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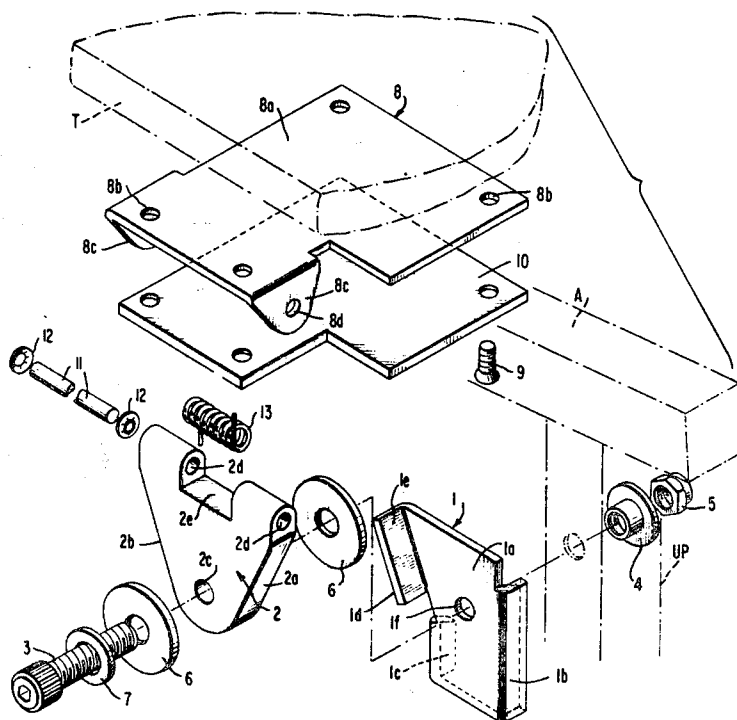
## [54] FOLDING TABLET CHAIR 12 Claims, 15 Drawing Figs.

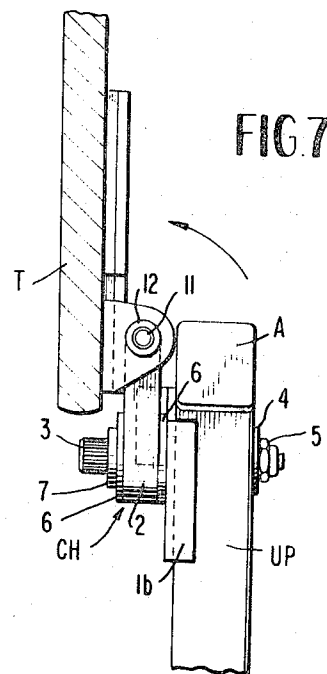
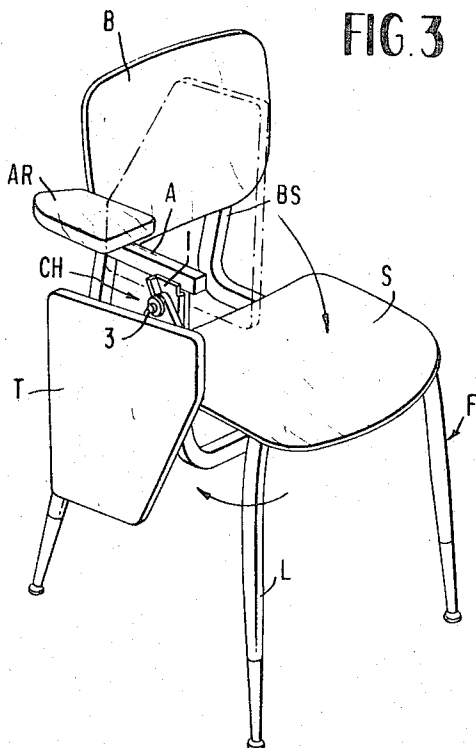
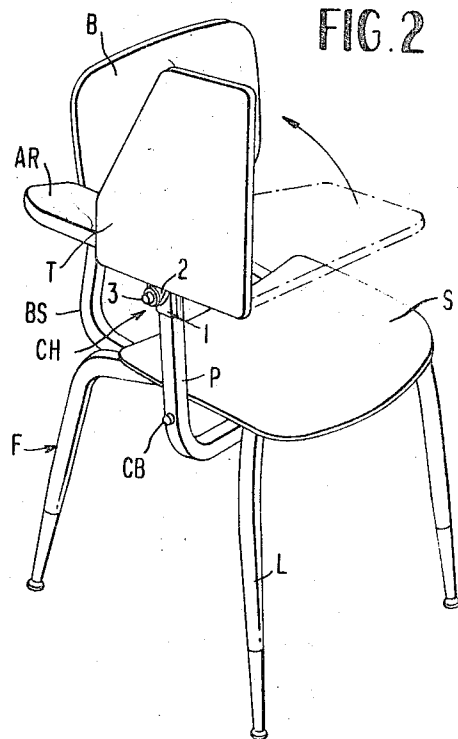
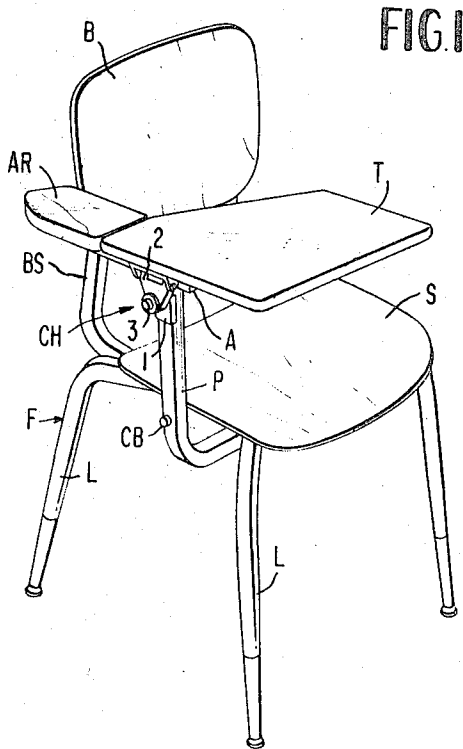
[52] U.S. Cl. .... 297/162,  
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 [51] Int. Cl. .... A47b 39/00  
 [50] Field of Search ..... 297/162,  
 155, 154, 135

