July 27, 1965 J. D. BROWN 3,197,253

FOLDING CHAIR

Filed June 1, 1964 2 Sheets-Sheet 1

Fig. 1.

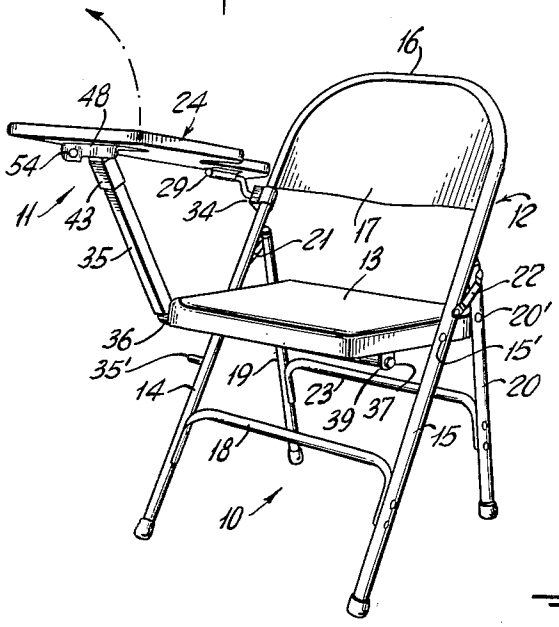


Fig. 2.

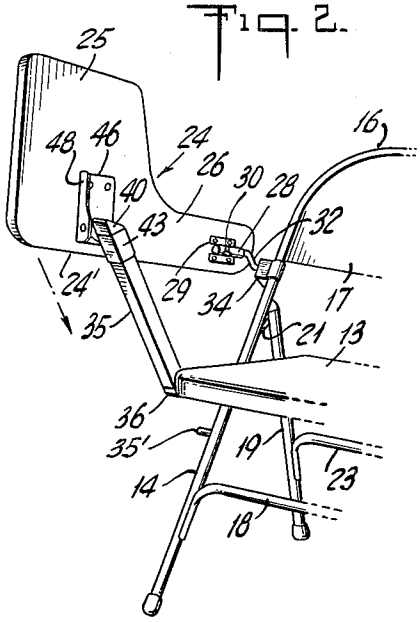


Fig. 3.

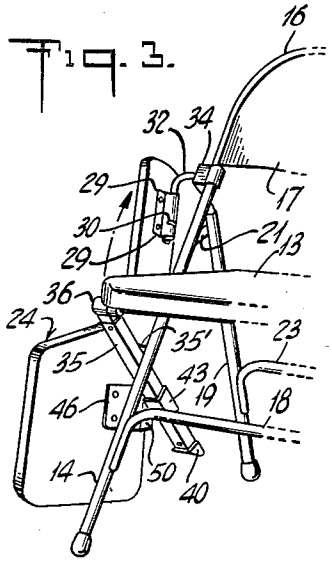


Fig. 4.

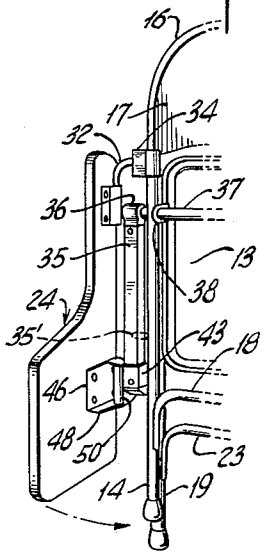
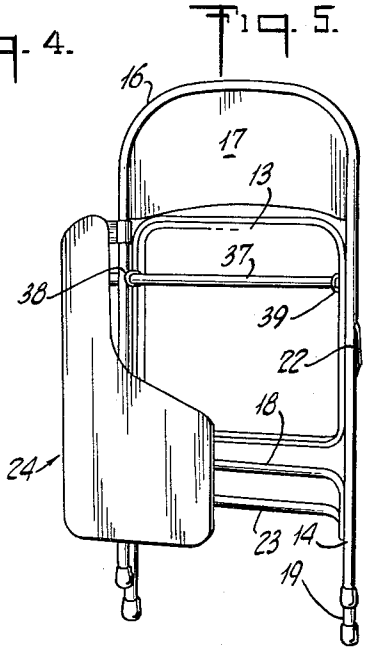


Fig. 5.



