

March 6, 1962

J. D. EVES ETAL

3,024,065

TABLET ARM ATTACHMENT FOR FOLDING CHAIRS

Filed Jan. 7, 1959

4 Sheets-Sheet 1

FIG. 1

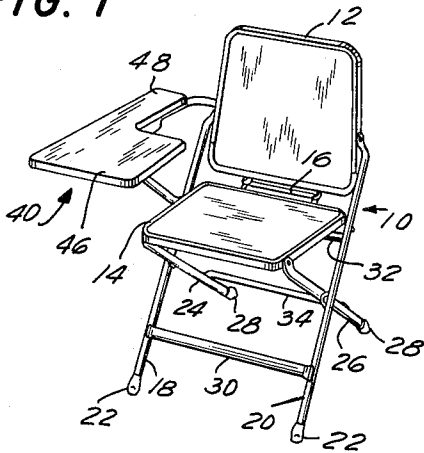


FIG. 2

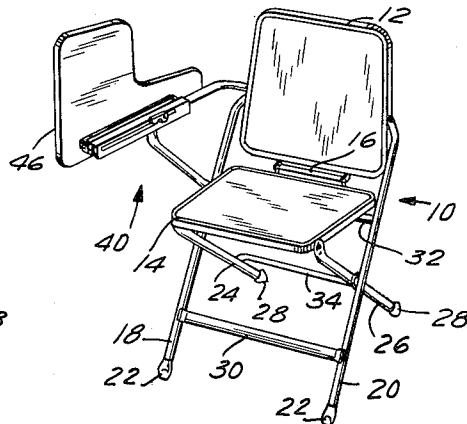


FIG. 3

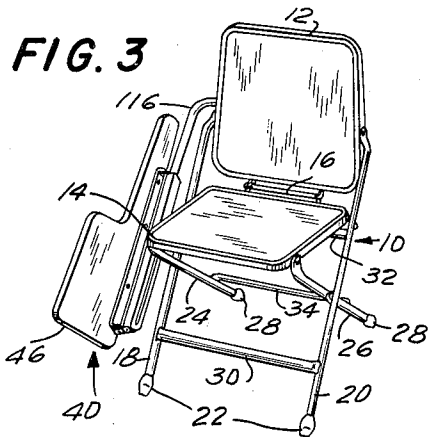


FIG. 4

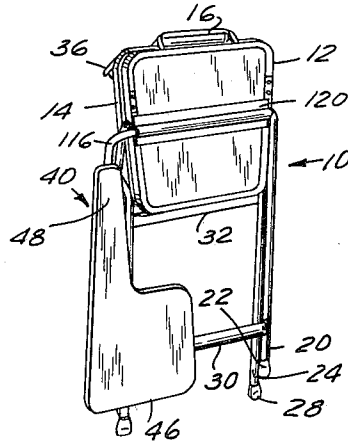
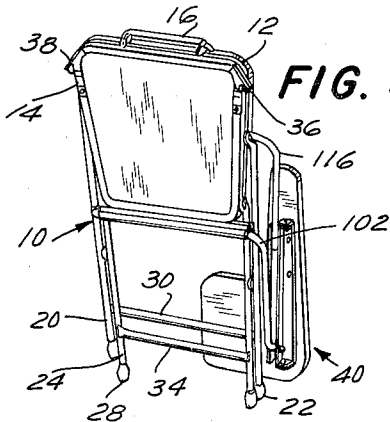