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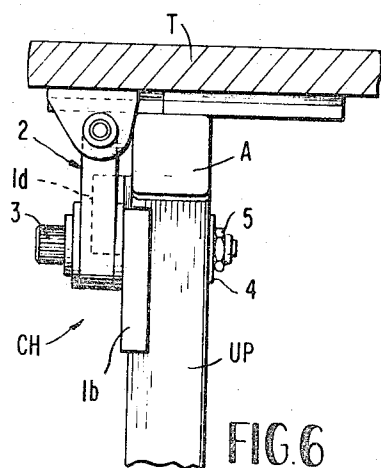
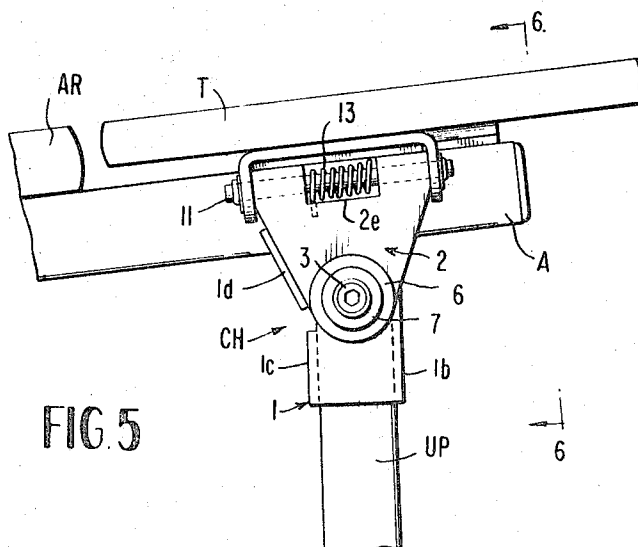
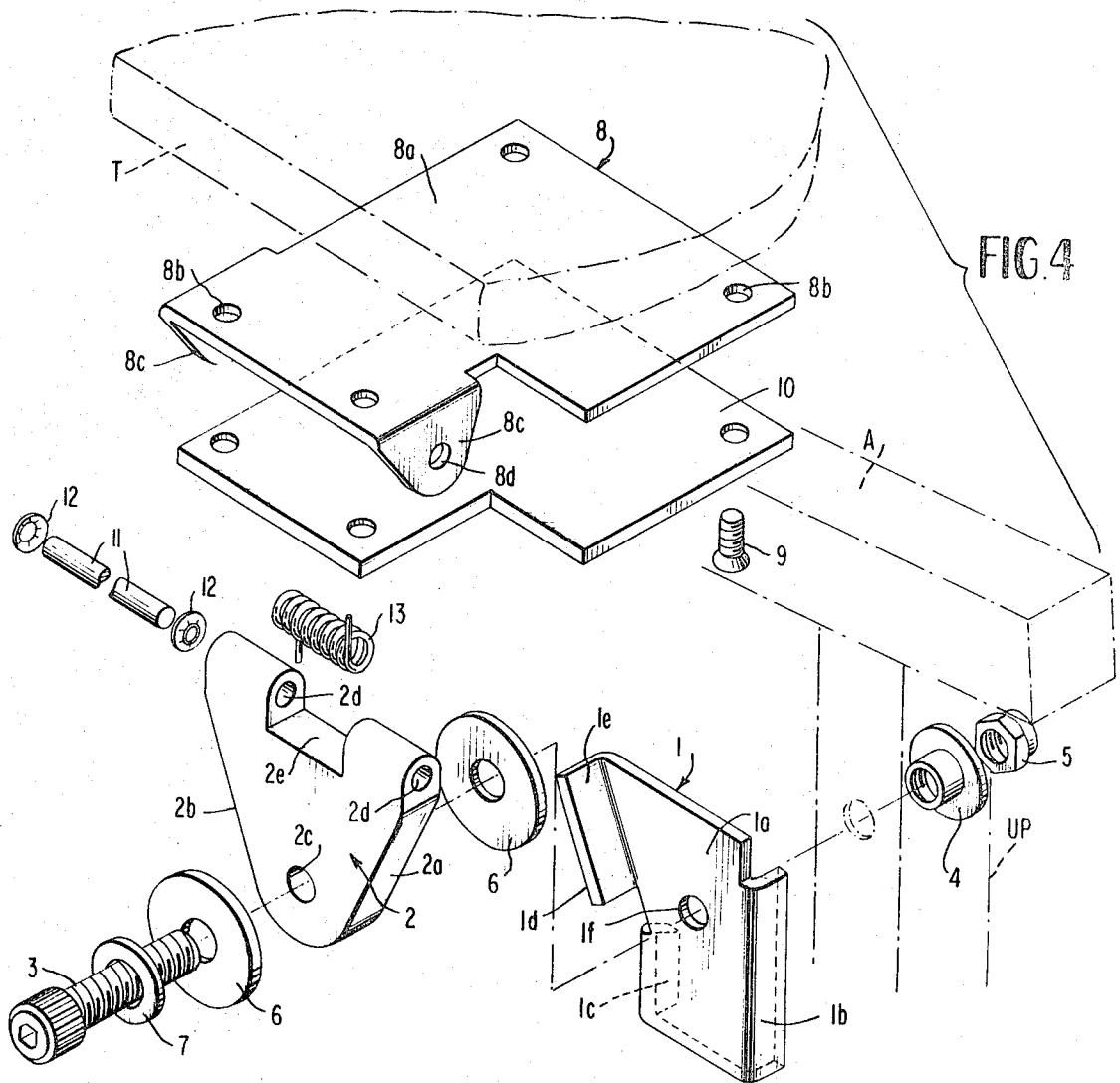
**ABSTRACT:** A chair writing or like tablet is mounted by a compound hinge for movements, about a first axis parallel to the fore-and-aft line of the chair and about a second axis transverse to the first axis, selectively to a substantially horizontal position of use, to an elevated intermediate position, and to a lower stowed position alongside the chair. Movement of the tablet from its stowed position to its intermediate position is limited by a stop part having a stop surface engageable by a hinge component swingable about the aforesaid second axis, thus ensuring that swinging of the tablet from its intermediate position about the aforesaid first axis to its "use" position is accomplished without interference by engagement of the tablet with the chair arm or other frame part. Means are provided for holding the tablet in a substantially vertical plane when in its stowed position.