INVENTOR
JOSEPH D. BROWN
BY Eugene L. Hoffman Jr.
ATTORNEY

July 27, 1965 J. D. BROWN 3,197,253

FOLDING CHAIR

Filed June 1, 1964 2 Sheets-Sheet 2

Fig. 6.

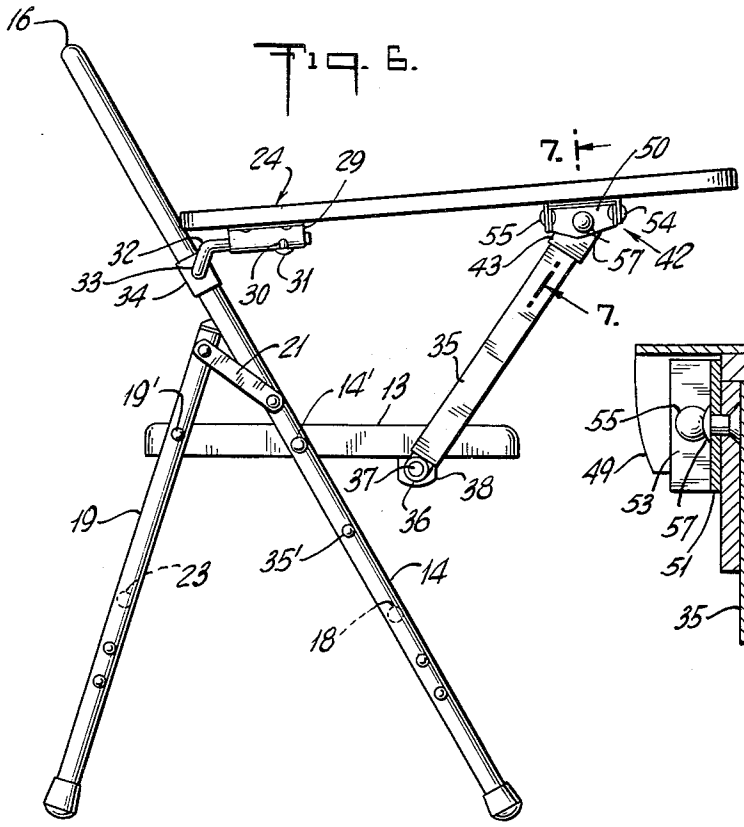


Fig. 7.

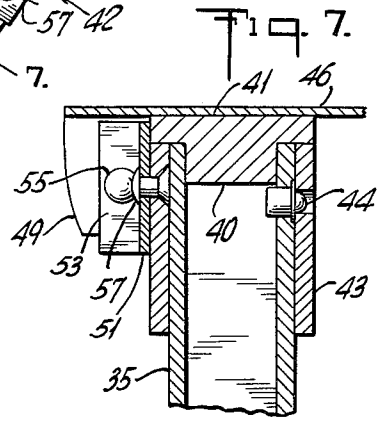
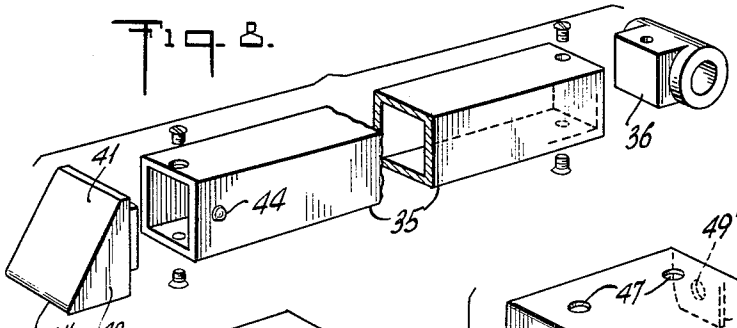


Fig. 8.