FIG. 5



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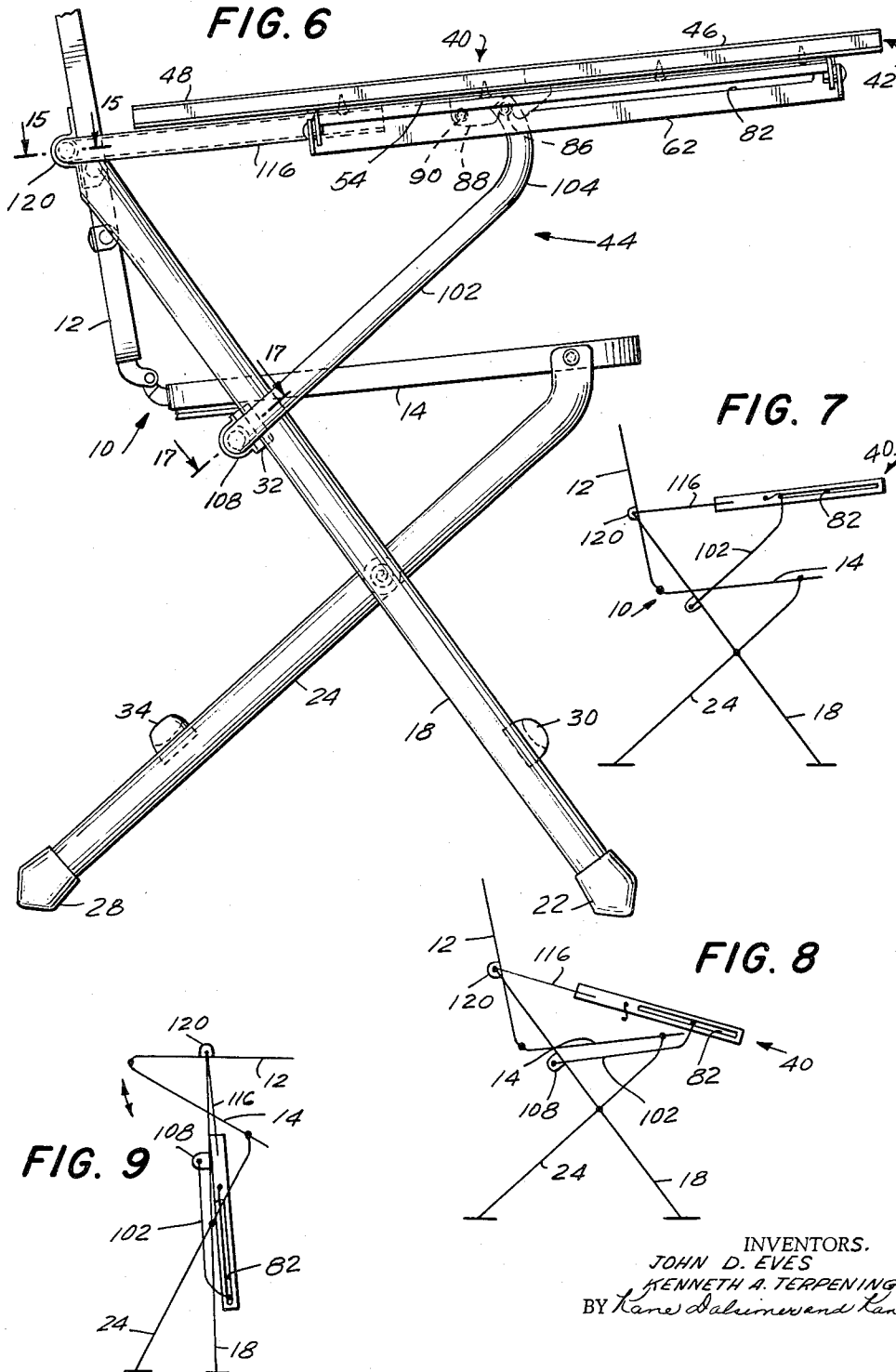
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TABLET ARM ATTACHMENT FOR FOLDING CHAIRS