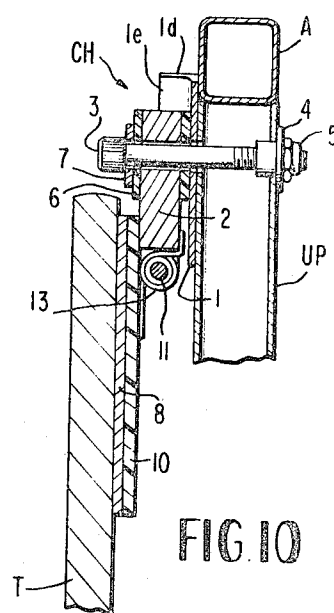
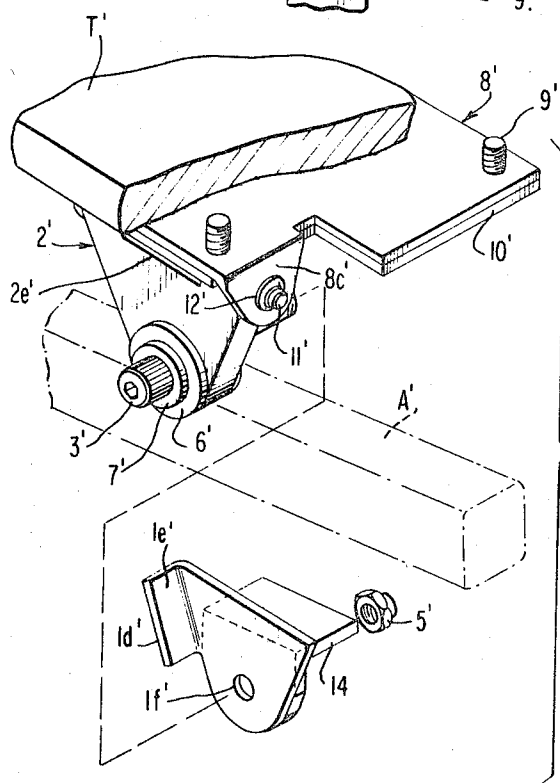
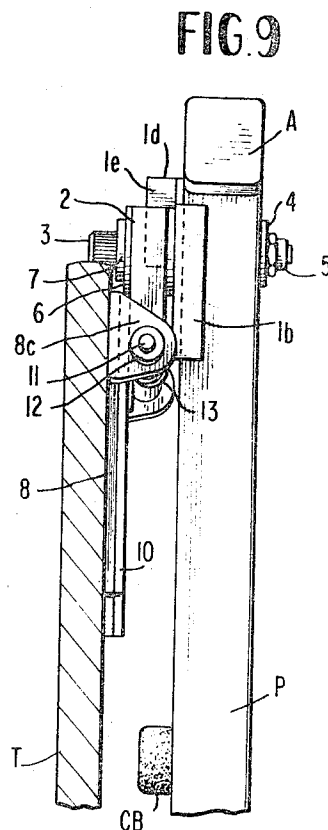
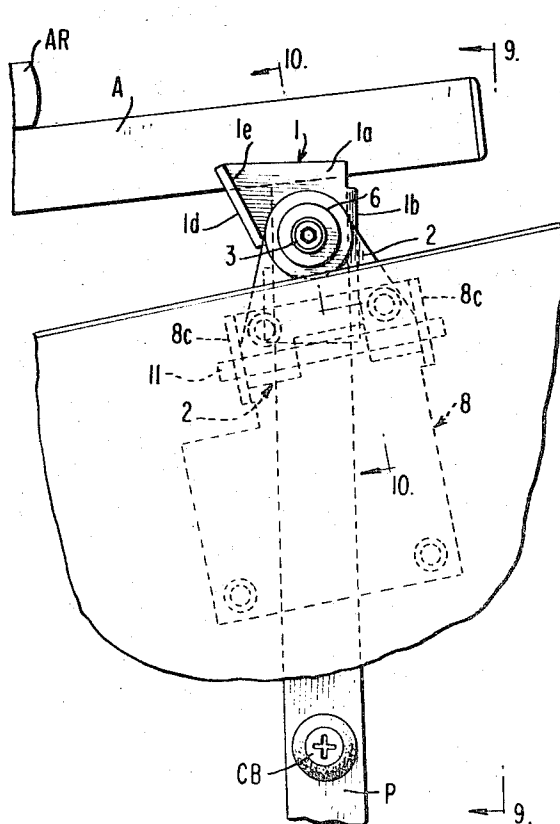