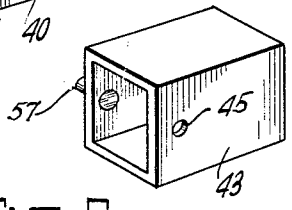
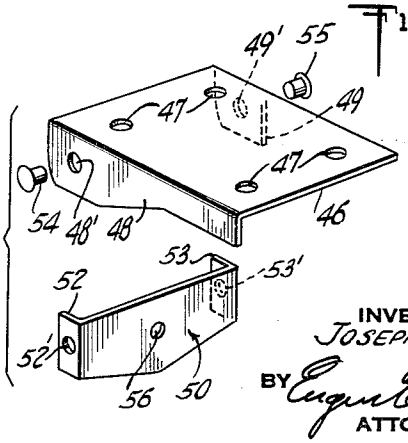


Fig. 9.

Fig. 10.



INVENTOR
JOSEPH D. BROWN
BY Eugene E. Huffman Jr.
ATTORNEY

United States Patent Office 3,197,253 Patented July 27, 1965

3,197,253

FOLDING CHAIR

Joseph D. Brown, 11 Forbes Blvd., Eastchester, N.Y.

Filed June 1, 1964, Ser. No. 371,461
7 Claims. (Cl. 297—36)

This invention relates to folding chairs and more specifically to a novel and improved combination of a folding chair and tablet arm wherein the tablet may be maintained either in a writing position or lowered to a storing position alongside the chair.

Numerous forms of tablet arm folding chairs have been suggested but known structures have not been found satisfactory for a number of reasons, among them being undue complication, relatively high cost and the necessity for care in operation to avoid damaging the linking mechanisms and latches. This invention overcomes the aforementioned difficulties and provides a novel and improved folding arm chair in combination with a folding tablet arm that is characterized by its relatively low cost, ruggedness, ease of operation and stability of the tablet arm in the writing position.

Another object of the invention resides in a novel and improved tablet arm for use on a folding chair that may be easily moved to and from the stored and writing positions and which embodies a simplified arrangement and organization of components affording a high degree of durability.

A still further object of the invention resides in the provision of a novel and improved tablet arm chair wherein the chair can be moved to a folded position whether the tablet arm is in the writing position or in the stored position and wherein the tablet arm will normally remain in the stored position when the chair is opened.

Still another object of the invention resides in the provision of a novel and improved folding chair in combination with a folding tablet arm assembly.

The above and other objects and advantages of the invention will become more apparent from the following description and accompanying drawings forming part of this application.

In the drawings:

FIGURE 1 is a perspective view of a folding chair with tablet arm in accordance with the invention and with the chair in the open position and the tablet arm in a writing position.

FIGURE 2 is a perspective view of a fragmentary portion of the chair shown in FIGURE 1 and with the tablet arm in vertical plane preparatory to movement to the stored position.

FIGURE 3 is a view similar to FIGURE 2 showing the tablet arm in the stored position.

FIGURE 4 is a perspective view of a fragmentary portion of the chair and tablet arm in the folded position.

FIGURE 5 is a front elevational view of the chair in a folded position and with the tablet arm in overlying relationship with the front of the chair.

FIGURE 6 is a side elevational view of the chair shown in FIGURE 1 and with the tablet arm in the writing position.

FIGURE 7 is a cross-sectional view of FIGURE 6 taken along the line 7—7 thereof.

FIGURE 8 is an exploded perspective view of the tablet arm supporting link.

FIGURE 9 is a perspective view of the sliding collar carried by the link shown in FIGURE 8.

FIGURE 10 is an exploded perspective view of the hinge and catch assembly carried by the tablet arm.

