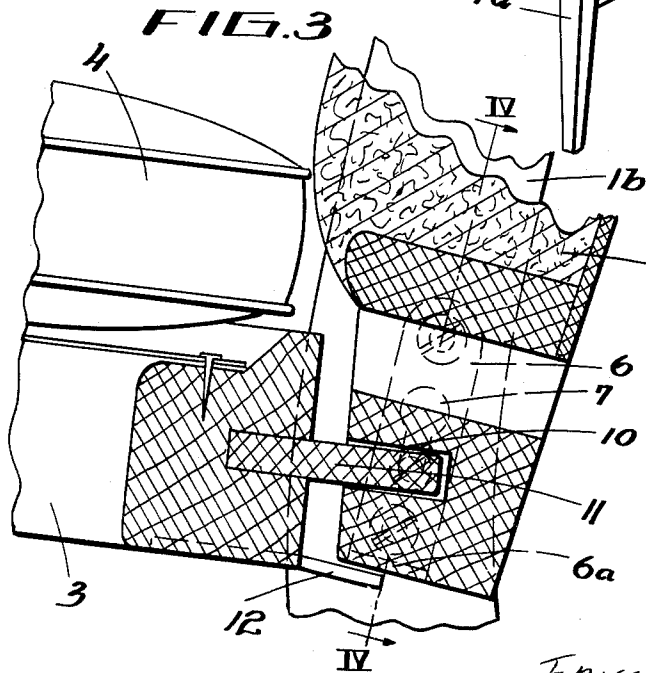
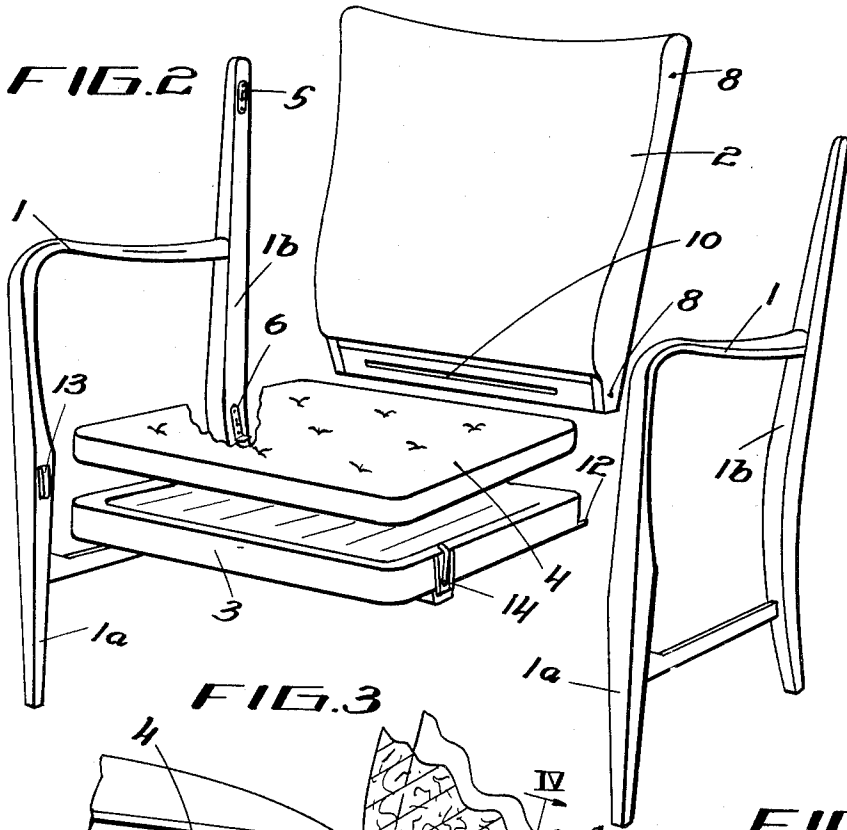
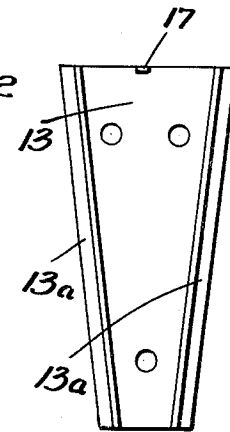