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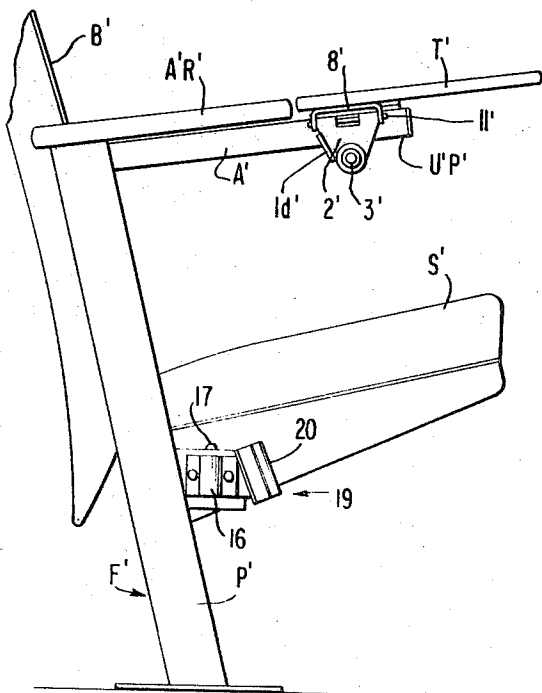


FIG. 11

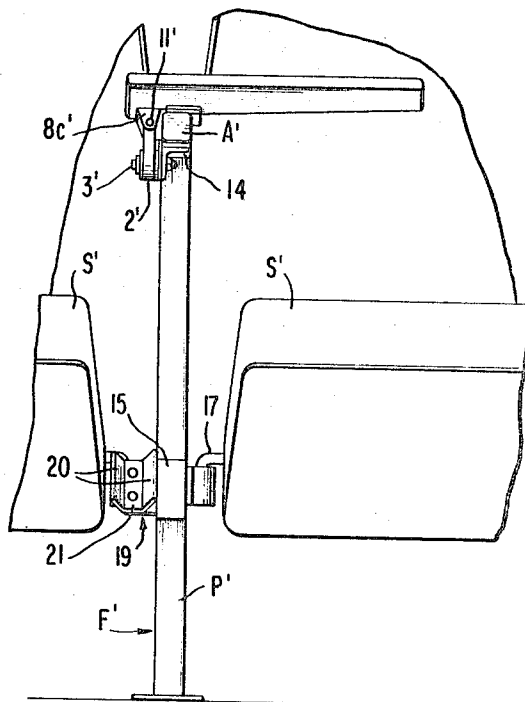


FIG. 12

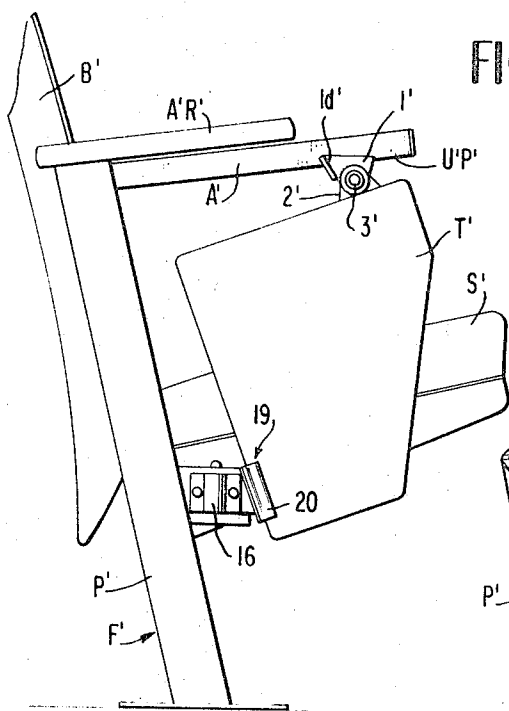


FIG. 13

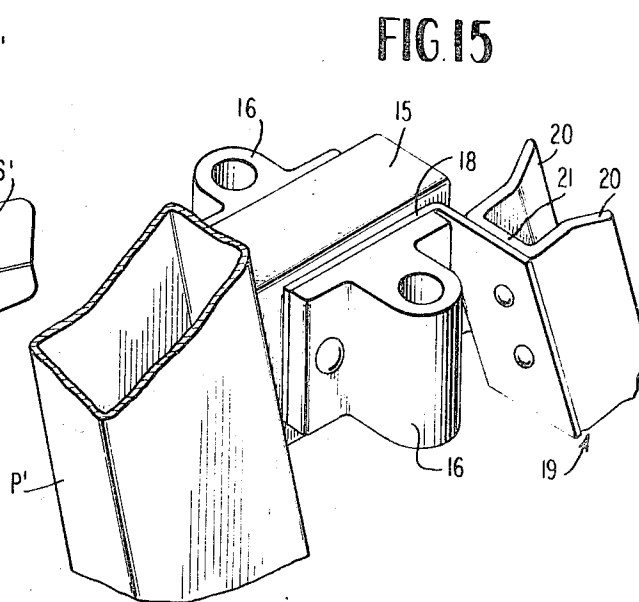


FIG. 15

## FOLDING TABLET CHAIR

This invention relates to folding tablet chairs, and more particularly to such chairs in which a writing or other work tablet is mounted on the chair frame for swinging movements selectively to three positions, namely: a "use" position in which the tablet extends generally or approximately in a horizontal plane above the chair seat, an intermediate position in which the tablet is in a vertical plane at the side of the chair and above its use position, and a stowed position in which the tablet is in a generally vertical plane alongside the lower part of the chair.

An object of the invention is to provide a tablet chair of this class including a simple, effective and economical compound hinge structure mounting the tablet on the chair frame and enabling such movements and for limiting the individual movements so as to prevent interference with subsequent movements to other positions.

Another object of the invention is to provide means for maintaining the tablet in a substantially vertical plane when in its stowed position despite any tendency of the tablet to swing gravitationally out of the aforesaid vertical plane.

Other objects of the invention will become apparent from a reading of the following more detailed description, the appended claims, and the accompanying drawings, in which:

FIGS. 1—10 illustrate a construction embodying the invention in conjunction with a portable or movable chair. In these FIGS.:

FIG. 1 is a perspective view of the portable chair, showing a writing or work surface tablet in position for use;

FIG. 2 is a perspective view showing the tablet in an intermediate position preparatory to being stowed alongside the chair;