The chair in accordance with the invention is generally intended for use in classrooms, auditoriums and the like wherein permanent seating cannot be conveniently provided and wherein means must be provided in the form of a desk or equivalent writing surface. Folding chair structures with tablet arms have heretofore been suggested which provide for movement of the tablet arm to a folded position without collapsing the chair so that they can be moved out of the way when not needed. Such prior structures however while having numerous disadvantages as previously enumerated present further difficulties particularly in instances where they must be frequently folded and unfolded in large numbers. For instance, certain of the prior art structures provide latching means for securing the tablet arm in the writing position and such latching means must of course be released to fold the tablet arm. In other instances, the tablet arm is required to be manipulated in a particular manner in order to effect the folding of the tablet arm independently of the chair. Other structures have openings and crevices in which foreign matter can be introduced as will occur particularly when the structures are utilized in classrooms and such foreign matter will prevent or materially interfere with normal operation of the tablet arm and sometimes the chair itself.

The chair in accordance with the invention does not embody any locking or latching means per se to retain the tablet arm in the writing position. Retention of the tablet arm is accomplished by a new and improved arrangement and organization of elements which enable a user to move the tablet arm freely from its writing position to its stored position and vice versa by following what may be considered logical steps, namely, moving the tablet arm to a vertical position and then lowering the tablet arm to the stored position. To place the tablet arm in the raised position, the tablet arm need merely be moved to the raised position whereupon the tablet arm can be rotated to a horizontal writing position which automatically locks it in place. Complicated and expensive devices including spring latches and the like are completely avoided with the result that a more durable and dependable structure is provided.

The folding chair in accordance with the invention has a further advantage in that the chair may be readily and easily folded to a storage position by merely folding the chair in the normal manner whether the tablet arm is in the writing position or the stored position. However, when the chairs are being set up in a lecture hall, classroom or the like, they are merely opened in the normal manner and the tablet arm will normally remain in the stored position. This reduces setting-up time and furthermore provides more convenient access to the chairs at which time the individuals using the chairs can raise the tablet arms to the writing position if they so desire.

Referring now to the drawings which illustrate one embodiment of the invention, the folding chair is generally denoted by the numeral **10** and is provided with a folding tablet arm generally denoted by the numeral **11**. The chair may be of any conventional construction and in the illustrated embodiment includes an inverted U-shaped element **12** which, when the chair is open, is inclined relative to the seat **13**. The lower portions of the U-shaped element **12** form the front legs **14** and **15** of the chair, while the upper portion **16** supports a back

17. The legs 14 and 15 are pivoted to the seat at 14' and 15', and a cross brace 18 joins the legs 14 and 15 to provide added rigidity. The rear legs 19 and 20 of the chair are pivoted to the rear portion of the seat at 19' and 20' and the upper ends of the legs 19 and 20 are connected to the legs 14 and 15 by links 21 and 22. The rear legs 19 and 20 are also braced by a transverse member 23. With this arrangement, the chair can be moved readily from the open to the closed positions, and in the closed position, the chair elements, such as the back, seat and legs, are generally in aligned vertical planes as shown for instance in FIGURE 5.

The folding tablet arm assembly 11 has a writing surface or tablet 24 of wood or other suitable material and is provided with a relatively large forward portion 25 and rearwardly extending neck part 26. The end of the neck 26 is pivotally secured to one side of the back portion 16 of the chair by means of a hinge assembly generally denoted by the numeral 27. This hinge includes a tubular member 28 carried by a plate 29 which is secured to the neck 26 by means of screws or other suitable fastening means. The tubular member 28 has an angular slot 30 which slidably receives a pin 31 carried by the hinge pin 32. The pin 31 and slot 30 are principally for the purpose of retaining the pin 32 in its proper position within the tubular element 28 and at the same time provide for rotation of the tablet arm 24 from the horizontal or writing position as shown in FIGURE 1 to the vertical position as shown in FIGURE 2 preparatory to its movement to the storage position as shown in FIGURES 3, 4 and 5. It will also be observed with reference particularly to FIGURE 2 that the axis of the tubular element 28 is substantially parallel to the edge 24' of the tablet arm 24. The rear portion of the pin 32 is bent downwardly as indicated at 33 (see FIGURE 6) and then transversely for engagement with the bracket 34 which is welded or otherwise suitably secured to the chair back 16. With this arrangement, the tablet arm can be rotated about an axis defined by the axis of the tube 28 and will also move in a vertical plane about the pivot point in the bracket 34.