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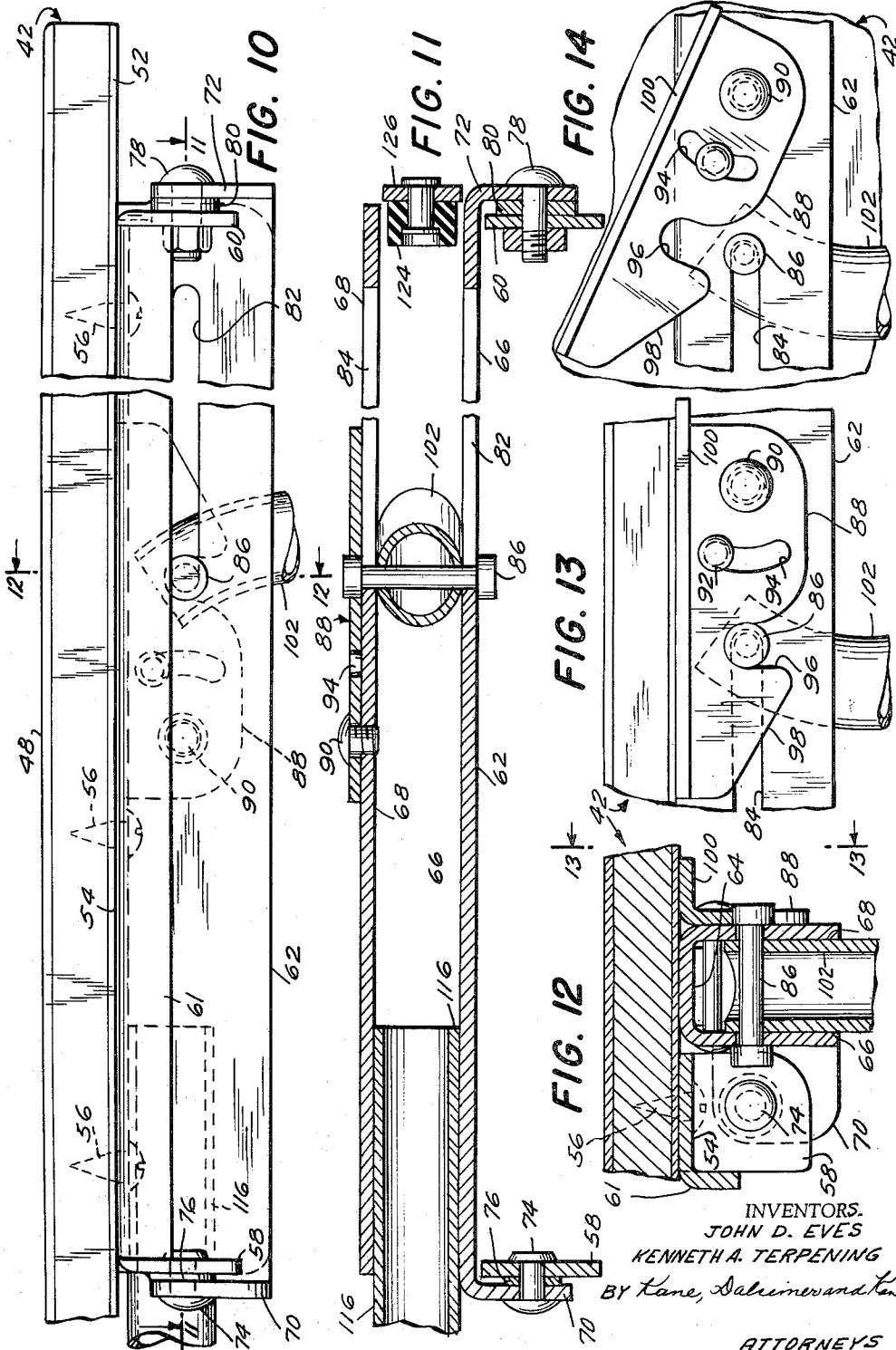
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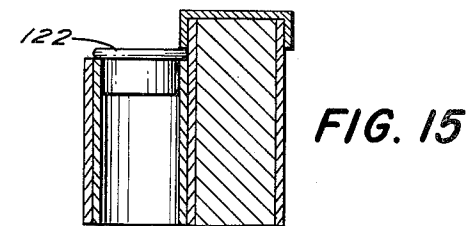