FIG. 6



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FIG. 9

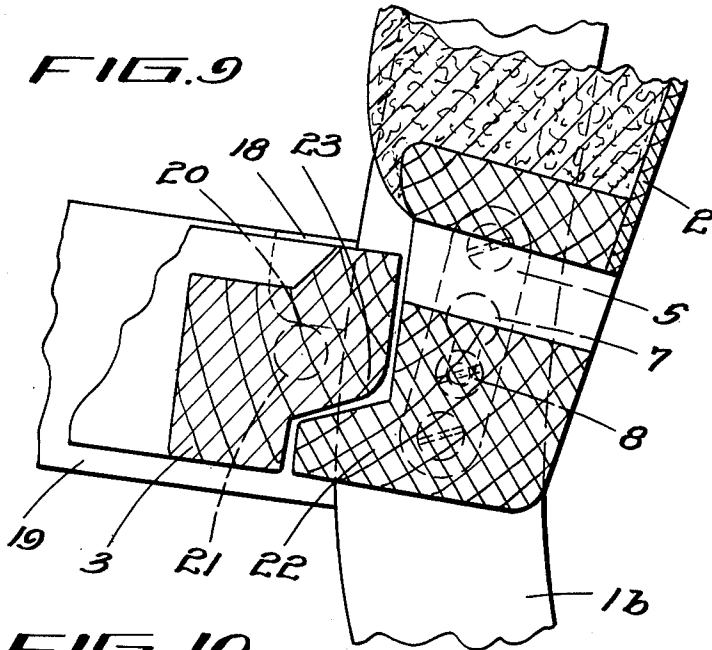


FIG. 10

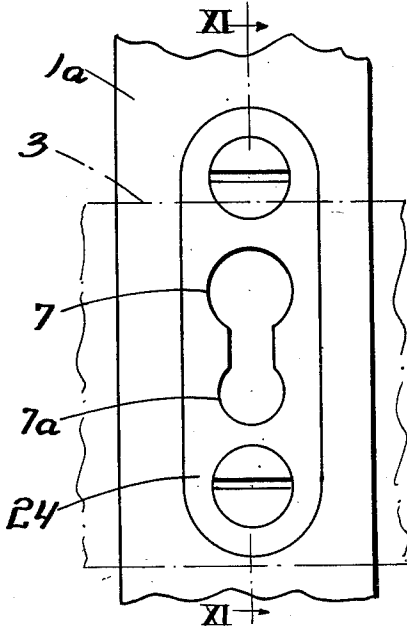
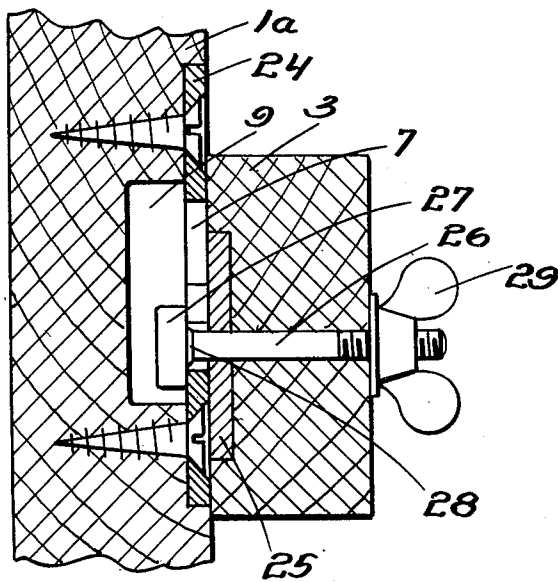