The forward end of the tablet arm 24 is supported by an arm or link 35. The lower end of the link 35 is provided with a transverse tubular bearing 36 rotatably engaging a shaft 37 fixed to the underside of the seat by a pair of brackets 38 and 39. The outer end of the arm or link 35 has a cap 40 with an inclined surface 41 which surface is coordinated with the tablet arm in the open position as shown in FIGURE 1 so that it is substantially parallel to the tablet arm in such open position.

The tablet arm 24 is connected to the arm 35 by means of a hinge and slider assembly generally denoted by the numeral 42. In the instant embodiment of the invention, the arm has a square cross-section and receives the tubular slider or collar 43 having the same cross-sectional configuration as the link 35. While the link 35 and the slider 43 may have any suitable configurations, it is desirable that the slider 43 be fixed against rotation on the link 35 as it affords somewhat added strength and rigidity to the structure. The outer end of the link is provided with a spring detent 44 which cooperates with a hole 45 in the slider 43. This detent 44 merely serves to hold the slider in the raised position when the tablet arm is being moved to the writing position to facilitate movement of the tablet from the vertical plane as shown in FIGURE 2 to the horizontal plane as shown in FIGURE 1. This avoids the need for the user to hold the tablet arm in the position shown in FIGURE 2 while it is being rotated about its axis.

The tablet arm 24 is secured to the slider 43 by a double hinge shown in exploded form in FIGURE 10. This double hinge includes a plate 46 having openings 47 therein for attachment of the plate to the underside of the tablet arm as shown in FIGURE 2. The plate includes a downwardly extending flange 48 along one side

thereof and a relatively narrow downwardly extending tab 49 on the other side thereof. The flange 48 and tab 49 are provided with openings 48' and 49' for pivotally securing the bracket 50 thereto. The bracket 50 has a vertical portion 51 and a pair of outwardly extending legs 52 and 53. These legs are provided with openings 52' and 53' for reception of the pivot pins 54 and 55 for securing the bracket 50 to the plate 46. The wall 51 of the bracket 50 has an opening 56 for pivotally securing it to a pin 57 extending from the outer side of the slider 43.

The plate 46 is positioned on the underside of the tablet arm 24 so that the axis defined by the pivot pins or rivets 54 and 55 is in substantial alignment with the axis of the rear hinge tube 28. With this arrangement, the tablet arm 24 can be rotated through an angle of 90° from the horizontal position shown in FIGURE 1 to the vertical position shown in FIGURE 2. In addition, the inclined surface 41 of the cap 40 engages the underside of the plate 46 when the tablet arm is in the writing position and the leading edge 41' of the cap 40 butts against the corner defined by the plate 46 and the downwardly extending flange 48. This arrangement provides a firm support for the tablet arm in its horizontal position and it is the cooperation of the cap 40 with the plate 46 and flange 48 which retains the tablet arm in the writing position.

The lowered or stored position of the tablet arm is determined by a pin 35' carried by the leg 14. This pin engages the link 35 when the latter is displaced downwardly and thus fixes the lowermost position of the tablet arm 24.

With the structure as described above and assuming the chair and tablet arm is in the open position shown in FIGURE 1, the user can move the tablet arm to the folded or stored position merely by raising the arm itself to the vertical plane as shown in FIGURE 2. When the tablet arm 24 is in this position, slight pressure downwardly will overcome the resistance of the detent 44 and the tablet arm can be lowered to the stored position as shown in FIGURE 3. To bring the tablet arm to the writing position, the user need merely raise the tablet arm until the detent 44 engages the opening 45. This will temporarily hold the slider 43 in the upper position while the tablet arm 24 is rotated to the horizontal position as shown in FIGURE 1.