FIG. 15

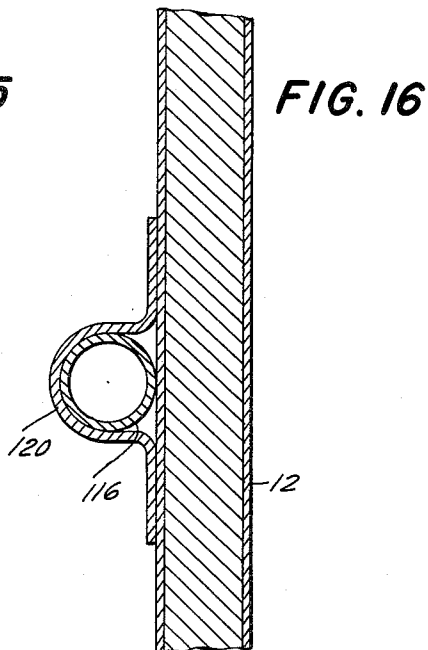


FIG. 16

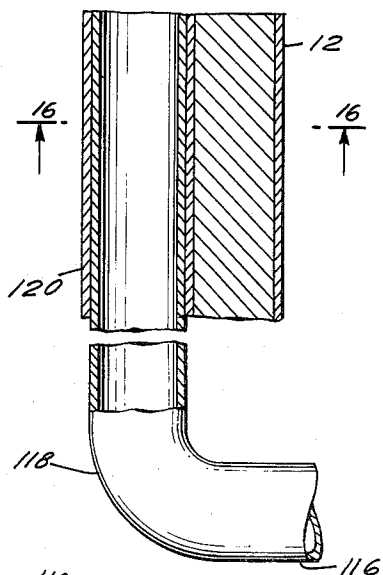


FIG. 17

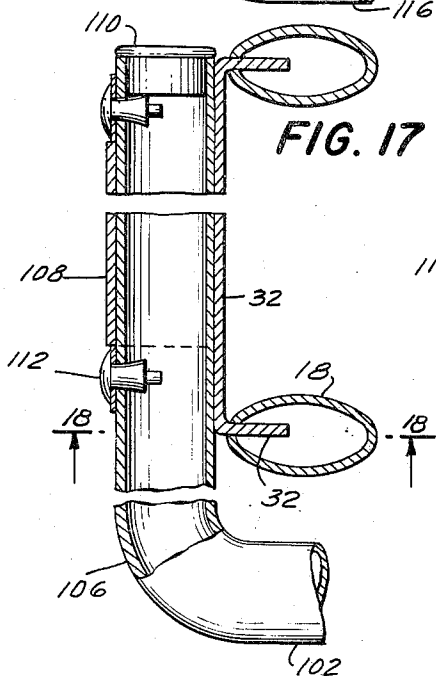


FIG. 18

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## TABLET ARM ATTACHMENT FOR FOLDING CHAIRS

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land, N.Y., a corporation of New York  
Filed Jan. 7, 1959, Ser. No. 785,368  
4 Claims. (Cl. 297—162)

This invention relates to folding chairs and, more particularly, to folding chairs having a tablet arm attachment for writing purposes in classrooms and the like.

An object of this invention is to provide such chairs with an improved tablet arm attachment which is adapted to be independently collapsed without folding the mounting chair, as well as being adapted to assume a fully collapsed and an approximate coplanar relationship with respect to a completely collapsed or folded chair to thereby enhance the versatility and storage of such chairs.

Another object is to provide a folding chair construction having an improved tablet arm attachment which may be moved from an inoperative or collapsed position at one side of the chair, at which position an individual is permitted more complete access to the seat of the chair, to an operative extended position over the seat for writing or other similar purposes.

A further object is to provide a folding chair with an improved tablet arm attachment which is of simple construction, less expensive to manufacture, and advantageously and conveniently operable under practically all contemplated conditions of use, as well as storage without affecting the proper and desired functioning of the chairs.

In general, the present invention comprises a tablet arm attachment mounted on a folding chair in such a manner that it can be shifted between an operative horizontal position and a collapsed position extending downwardly to thereby afford access to the chair seat. The tablet arm attachment includes a tablet arm which is supported by a collapsible or foldable frame assembly which, in turn, is coupled with the foldable chair. A channel of this frame assembly is disposed beneath the tablet arm and is pivotally connected to the undersurface thereof in such a manner that the tablet arm may be laterally tilted. A pair of tubular members are operatively associated with the channel, with one of these members being rotatably mounted on the back-rest of the chair while the other tubular member is rotatably mounted on a cross-bar extending between the front supporting legs of the chair. A slotted connection between the channel and one of the tubular members permits relative displacement of these parts in response to the collapsing of the tablet arm attachment. A latch assembly releasably secures this tubular member with respect to the channel to thereby maintain the tablet arm attachment in its operative position with the tablet arm extending forwardly over the seat of the chair. When the tablet arm attachment is collapsed and the mounting chair is in a folded condition, the tablet arm may then be turned with respect to the channel to thereby be ultimately substantially coplanar with the completely collapsed chair and approximately in this relative position with respect to the remaining parts of the tablet arm attachment.