FIG. 11



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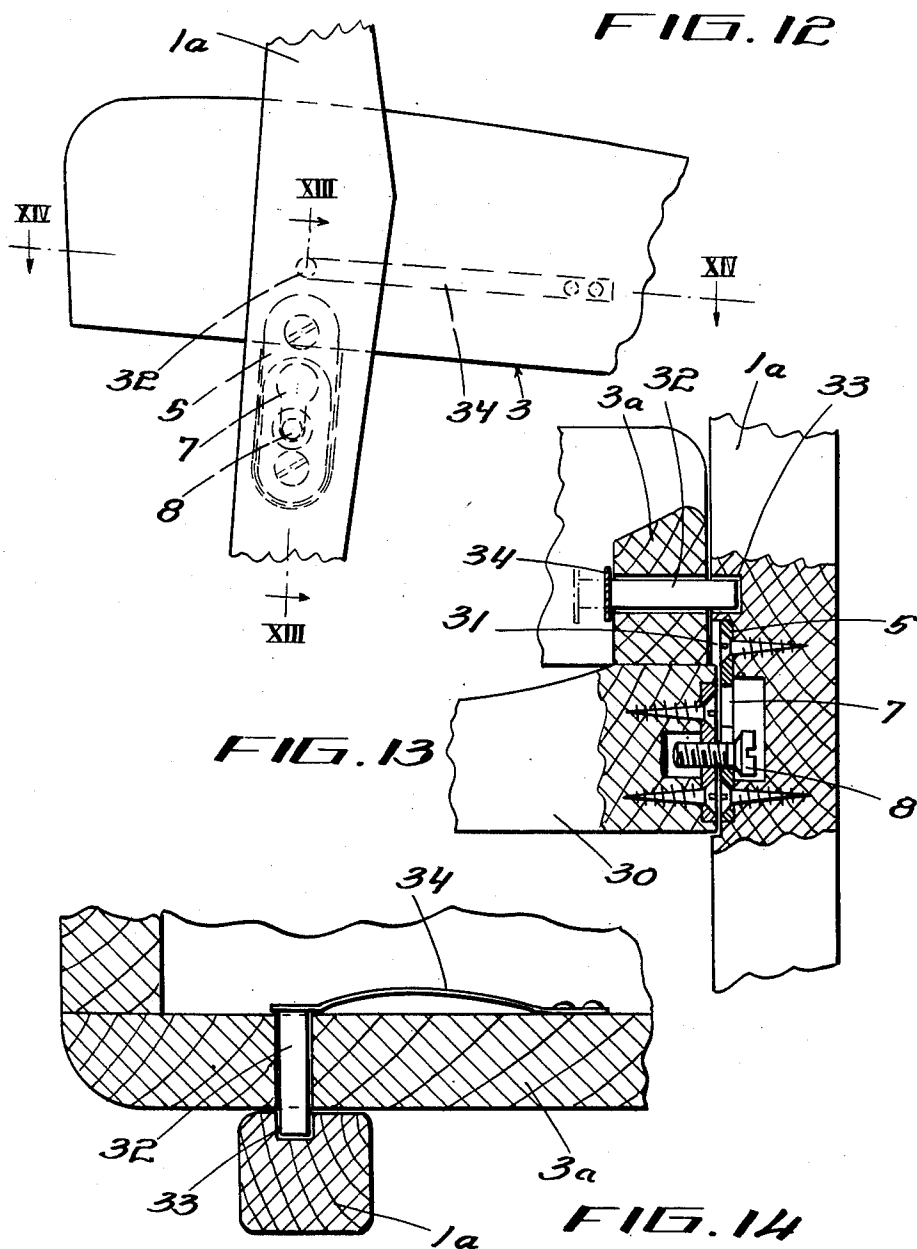
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SITTING FURNITURE OF THE KNOCKDOWN TYPE

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UNITED STATES PATENT OFFICE

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SITTING FURNITURE OF THE KNOCKDOWN TYPE

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Application October 6, 1949, Serial No. 119,812
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5 Claims. (Cl. 155—196)

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This invention relates to an improvement of sitting furniture of the knock-down type, such as easy-chairs and sofas, and a special object of the invention is to provide means enabling the parts of the sitting furniture to be mounted and interlocked in mounted position in a particularly simple way without any tools whatever and using a minimum of furniture fittings.