The chair in accordance with the invention can be folded whether the tablet arm is in either the raised or stored position. If the arm is in the stored position as shown in FIGURE 3, the chair may be readily folded to the position shown in FIGURE 4 in which instance the arm is free to rotate about a vertical axis to assume the position shown either in FIGURE 4 or in FIGURE 5, the latter being the usual position of the arm for the storage of banks of chairs. If the tablet arm is in an open position as shown in FIGURE 1, the chair can be folded without actually lowering the arm to the stored position. Should the chair of FIGURE 1 be folded without first lowering the tablet arm than as the seat 13 of the chair is raised, the arm 24 will move upwardly until the link 35 and seat pass an in-line position. The angular shift of the cap 40 relative to the plate 46 will cause angular movement of the tablet arm 24 about its axis so that it will clear the link 35 and automatically move downwardly to a position shown for instance in FIGURE 5. When the chair is in the closed position as shown in either FIGURE 4 or 5, the unfolding of the chair will not automatically move the tablet arm to the raised position. It is quite evident from the structure thus far described that when the tablet arm is in the position shown in FIGURE 4 unfolding the chair will not affect the position of the tablet arm. In FIGURE 5, unfolding of the chair merely moves the tablet arm about a vertical axis to a position corresponding to that shown in FIGURE 4.

From the foregoing description, it is apparent that the

chair in accordance with the invention provides a sturdy, dependable unit that is characterized by its ease of operation, sturdiness, durability and freedom from damage that may be caused by improper operation.

While only one embodiment of the invention has been illustrated and described, it is apparent that changes, alterations and modifications may be made without departing from the true scope and spirit thereof as defined by the appended claims.

What is claimed is:

1. The combination with a folding chair having back, seat and leg members movable from a folded position with the members in relatively closely disposed relationship to an open position, of a folding tablet arm assembly comprising an elongated tablet arm, means pivotally securing one end of said arm to said back member for pivotal movement of said arm in a substantially vertical plane relative to said chair and about an axis extending in a direction of the length of said arm, an elongated link pivotally secured to said seat member at a point spaced from the forward edge thereof and angularly displaceable in a vertical plane, a hinge assembly securing the forward end of said tablet arm to said link, said hinge assembly including a plate secured to the underside of said tablet arm, a depending member hinged to said plate with the axis of said hinge being in substantial alignment with the first said axis, means pivotally and slidably securing said depending hinge portion to said link whereby angular movement of the tablet arm about the first said pivot and in a vertical plane will produce corresponding angular rotation of said link, and downwardly extending means carried by said plate and abutting the outer end of said link with the latter inclined outwardly and upwardly of the seat member when the tablet arm is moved about said axes and into the writing position to retain said tablet arm in the writing position.

2. The combination with a folding chair having back, seat and leg members movable from a folded position with the members in relatively closely disposed relationship to an open position, of a folding tablet arm assembly comprising an elongated tablet arm, means pivotally securing one end of said arm to said back member for pivotal movement of said arm in a substantially vertical plane relative to said chair and about an axis extending in a direction of the length of said arm, an elongated link pivotally secured to said seat member at a point spaced from the forward edge thereof and angularly displaceable in a vertical plane, a hinge assembly securing the forward end of said tablet arm to said link, said hinge assembly including a plate secured to the underside of said tablet arm, a depending member hinged to said plate with the axis of said hinge being in substantial alignment with the first said axis, means pivotally and slidably securing said depending hinge portion to said link whereby angular movement of the tablet arm about the first said pivot and in a vertical plane will produce corresponding angular rotation of said link, a downwardly dedepending element carried by said plate and a cap on the outer end of said link, said cap having a top surface substantially parallel with and contacting said plate and the leading edge of said cap abutting said depending element when the tablet arm is in the writing position.

3. The combination according to claim 2 wherein said link includes a spring actuated detent engaging said collar when in the raised position.