Other objects and advantages will become apparent from the following detailed description which is to be taken in conjunction with the attached sheets of drawings illustrating a preferred embodiment of the invention, and in which:

FIG. 1 is a perspective view of a folding chair and tablet arm attachment, both of which are in an operative position;

FIG. 2 is a similar view with the tablet arm tilted with

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respect to the mounting channel of the collapsible frame assembly of the attachment;

FIG. 3 is, likewise, similar to FIG. 1, with the tablet arm attachment in its folded or collapsed position;

FIG. 4 is a perspective view of the chair and attachment, both of which are in a collapsed position and in substantially coplanar relationship with one another;

FIG. 5 is a perspective view of the chair and attachment of FIG. 4 and illustrates that relationship when observed from a different direction;

FIG. 6 is an enlarged side elevational view of the chair and tablet arm, both of which are illustrated in an operative position with certain parts broken away and removed;

FIGS. 7-9 are stick representations of sequential and selected positions of the folding chair and tablet arm attachment, which illustrations serve to more clearly demonstrate the relative movement of the various assemblies and their individual components;

FIG. 10 is an enlarged fragmentary view of the forward major sector of the tablet arm and its relationship with respect to the associated parts of the collapsible frame assembly of the attachment;

FIG. 11 is a sectional view taken along the line 11—11 of FIG. 10;

FIG. 12 is a sectional view taken along the line 12—12 of FIG. 10;

FIG. 13 is an illustration taken along the line 13—13 of FIG. 12 in the direction of the arrows;

FIG. 14 is a similar view with the latch means in its released position;

FIG. 15 is a fragmentary sectional view taken along the line 15—15 of FIG. 6;

FIG. 16 is a sectional view taken along the line 16—16 of FIG. 15;

FIG. 17 is a fragmentary sectional view taken along the line 17—17 of FIG. 6; and

FIG. 18 is a sectional view taken along the line 18—18 of FIG. 17.

Reference is now made to the construction of the folding chair 10, which is adapted to assume an unfolded operative position simulating that illustrated in FIG. 1, from the folded or collapsed position of FIG. 4. In this connection, a back-rest 12 is pivotally associated with a seat 14 through means including a handle bar 16, which, in turn, additionally serves as a handle for carrying the chair 10 when in its folded condition. The back-rest 12 has pivotally connected thereto a pair of front supporting legs 18 and 20 which terminate at their lower ends in the usual feet 22 which may be formed from suitable resinous material. Seat 14, on the other hand, has pivotally connected thereto a pair of rear supporting legs 24 and 26 which similarly include the usual plastic feet 28.

The supporting legs 18 and 24 are pivotally connected to one another intermediate their ends, whereas supporting legs 20 and 26 are similarly connected to one another intermediate their ends. Cross-bars or braces 30 and 32 extend between and are rigidly connected to supporting legs 18 and 20 for purposes of cooperating to maintain the desired spaced-apart relationship of the chair supporting legs in addition to their other functions. An additional cross-bar 34 is similarly connected to the supporting legs 24 and 26. In an effort to secure the proper interrelationship of parts as well as distribution of stresses and strains, a pair of bearing brackets 36 and 38 are secured to the undersurface of seat 14 and are adapted to engage front supporting legs 18 and 20, respectively, when the chair 10 is in its unfolded, operative condition. For a more detailed disclosure of a folding chair of substantially similar construction, reference should be made

to application serial Number 742,356 filed June 16, 1958 having a common assignee.

The tablet arm attachment 40 comprises a tablet arm 42 and a collapsible frame assembly 44. The tablet arm 42 assumes the usual configuration, which includes the enlarged writing surface 46 and arm rest 48. Furthermore, the tablet arm 42 may be formed from plywood having the proper number of plies. A decorative plastic laminate 50 may also be applied to the upper face of the tablet arm 42; and similarly, if desired, a suitable backing sheet 52 may be laminated to the undersurface thereof.

A mounting plate 54 is attached to the bottom-face of the tablet arm 42 by the necessary number of fasteners 56 which extend through preformed holes in the plate. Mounting plate 54 has a pair of depending and bored flanges 58 and 60 at its terminal ends as well as a laterally extending reinforcing leg 61.