Another special object of the invention is to provide means for supporting the seat at the rear from the furniture back only and at the front from the supporting furniture frame only, while the parts still are positively interlocked in mounted position with the aid of a small number of simple means, whereby the furniture architect has great freedom in giving the furniture its desired form. In particular it is possible, if desired, to dispense with the border edging of the side frames of the piece of furniture, which extends along the lateral edges of the seat and which was necessary in the hitherto known constructions.

Further objects and advantages of the invention will be apparent to those skilled in the art from the following detailed description of some examples of the invention illustrated in the accompanying drawings.

In the drawings:

Fig. 1 shows a perspective view of an easy-chair of the invention in assembled position.

Fig. 2 in a like manner shows an exploded view of the main parts of the easy-chair.

Fig. 3 shows a part of a vertical section through the back and the seat of the easy-chair in parallel with and adjacent to one side frame of the easy-chair.

Fig. 4 shows a section on line IV—IV of Fig. 3. Fig. 5 shows a horizontal section on line V—V of Fig. 1.

Figs. 6 and 7 show two fittings used in the easy-chair and adapted to be interlocked.

Fig. 8 shows a vertical cross section through the interlocked fittings in Figs. 6 and 7.

Fig. 9 shows a section corresponding to Fig. 3 through a modified embodiment of the invention.

Fig. 10 shows the inner side of the front portion of an easy-chair side frame having a modified fitting for securing the front end of the seat to the side frames.

Fig. 11 shows a section on line XI—XI of Fig. 10.

Fig. 12 is a side view of a further modification for securing the front end of the seat to the supporting frame of the easy-chair.

Figs. 13 and 14 show sections on line XIII—XIII and XIV—XIV, respectively, of Fig. 12.

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The easy-chair shown in Figs. 1 to 8 comprises two side frames 1, a back 2, a seat 3 and a pad 4 placed thereon. Each side frame 1 has a front leg 1a and a back standard 1b terminating in a rear leg. Near the upper end and approximately at a level with the mounted seat 3, the back standard 1b of each side frame 1 has a pair of fittings 5 and 6 which are screwed fast to the back standard and provided with an opening 7 of keyhole-shape having its wide end at the top. The back 2 is provided at its two side edges with two screws 8 that are not screwed in completely and the heads of which may be inserted through the wide portions of the keyhole openings 7 of the fittings 5 and 6 and pushed down into the narrow portions of the openings 7, through which narrow portions the heads of the screws 8 cannot escape. The back standards 1b have of course recesses 9 behind the openings 7 of the fittings 5 and 6 to accommodate the heads of the screws 8. The two side frames 1 can thus be steadily connected with the back 2 in that the heads of the screws 8 are inserted through the wide ends of the keyhole openings 7 of the fittings 5 and 6, whereupon the back 2 is pushed downwards approximately along the rear edges of the side frames so that the heads of the screws 8 engage with the opening edges of the fittings 5 and 6 at the narrow lower ends of the openings 7, it being thereby possible to make the connection almost free from play by adjusting the depth to which the screws 8 are screwed into the back 2. In the embodiment shown in Figs. 1 to 8, the back at the lower end has a horizontal groove 10 in which a key 11 mounted on the rear edge of the loose seat 3 may be inserted by the seat being pushed backwards a short distance, so that the rear end of the seat will be applied, with the downwardly facing surface of the key 11, against the upwardly facing side wall of the groove 10. The rear end of the seat 3 is thus supported from the back 2 only without the aid of the side frames 1. At the two ends of its rear edge the seat has a rearwardly projecting extension or lug 12 which on pushing the seat 3 backwards to provide engagement between the key 11 and the groove 10, engages under an end portion 6a of the lower fitting 6 on the respective back standard. This end portion 6a is bent and projects from the inwardly facing side surface of the respective adjacent back standard 1b. When assembling the back 2 connected with the side frames 1 and the seat 3 in the manner described, the back 2 is thus locked in mounted position, for when urging the back 2 upwards in relation to the side frames 1 to move the heads of the