FIG. 3 is a perspective view showing the tablet in stowed position;

FIG. 4 is an exploded perspective view on an enlarged scale showing compound hinge components in full lines and showing part of the tablet and part of a chair side frame structure in dash lines;

FIG. 5 is a fragmentary side elevational view showing part of the chair frame, tablet and hinge construction, the parts being shown in the positions corresponding to those shown in FIG. 1, i.e. the "use" position, FIG. 5 being on an enlarged scale with respect to FIG. 1 and on a reduced scale with respect to FIG. 4;

FIG. 6 is a sectional view on the line 6—6 of FIG. 5, the parts again being shown in the "use" position;

FIG. 7 is a fragmentary view on the line 6—6 of FIG. 5, but showing the parts in the intermediate position corresponding to FIG. 2;

FIG. 8 is a fragmentary side elevational view similar to FIG. 5, but showing the parts in the stowed position;

FIG. 9 is a fragmentary sectional view on the line 9—9 of FIG. 8;

FIG. 10 is a fragmentary sectional view on the line 10—10 of FIG. 8.

FIGS. 11—15 illustrate a construction embodying the invention in conjunction with a floor mounted auditorium or the like chair. In these FIGS.:

FIG. 11 is a fragmentary side elevational view showing the tablet in its "use" position;

FIG. 12 is a fragmentary front elevational view also showing the tablet in its "use" position, this FIG. also showing parts of an adjoining chair in a row of auditorium chairs;

FIG. 13 is a side elevational view showing the tablet in stowed position;

FIG. 14 is an exploded perspective view showing part of the auditorium chair frame in dash lines, and showing a compound hinge and the tablet in full lines; and

FIG. 15 is a perspective view of a tablet rest for locating and supporting the tablet in stowed position, part only of a chair frame being shown.