4. The combination with a folding chair having back, seat and leg members movable from a folded position with the members in relatively closely disposed relationship to an open position, of a folding tablet arm assembly comprising an elongated tablet arm, means pivotally securing one end of said arm to said back member for pivotal movement of said arm in a substantially vertical plane relative to said chair and about an axis extending in a direction of the length of said arm, an elongated link pivotally secured to said seat member at a point spaced from the forward edge thereof and angularly displaceable in a vertical plane, a hinge assembly securing the forward end of said tablet arm to said link, said hinge assembly including a plate secured to the underside of said tablet arm, a depending member hinged to said plate with the axis of said hinge being in substantial alignment with the first said axis, means slidably engaging said link and fixed against relative rotation therewith, means pivotally securing said depending hinge portion to the last said means whereby angular movement of the tablet arm about the first said pivot and in a vertical plane will produce corresponding angular rotation of said link, a downwardly depending element carried by said plate, and a cap on the outer end of said link, said cap having a top surface substantially parallel with and contacting said plate and the leading edge of said cap abutting said depending element when the tablet arm is in the writing position.

5. The combination according to claim 4 wherein said slidable means comprises an elongated collar surrounding said link.

6. The combination with a folding chair having back, seat and leg members movable from a folded position with the members in relatively closely disposed relationship to an open position, of a folding tablet arm assembly comprising an elongated tablet arm, means pivotally securing one end of said arm to said back member for pivotal movement of said arm in a substantially vertical plane relative to said chair and about an axis extending in a direction of the length of said arm, an elongated link of rectangular cross section pivotally secured to said seat member at a point spaced from the forward edge thereof and angularly displaceable in a vertical plane, a hinge assembly securing the forward end of said tablet arm to said link, said hinge assembly including a plate secured to the underside of said tablet arm, a depending member hinged to said plate with the axis of said hinge being in substantial alignment with the first said axis, a collar surrounding said link and slidable relative thereto, said collar having a configuration corresponding to the configuration of said link and fixed against angular motion relative thereto, means pivotally securing said depending hinge portion to said collar whereby angular movement of the tablet arm about the first said pivot and in a vertical plane will produce corresponding angular rotation of said link, a downwardly depending element carried by said plate, and a cap on the outer end of said link, said cap having a top surface substantially parallel with and contacting said plate and the leading edge of said cap abutting said depending element when the tablet arm is in the writing position.

7. The combination with a folding chair having back, seat and leg members movable from a folded position with the members in relatively closely disposed relationship to an open position, of a folding tablet arm assembly comprising an elongated tablet arm, means pivotally securing one end of said arm to said back member for pivotal movement of said arm in a substantially vertical plane relative to said chair and about an axis extending in a direction of the length of said arm, an elongated link pivotally secured to said seat member at a point spaced from the forward edge thereof and angularly displaceable in a vertical plane, a hinge assembly securing the forward end of said tablet arm to said link, said hinge assembly including a plate secured to the underside of said tablet arm, a depending member hinged to said plate with the axis of said hinge being in substantial alignment with the first said axis, means pivotally and slidably securing said depending hinge portion to said link whereby angular movement of the tablet arm about the first said pivot and in a vertical plane will produce corresponding angular rotation of said link, a downwardly depending element carried by said plate and means on the outer end of said link having a surface firmly abutting said downwardly depending element with the tablet arm

in the writing position and said link inclined upwardly and outwardly of said seat member.

References Cited by the Examiner

UNITED STATES PATENTS

1,196,050	8/16	Watkins	297—162
1,482,205	1/24	Uhl	248—188.9
2,664,943	1/54	Clarin	297—162
2,676,645	4/54	Supita	297—160
2,694,442	11/54	Nordmark	297—55
2,954,073	9/60	Junkunc	297—162
3,024,065	3/63	Eves et al.	297—162
2,099,479	7/63	Banke	297—162

FRANK B. SHERRY, *Primary Examiner.*