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screws 8 up into the wide portions of the keyhole openings 7, the back 2 will tend to carry along the rear end of the seat 3 on account of the engagement of the groove 10 and the key 11, which however is not possible due to the lugs 12, attached to the seat 3, being applied with their upper sides against the downwardly facing surfaces on the bent ends 6a of the lower fittings 6 mounted on the back standard 1b of the side frames 1.

The seat 3 on one hand and the back 2 and the side frames 1 on the other are interlocked in such a way that the front end of the seat may be tilted up and down through a certain distance without the engagement between the groove 10 and the key 11 or the engagement between the lugs 12 and the bent ends 6a of the fittings 6 being cancelled. The groove 10 is somewhat wider than the key 11 in order to permit the mentioned tilting of the front end of the seat 3.

The said tilting movement of the front end of the seat 3 is utilized to lock the seat in position with the key 11 engaged with the groove 10 of the back 2 and with the lugs 12 engaged with the projecting abutments 6a of the side frames 1. For such a locking of the seat 3, the front leg 1a of each side frame 1 is provided with a seat fastening member in the form of a fitting 13 which is shaped to form a wedge groove which is open at the top and tapers downwardly. Said wedge groove has its side walls that are formed of bent marginal portions 13a of the sheet metal fittings 13 (cf. especially Figs. 5, 6 and 8) constructed for dovetail engagement. To cooperate with the two fittings 13 the seat 3 has in front on each side a fitting 14 of sheet metal having the form of a wedge for engagement with the wedge groove of the respective fitting 13 (cf. especially Figs. 5, 7 and 8).

When securing the seat 3 it is pushed backwards towards the back 2, the key 11 being at a level with the groove 10 to engage it, while the front edge of the seat is tilted upwardly to such a degree that the fittings 14 of the seat are situated at a higher level than the fittings 13 on the front legs 1a of the side frames 1. After the rear end of the seat has been engaged with the back 2 and the abutments 6a of the side frames 1, the front end of the seat 3 is lowered so that the wedges 14 are pushed down from above into the tapering and dovetailed wedge grooves of the fittings 13 between the side walls 13a thereof. Each wedge 14 is provided with a leaf spring 15 having a hole 16 to engage a small projection 17 on the pertaining fitting 13 when the wedge 14 reaches its lowermost position of engagement with the wedge groove of the fitting 13. The spring 15 automatically snaps into engagement with the projection 17 when the front end of the seat 3 is tilted downwardly and ensures that the seat cannot inadvertently come loose due to pressure or pushes from below on the front edge of the seat. When it is desired to dismount the assembled easy-chair into its main parts it is sufficient to remove the loose pad 4 and to press with the fingers on the upwardly projecting ends of the leaf springs 15 of the fittings 14 and at the same time to tilt the front end of the seat upwards so that the wedges 14 are lifted out of the fittings 13, whereupon the seat is pulled forwards to release it from the back 2 and the abutments 6a of the side frames 1. Dismounting of the easy-chair is completed by lifting the back 2 to withdraw the screws 8 of the back from the keyhole openings 7 of the fittings 5, 6.