The tablet chair structure shown in FIGS. 1—10 includes a chair proper comprising a frame F, a back B and a seat S. The frame includes four legs L, a back support BS, a post or vertical arm support member P, a substantially horizontal chair arm A and an arm rest AR.

The upper portion UP of the post P at one side of the frame and above the level of the seat S carries a compound hinge CH which mounts a tablet T for selective movements to a use position extending generally horizontally above the chair seat S as shown in FIG. 1, an intermediate position in a vertical plane and above the post P as shown in FIG. 2, and a stowed position alongside the chair below the chair arm A as shown in FIG. 3. To move the tablet T from its use position shown in FIG. 1 to its intermediate position shown in FIG. 2, the tablet is swung upwardly about an axis extending longitudinally of or parallel to the fore-and-aft line of the chair. To move the tablet from its intermediate position shown in FIG. 2 to the stowed position shown in FIG. 3, the tablet is swung substantially in a vertical plane about another axis extending transversely to the axis mentioned above and transversely to the fore-and-aft line of the chair.

The present invention relates more particularly to the construction and operation of the compound hinge CH, the parts of which and their cooperative relationship are most clearly illustrated in the enlarged scale FIG. 4. As shown in this FIG. as well as in other FIGS., the compound hinge CH comprises a hinge stop part element 1 including a flat portion 1a mounted against the frame upper side portion UP in a plane extending fore-and-aft of the chair, the stop part 1 being provided with locating ears 1b and 1c which project respectively in front of and in contact with the front and rear faces of the frame upper side portion UP. The stop part 1 further includes a stop ear 1d at the rear of the part 1 with respect to the chair, the ear 1d projecting from the flat part 1a oppositely to the ears 1b and 1c. The ear 1d provides a fixed forwardly facing stop surface 1e the purpose of which is explained later. The stop part flat portion 1a is also formed with an aperture 1f.

A hinge component 2, mounted adjacent to the hinge stop part 1, is formed with downwardly converging front and rear sides 2a and 2b, and a pivot aperture 2c through which extends a pintle or pivot screw 3 which is threaded into a T-nut 4 secured in the frame part UP, the axis of the screw 3 being transverse to the fore-and-aft line of the chair. A lock nut 5 threaded onto the screw 3 after it has been secured to the T-nut 4 holds the screw in such position that its head, two friction washers 6 and a metal washer 7 mount the component 2 snugly alongside the flat part 1a of the stop part 1. The friction washers 6 may be formed, for example, of laminated phenolic plastic impregnated with graphite, the arrangement being such that the hinge component 2 may pivot about the axis of the screw 3 which is transverse to the fore-and-aft line of the chair, the pivotal movement, however, being somewhat inhibited or controlled by the friction washers 6.

The hinge component 2 mounts another hinge component 8 for swinging about another axis transverse to the axis of the pintle 3, and the component 8 carries the tablet T. As shown in FIG. 4, the component 8 includes a flat, platelike part 8a provided with holes 8b which receive screws 9 screwed onto the tablet T. A spacer plate 10, for example of rigid vinyl material, is mounted on the underside of the hinge component 8 and is adapted to rest upon the chair arm A when the tablet T is in its use position.

The hinge component 8 further includes mounting ears 8c which fit alongside the first mentioned hinge component 2, the ears 8c being provided with holes 8d which receive a pivot pin 11 extending through aligned holes 2d in the hinge component 2. Snap-on or other suitable retainers 12 hold the pin 11 in its position extending through the holes 8d and 2d with the axis of the pin 11 being transverse to the axis of the pivot screw 3. The component 2 is recessed at 2e between the holes 2d to accommodate a torsion spring 13 surrounding the pivot pin 11, the purpose of the spring 13 being described hereinafter.

In operation, and assuming firstly that the tablet is in its use position as shown in FIGS. 1, 4, 5 and 6, the tablet may be moved to its intermediate position shown in FIGS. 2 and 7 by being swung upwardly counterclockwise as viewed in FIG. 1 about the axis of the pivot pin 11 while the hinge component 2 remains stationary, although a slight movement of the component 2 about the axis of the screw 3 during raising of the

tablet T would not be harmful. Movement of the tablet from the intermediate position shown in FIG. 2 to the stowed position shown in FIG. 3 is accomplished by swinging the tablet and the hinge component 2 about the axis of the pivot screw 3 until the parts have reached the positions shown in FIGS. 3, 8, 9 and 10. As shown in FIG. 8, movement of the tablet to its stowed position is limited by engagement of the hinge component 2 with the lower part of the stop ear 1e. If the tablet is held somewhat outwardly of the vertical plane when being lowered toward its FIG. 3 stowed position and is then released, it may swing inwardly toward the chair frame sufficiently to bump the latter and mar the frame or the underside of the tablet T. To prevent any such marring, the post part P is provided with a cushion bumper CB of rubber or other cushioning material.