The tablet arm 42, through mounting plate 54 is tiltable with respect to the frame assembly 44 by being pivotally mounted on a channel 62. In this connection, channel 62 may include a base 64 with integrally extending legs 66 and 68. The leg 66 has a pair of laterally extending and suitably bored flanges 70 and 72. These flanges are adapted to be interposed between flanges 58 and 60 of the mounting plate 54 and are coupled therewith at the rear end by means of rivet 74 and interposed washer 76, and at the forward end by a nut and bolt assembly 78 with an interposed friction washer 80. Thus, the mounting plate 54 is pivotally mounted on the channel 62 to thereby permit the tablet arm 42 to be tilted to a vertical position with respect to the horizontal from its normal substantially horizontal position. The ease at which the tablet arm 42 may be tilted can be regulated by either increasing or decreasing the friction created by washer 80 by means of the nut of the nut and bolt assembly 78 as the conditions may require.

As will be observed in FIG. 12, the tablet arm 42 will be prevented from shifting past its proper vertical position by the ultimate abutting of flanges 58 and 60 with outer surfaces of leg 66 in a stop relationship to thusly prevent further tilting. The reverse movement of the tablet arm 42 is limited by its ultimate bearing relationship with base 64 of channel 62 whereby this tablet arm 42 will conveniently assume its desired horizontal writing position.

The legs 66 and 68 of channel 62 each include longitudinally extending slots 82 and 84, respectively. The slots 82 and 84 are adapted to receive a bearing pin 86 having enlarged heads at its terminal ends to prevent it from being removed or disassociated from the slots while, at the same time, permitting it to travel freely within the slots.

The displacement of pin 86 within slots 82 and 84 is restricted under certain conditions by latch 88 which is pivotally mounted on leg 68 of channel 62 by means of pin 90. The pivotal displacement of latch 88 with respect to this leg 68 is limited by a stop pin 92 which extends from leg 68 into an arcuate slot 94 formed in latch 88. The latch 88 additionally includes a latch opening 96, the forming surfaces thereof being adapted to engage the associated head of bearing pin 86. The latch 88 further includes a beveled camming edge 98 to induce latch 88 to rotate about pin 90 in response to its engagement with the bearing pin 86 as the latter is moved in a direction towards the rear of the mounting chair 10. A transverse flange 100 extends from latch 88 and serves to present a finger engaging surface to pivot latch 88 in a clockwise direction, as viewed in FIG. 13, to unlatch the engaged pin 86 to permit the latter's displacement in a forward direction. This flange 100 additionally serves to increase the bearing area on which the undersurface of tablet arm 42 rests when the latter is in its horizontal writing position.

The pin 86, interiorly of the channel 62, is mounted by a lower support strut 102, which may be fabricated from

tubular stock. The lower support tube 102 may include a suitably located bend 104 to facilitate the proper transmission of stresses from the bearing pin 86 as a result of loads acting upon the upper face of the tablet arm 42. The lower support tube 102 includes a further bend 106 so that the other end of this tube will extend beneath the chair seat 14 and be advantageously rotatably mounted by a lower support bracket 108. This lower support bracket 108 is suitably secured to the chair cross-bar 32, such as by welding. The longitudinal movement of the lower support tube 102 within bracket 108 is prevented by expandable rivets 110 and 112 which may mount suitable washers for this purpose. A plug 114 may be inserted into the terminal end of the lower support tube in an effort to minimize sharp edges.

An upper support tube 116 is anchored within channel 62, as for example by welding, and includes a bend 118 for the purpose of conveniently locating the other end of upper support tube 116 behind the chair back-rest 12. This end of the upper support tube 116 is rotatably mounted within an upper support bracket 120 which, in turn, is secured to the rear of the back-rest 12. A plug 122 may be placed within the exposed terminal end of the upper support tube 116, again in an attempt to decrease the number of sharp edges.

When it is desired to collapse the tablet arm attachment 40 from its operative position, with the chair 10 likewise in an operative, unfolded condition as illustrated in FIG. 1, the tablet arm 42 is tilted vertically, as illustrated in FIG. 2, to obtain access to the latch 88 which otherwise will be prevented from being released to free bearing pin 86 as long as the tablet arm 42 is in its operative horizontal position. The flange 100 of latch 88 may then be engaged to force the latch to pivot about its mounting pin 90 to thereby free bearing pin 86 from the notch 96. Thus, from the stick representation illustrated in FIG. 7, the frame assembly 44 will collapse under its own weight in the manner illustrated in FIG. 8, with the bearing pin 86 riding in slots 82 and 84 of channel 62. As the tablet arm attachment is thus collapsed, the lower support tube 102 and upper support tube 116 will rotate within their respective mounting brackets 108 and 120.