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The invention is of course not limited to the embodiment described above and illustrated in Figs. 1 to 8 of the drawings, for many modifications may be resorted to within the scope of the annexed claims. As an instance, Fig. 9 shows a modified manner of interlocking the rear end of the seat, the back and the side frames, so that the front end of the seat may be tilted up and down. In the embodiment according to Fig. 9, the back 2 has, like in the embodiment described above, screws 8 to engage keyhole-shaped openings in fittings 5 on the back standards 1b of the side frames, but in the embodiment according to Fig. 9 there are used fittings 5 both at the top and at the lower position on the back standards. In the embodiment according to Fig. 9 the abutments 6a of the fittings 6 used in the embodiment according to Figs. 1 to 8 are replaced by a special fitting 18 fixed adjacent the back standards 1b to a bar 19 extending between said back standards and the front legs of the side frames. Each fitting 18 consists of a sheet metal plate having a lower edge 20 curved upwardly at the front, against which the upper side of a tenon 21 projecting from the respective side edge of the seat 3 is applied when the seat is mounted.

To support the rear end of the seat and to interlock the seat 3 and the back 2 there is used a somewhat different construction in the embodiment according to Fig. 9 than in Figs. 1 to 8. In Fig. 9 the back 2 has at its lower edge a forwardly extending slat 22 and the rear end of the seat 3 is formed with a groove to receive the back slat 22 so that the seat in mounted position has a downwardly facing surface 23 engaging over the slat 22 and bearing against the upwardly facing surface of the slat 22, thereby supporting the rear end of the seat from the back only and preventing lifting of the back.

Due to the form given to the rear edge of the seat 3 and to the slat 22 of the back 2 as well as due to the position chosen for the tenons 21 and the fittings 18 it is possible to tilt the front end of the seat up and down also in the embodiment shown in Fig. 9, after the seat has been moved into engagement with the back 2 and the fittings 18.

Figs. 10 and 11 show a modification of the arrangement for supporting and locking the front end of the seat. Instead of the fittings 13 on the front legs 1a used in the embodiment according to Figs. 1 to 8, there is now used on each front leg a keyhole fitting 24 identical with those used for the back in Figs. 2 and 9, excepting that the narrow portion of the keyhole opening 7 at its lower end has a small enlargement 7a which is however considerably smaller than the widened portion at the upper end of the keyhole opening.

Mounted on each side edge of the seat 3 is a fitting plate 25 with a hole, in which a bolt 26 extending through the seat frame is displaceable. The end of the bolt 26 projecting out of the plate 25 has a relatively big head 27. On its side facing the tenon the head is provided with a small conical projection 28, through which the head is connected with the tenon. The head 27 is of such a diameter that it may be passed through the upper big widening portion of the keyhole opening 7 of the fitting 24 into the recess 9 of the front leg 1a behind the fitting 24, whereafter the tenon 26 may be moved through the narrow portion of the keyhole opening 7 to the lower small enlargement 7a thereof by tilting the front end of the seat 3 downward. On the end opposed to the head the tenon 26 is provided with

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a screw thread to engage with a wing nut 29, by means of which the head 27 may be pressed against the fitting 24 when the bolt 26 is situated in the enlargement 7a, the conical projection 28 penetrating into the enlargement 7a and preventing a relative displacement of the front end of the seat 3 and the front legs 1a longitudinally of the keyhole opening 7, as long as the wing nut 29 holds the projection 28 of the bolt head 27 in engagement with the enlargement 7a of the opening 7.

Of course the head 27 of the bolt 26 and the fitting 24 may be provided with other projections and recesses than the conical projection 28 and the enlargement 7a. Thus the bolt head may for instance be provided with a projection of square cross section on its side facing the bolt to engage an approximately square-shaped enlargement of the lower end of the keyhole opening 7, or the marginal portion of the fitting 24 may be provided with teeth or other projections or recesses at the lower end of the opening 7 on the side facing the seat for cooperation with corresponding recesses or teeth or other projections on the side of the head 27 facing the bolt for connecting the bolt head and the fitting.

Figs. 12 to 14 show a third embodiment for supporting and locking the seat at the front end. In this embodiment the front legs 1a of the side frames are inter-connected by means of a transverse bar 30, the ends of which are provided with screws 8 to engage keyhole fittings 5 of the same type as those used at the top for the back 2 in Figs. 1 to 8. The fittings 5 are so arranged that on securing of the transverse bar 30 it must be moved downwards in relation to the front legs 1a, and the fittings are arranged in shallow recesses 31 milled into the front legs and fitting the transverse bar, to prevent rotation of said bar about the axis of the screws 8.