With particular reference to FIGS. 9 and 10, it will be seen that when the tablet T is lowered alongside the chair to its stowed position, its center of gravity will be offset from the axis of the hinge pin 11, and the tablet will tend to swing under that axis so as to assume an inclined position converging upon the lower part of the chair frame. However, assumption of an inclined position is prevented by the spring 13 which is loaded just sufficiently to offset the gravitational tendency of the tablet to move to the inclined position. The spring 13 holds the tablet against that tendency and in a substantially vertical plane extending fore-and-aft of the chair. As shown in FIG. 10, the opposite ends of the spring 13 abut against the inner face of the hinge component 2 and the spacer 10, respectively.

To return the tablet T from its stowed or FIG. 3 position to its use position shown in FIG. 1, the tablet is first swung upwardly about the axis of the pivot screw 3 to the intermediate position shown in FIG. 2, overswinging of the tablet in this movement being prevented by engagement of the side 2b of the hinge component 2 with the stop surface 1e on the stop ear 1d of the stop part 1. Were it not for this limiting or swinging movement to the intermediate position, it would be possible for the movement to be continued to such a degree that it would not then be possible to swing the tablet from its intermediate position to its use position, because there would be interference with the rear edge portion of the tablet with the arm rest AR. When the tablet has been arrested in the proper intermediate position determined by the stop means 2b, 1e, the tablet may be swung freely clockwise from its FIG. 2 intermediate position to its FIG. 1 use position in which the spacer 10 rests upon the arm A and positions the tablet in its predetermined correct working position.

Referring now to the modified arrangement shown in FIGS. 11—15 in conjunction with a floor mounted auditorium chair, this construction is similar in many respects to the construction described above with reference to FIGS. 1—10, only some parts being modified to adapt the hinge construction to the different basic chair construction. In FIGS. 11—15, parts which are essentially the same as parts shown in FIGS. 1—10 and have similar functions are designated by the same reference characters as their counterparts in FIGS. 1—10, these reference characters in FIGS. 11—15, however, being primed. Thus, the chair shown in FIGS. 11—15 includes a vertical-frame part P' having an upper side frame part U'P' supporting the arm A' and an arm rest A'R'.

The compound hinge C'H' shown in FIGS. 11—15 differs from the compound hinge CH described previously in that the compound hinge C'H' does not have locating ears corresponding to the ears 1b and 1c shown in FIGS. 1—10. The hinge stop part 1', however, does include a flat portion 1a' having a stop ear 1d' providing a stop surface 1e'. The hinge stop part 1' is welded or otherwise secured to the vertical leg of an inverted L-shaped mounting piece 14, the top horizontal leg of which is welded or otherwise secured to the chair arm A'.

The hinge component 2' is the same as the component 2 previously described and is mounted in the same manner, that is by a pivot screw 3'. Also, the tablet T' is secured to the second hinge component 8' and the latter is pivotally mounted on the component 2', similarly to the mounting described with reference to FIGS. 1—10.

The movements of the tablet T' selectively to its three positions are effected in the same manner as described with reference to FIGS. 1—10. However, the construction shown in FIGS. 11—15 includes an additional device in the form of a tablet rest which locates the tablet accurately in a vertical plane when it is in its stowed position. As shown in FIG. 15, a mounting bar 15 is secured to and extends forwardly from the frame part P'. On each side of the mounting bar 15 is secured a socket member 16 which receives a seat support 17 as shown most clearly in FIG. 12. On one side of the mounting bar 15 and underneath the compound hinge C'H' is mounted a supporting plate 18 which carries a channel-shaped tablet rest 19 which is open at its top and has spaced sides 20, 20 converging toward a root or seat 21. When the tablet T' is swung from its intermediate position to its stowed position, its leading edge passes between the tablet rest sides 20 which guide it into a vertical plane, the tablet edge then contacting and resting upon the root 21 of the rest 19. The tablet rest 19 thus serves generally the same purpose as the spring 13 described with reference to FIGS. 1—10 so that the construction shown in FIGS. 11—15 need not include a corresponding spring, although such a spring may be employed to supplement the action of the tablet rest 19 if desired.

The constructions illustrated and described embody the invention in preferred forms, but it is intended that the disclosure be illustrative rather than definitive, the invention being defined in the claims.

I claim:

1. In a tablet chair structure including a chair frame, a chair seat, a tablet, and means mounting said tablet on a side portion of said frame above the level of said seat for movements to a use position over said seat, to an intermediate position in which said tablet is in a substantially vertical plane at said chair side and above said frame side portion, and to a stowed position below said frame side portion and alongside said frame in a substantially vertical plane extending fore-and-aft of said chair, the improvement in that said mounting means comprises a hinge stop part on said frame side portion facing forwardly with respect to said chair; a hinge component carried by said frame side portion and mounted for pivotal movement about a first axis extending transversely to the fore-and-aft line of the chair; and means mounting said tablet on said hinge component for pivotal movement about a second axis transverse to and offset from said first axis from a first position in which said second axis extends fore-and-aft of said chair above said first axis to a second position in which said second axis extends fore-and-aft of said chair below said first axis, movement of said tablet with said hinge component about said first axis from said stowed position to said intermediate position with accompanying movement of said second axis from its said second position to its said first position being limited by engagement of said hinge component with said stop part.