The tablet arm attachment 40 will then assume a fully collapsed position, simulating that illustrated in FIG. 3, with respect to the unfolded chair 10. In this position the tablet arm attachment 40 will extend downwardly at an angle with respect to the horizontal and thereby provide access to the seat 14 of chair 10 without substantially encountering any difficulty. The collapsing of the tablet arm attachment 40 is limited by the engagement of bearing pin 86 with the forward ends of the slots 82 and 84. A plug 124 may be mounted on the interior face of a downwardly projecting flange 126 to soften any impact of lower support tube 102 as well as bearing pin 86 with metal surfaces that they may encounter when the tablet arm attachment is folded to its completely collapsed position.

When it is desired to collapse the chair 10, the back-rest 12 is pivoted towards the chair seat 14 while grasping handle 16. An intermediate stage of this folding operation is illustrated by means of the stick view of FIG. 9 with the fully collapsed position of chair 10 illustrated in FIGS. 4 and 5. To render the various parts coplanar to facilitate storage of the chair 10 with tablet arm attachment 40, the tablet arm 42 is pivoted to return it into bearing relationship with respect to base 64 of channel 62 and flange 100 of latch 88. Thus, in the completely collapsed position of the chair 10 and attachment 40, as illustrated in FIGS. 4 and 5, the procedure and steps are simply reversed to effect the unfolding of chair 10 and subsequent unfolding of tablet arm attachment 40 to their respective operative positions.

Thus the aforementioned objects and advantages are most effectively attained. Although a single preferred embodi-

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ment is illustrated, the invention is not to be limited thereby and it is intended that the scope thereof be defined by the appended claims.

We claim:

1. The combination with a folding chair having a back rest and a pair of front legs connected to said back rest, of a tablet arm attachment including a tablet arm which extends forwardly of said chair, and a collapsible frame assembly supporting said tablet arm and pivotal on said chair between an unfolded position extending said tablet arm forwardly of said chair and a collapsed position extending said tablet arm substantially downwardly with respect to said chair, said tablet arm being tiltable—when said frame assembly is in its unfolded position—between a substantially horizontal position and a substantially vertical position, said frame assembly comprising a support member pivotally mounting said tablet arm so that said tablet arm is tiltable between a substantially horizontal position and a substantially vertical position, an arm extending integrally from said support member and pivotally mounted on said back rest about a fixed axis of rotation such that said frame assembly is permitted to fold from said unfolded position to said collapsed position, a strut for receiving a major portion of stresses transmitted through said tablet arm resulting from loads placed thereon, one end of said strut being pivotally mounted by said pair of front legs and the other end being pivoted to said supporting member while being slidably coupled therewith, latch means for releasably holding said tablet arm in an extended position forwardly of said chair with said latch means being adapted to be released to thereby release said tablet arm from said extended position only upon tilting said tablet arm from said substantially horizontal position, said latch means being pivoted to said support member and adapted to releasably hold said other end of said strut with respect to said support member, said latch means being disposed beneath said tablet arm

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when said tablet arm is in a substantially horizontal position.

2. The invention in accordance with claim 1 wherein said latch means is disposed immediately below said tablet arm when said tablet arm is in said substantially horizontal position and releasably holds said other end of said strut, said latch means prevented from being released when said tablet arm is in said substantially horizontal position and permitted to be released only upon tilting said tablet arm between said substantially horizontal position and substantially vertical position.

3. The invention in accordance with claim 1, wherein said support member is a slotted channel on which said tablet arm is adapted to rest and to which said tablet arm is pivotally mounted and said tablet arm and channel presenting stop means for preventing tilting of said tablet arm beyond said horizontal position and vertical position.

4. The invention in accordance with claim 1, wherein said support member includes a slot, a pin extends from said other end of said strut into said slot, and said latch means includes a latch pivotally mounted on said support member for releasably holding said pin so as to retain said tablet arm at an extended position forwardly of said chair.

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