The seat 3 rests with its front portion directly on the upper side of the transverse bar 30 and is held in this position by a tenon 32 displaceably mounted in each side member of the seat frame 3a. In mounted position of the seat said tenon 32 penetrates into a hole 33 in the inner side of the adjacent front leg 1a. The tenons 32 thus prevent tilting of the front end of the seat upwards and away from the transverse bar 30 carrying the same, whereby said transverse bar is at the same time prevented from moving upwards to the position, in which the screws 8 of the transverse bar may be withdrawn from the keyhole openings 7 of the fittings 5. At the end remote from the respective adjacent front leg 1a, each tenon 32 is fixed to one end of a leaf spring 34, the other end of which is secured to the respective side member of the seat frame 3a so that the tenons 32 may be brought out of engagement with the front legs 1a by the springs 34 being acted upon. When mounting the seat, the ends of the pins 32 projecting from the sides of the seat are pressed inwards with the fingers when the front end of the seat is tilted down between the front legs 1a, whereupon the ends of the tenons are allowed to slide against the insides of the front legs during tilting of the seat into its position of use, until the tenons on arrival at the holes 33 in the front legs 1a snap into said holes and lock the seat in its position of use.

In the arrangement according to Figs. 12 to 14 it is of course possible to conceive other locking means than tenons 32 attached to leaf springs 34 to engage holes 33 in the front legs 1a. For

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instance, screws mounted in the side members of the seat frame 3a may be substituted for the tenons 32 and the leaf springs 34, the ends of which screws are screwed out of the sides of the seat into holes 33 provided in the front legs 1a, after the seat has been tilted down into bearing engagement with the transverse bar 30.

What I claim and desire to secure by Letters Patent is:

1. Sitting furniture having a supporting frame comprising a pair of spaced apart side frames, a back between said side frames at the rear thereof, a first set of interengaging means on said side frames and said back for supporting said back between said side frames, said interengaging means allowing disengagement of said back from said side frames by moving said back upwardly in relation to said side frames, a seat between said side frames, downwardly facing bearing surface means on the rear portion of said seat, upwardly facing bearing surface means on said back, said bearing surface means facing one another and abutting each other for supporting the rear portion of said seat by means of said back only, upwardly facing locking surface means on the rear portion of said seat, downwardly facing locking surface means on said side frames, said locking surface means facing one another and abutting each other for locking the rear portion of said seat and said back against upward movement to disengage said back from said side frames, the engagement between said bearing surface means and said locking surface means on said seat, said back and said side frames allowing vertical swinging movements of the front portion of said seat, and a second set of interengaging means on the front portions of said seat and said supporting frame for supporting said seat directly by said supporting frame at the front only, said second set of interengaging means allowing disengagement of said seat from said supporting frame by swinging the front end of said seat upwards in relation to said supporting frame.

2. Sitting furniture comprising a pair of spaced apart side frames, a back between said side frames at the rear thereof, a first set of interengaging means on said side frames and said back for supporting said back between said side frames and rigidly interlocking said side frames at the rear by means of said back, said interengaging means allowing disengagement of said back from said side frames by moving said back upwardly in relation to said side frames, a seat between said side frames, downwardly facing bearing surface means on the rear portion of said seat, upwardly facing bearing surface means on said back, said bearing surface means facing one another and abutting each other for supporting the rear portion of said seat by means of said back only, upwardly facing locking surface means on the rear portion of said seat, downwardly facing locking surface means on said side frames, said locking surface means facing one another and abutting each other for locking the rear portion of said seat and said back against upward movement to disengage said back from said side frames, the engagement between said bearing surface means and said locking surface means on said seat, said back, and said side frames allowing vertical swinging movements of the front portion of said seat, and a second set of interengaging means on the front portions of said seat and said side frames for

supporting said seat directly by said side frames at the front only, said second set of interengaging means allowing disengagement of said seat from said side frames by swinging the front end of said seat upwards in relation to said side frames.