2. Structure according to claim 1 in which said hinge stop part comprises a flat portion secured to said frame side portion and lying in a plane extending fore-and-aft of the chair; and a stop ear projecting from said flat portion outwardly with respect to said chair.

3. Structure according to claim 1 in which movement of said tablet with said hinge component about said first axis from said intermediate position to said stowed position with accompanying movement of said second axis from its said first position to its said second position is limited by engagement of said hinge component with said hinge stop part.

4. Structure according to claim 2 in which said side portion of said frame is a vertical member, and in which said hinge stop part comprises an element having two locating ears spaced from each other fore-and-aft of the chair and projecting from said flat portion respectively in front of and in rear of said vertical member and respectively engaging the front and rear surfaces thereof, said stop ear projecting from said flat portion oppositely to said locating ears.

5. Structure according to claim 2 in which said side portion of said frame is a substantially horizontal chair arm, said hinge stop part being mounted on said chair arm.

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6. Structure according to claim 5 including an inverted L-shaped mounting piece having one leg secured to the substantially horizontal surface of said chair arm and having its other leg extending vertically from said one leg, said hinge stop part being mounted on said other leg of said mounting piece.

7. Structure according to claim 1 in which said tablet is offset from said second axis transversely to said second axis, whereby when said tablet is in stowed position said tablet will tend to swing by gravity out of a vertical plane to assume an inclined position with its center of gravity directly under said second axis, said structure further including spring means interposed between said tablet and said hinge component and being loaded when said tablet is in stowed position sufficiently to overcome the gravitational tendency of the tablet to swing to said inclined position and will thereby position said tablet substantially vertically.

8. Structure according to claim 1 further including a tablet rest secured to the lower portion of said frame at the side thereof at which said tablet is mounted, said tablet rest being of channel shape facing upwardly and comprising a root and two spaced upstanding sides having mutually diverging portions for receiving an edge portion of said tablet as the latter is swung downwardly to stowed position, said sides guiding said tablet to a substantially vertical position with its lower edge resting upon said root.

9. Structure according to claim 1 in which said chair frame includes an arm over which said tablet extends when in said use position, the means mounting said tablet on said hinge component comprising a second hinge component including a platelike part extending under said tablet and being secured thereto, said structure further including a spacer positioned against and secured to said platelike part and being restable upon said arm when said tablet is in said use position.

10. Structure according to claim 1 further including friction means for inhibiting swinging of said hinge component about said first axis.

11. In a tablet chair structure including a chair frame, a chair seat, a tablet, and means mounting said tablet on a side portion of said frame above the level of said seat for movements to a use position over said seat, to an intermediate position in which said tablet is in a substantially vertical plane at said chair side and above said frame side portion, and to a

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stowed position in a substantially vertical plane below said frame side portion and alongside said frame, the improvement in that said mounting means comprises a hinge component carried by said frame side portion and mounted for pivotal

5 movement about a first axis extending transversely to the fore-and-aft line of the chair; and means mounting said tablet on said hinge component for pivotal movement about a second axis transverse to and offset from said first axis, said tablet being offset from said second axis transversely to said second axis, whereby when said tablet is in stowed position alongside said frame said tablet will tend to swing by gravity out of said substantially vertical plane to assume a position inclined with respect to and out of said substantially vertical plane with its center of gravity directly under said second axis, said structure further including spring means interposed between said tablet and said hinge component and being loaded when said tablet is in stowed position sufficiently to overcome the gravitational tendency of the tablet to swing to said inclined position and will thereby position said tablet in said substantially vertical plane.

12. In a tablet chair structure including a chair frame, a chair seat, a tablet, and means mounting said tablet on a side portion of said frame above the level of said seat for movements to a use position over said seat, to an intermediate position in which said tablet is in a substantially vertical plane at said chair side and above said frame side portion, and to a stowed position in a substantially vertical plane below said frame side portion and alongside said frame, the improvement in that said mounting means comprises a hinge component carried by said frame side portion and mounted for pivotal movement about a first axis extending transversely to the fore-and-aft line of the chair; and means mounting said tablet on said hinge component for pivotal movement about a second axis transverse to and offset from said first axis, said structure further including a tablet rest secured to the lower portion of said frame at the side thereof at which said tablet is mounted, said tablet rest being of channel shape facing upwardly and comprising a root and two spaced upstanding sides having mutually diverging portions for receiving an edge portion of said tablet as the latter is swung downwardly to stowed position, said sides guiding said tablet to a substantially vertical position with its lower edge resting upon said root.

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