3. Sitting furniture having a supporting frame comprising a pair of spaced apart side frames, a back between said side frames at the rear thereof, a first set of interengaging means on said side frames and said back for supporting back between said side frames, said interengaging means allowing disengagement of said back from said side frames by moving said back upwardly in relation to said side frames, a seat between said side frames, downwardly facing bearing surface means on the rear portion of said seat, upwardly facing bearing surface means on said back, said bearing surface means facing one another and abutting each other for supporting the rear portion of said seat by means of said back only, projecting ears on the rear portion of said seat, inwardly projecting ears on the inner sides of said side frames, said ears on said side frames gripping over said ears on said seat for locking the rear portion of said seat and said back against upward movement to disengage said back from said side frames, the engagement between said bearing surface means and said ears on said seat, said back, and said side frames allowing vertical swinging movements of the front portion of said seat, and a second set of interengaging means on the front portions of said seat and said supporting frame for supporting said seat directly by said supporting frame at the front only, said second set of interengaging means allowing disengagement of said seat from said supporting frame by swinging the front end of said seat upwards in relation to said supporting frame.

4. Sitting furniture having a supporting frame comprising a pair of spaced apart side frames, a back between said side frames at the rear thereof, a first set of interengaging means on said side frames and said back for supporting said back between said side frames, said interengaging means allowing disengagement of said back from said side frames by moving said back upwardly in relation to said side frames, a seat between said side frames, downwardly facing bearing surface means on the rear portion of said seat, upwardly facing bearing surface means on said back, said bearing surface means facing one another and abutting each other for supporting the rear portion of said seat by means of said back only, upwardly facing locking surface means on the rear portion of said seat, downwardly facing locking surface means on said side frames, said locking surface means facing one another and abutting each other for locking the rear portion of said seat and said back against upward movement to disengage said back from said side frames, the engagement between said bearing surface means and said locking surface means on said seat, said back, and said side frames allowing vertical swinging movements of the forward portion of said seat, a second set of interengaging means on the front portions of said seat and said supporting frame for supporting said seat directly by said supporting frame at the

front only, said second set of interengaging means allowing disengagement of said seat from said supporting frame by swinging the front end of said seat upwards in relation to said supporting frame and locking means for holding the front portion of said seat against vertical swinging movements in relation to said supporting frame.

5. Sitting furniture having a supporting frame comprising a pair of spaced apart side frames, a transverse bar extending between said side frames adjacent the front edges thereof, a first set of interengaging means on said side frames and said transverse bar for supporting said transverse bar between said side frames and rigidly interlocking said side frames at the front by means of said transverse bar, a back between said side frames at the rear thereof, a second set of interengaging means on said side frames and said back for supporting said back between said side frames and rigidly interlocking said side frames at the rear by means of said back, said interengaging means allowing disengagement of said back from said side frames by moving said back upwardly in relation to said side frames, a seat between said side frames, downwardly facing bearing surface means on the rear portion of said seat, upwardly facing bearing surface means on said back, said bearing surface means facing one another and abutting each other for supporting the rear portion of said seat by means of said back only, upwardly facing locking surface means on the rear portion of said seat, downwardly facing locking surface means on said side frames, said locking surface means facing one another and abutting each other for locking the rear portion of said seat and said back against upward movement to disengage said back from said side frames, the engagement between said bearing surface means and said locking surface means on said seat, said back, and said side frames allowing vertical swinging movements of the front portion of said seat towards and away from a position in which the front portion of said seat rests on said transverse bar for supporting said seat directly by said supporting frame at the front only, and a third set of interengaging means on said seat and said supporting frame for holding the front portion of said seat resting on said transverse bar.

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