Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).
Description

Background of the Invention

1. Field of the Invention

[0001] The present invention relates to Mobile Elevationally Adjustable Folding Stages that fold between a storage position and a use position.

2. Description of the Prior Art

[0002] Folding stages are used for a variety of purposes to provide a temporary raised platform for use in hotels, arenas, convention centers and other institutions or multiple use facilities that require the capability of setting up temporary stages. The stages are made up of individual stage structures positioned adjacent to each other to form an extended stage surface. When not in use, the individual stage structures may be folded to compact dimensions and stored.

[0003] Stages that are used for forming an elevated platform at lower heights, typically ranging between stages having a minimum height of 16 inches (1 inch = 2.54 cm) up to stages having a typical maximum height of 48 inches, generally fold at their center with the stage decks folding to a substantially vertical storage position whereat the upper surfaces face one another. A folding linkage facilitates folding between the use position and the storage position. Support legs fold inward to lie substantially flush against the underside of the stage decks. When folded, the stages are supported on rollers or casters for transportation between locations.

[0004] An example of such a tri-height stage is shown in U.S. Patent No. 5,613,450 assigned to Sico, Inc., the Assignee of the present invention. Although this stage provides many advantages over the prior art and is very useful, still further improvements are possible. The stage shown in the '450 patent provides advantages for guiding the legs into position during unfolding, but provides only a frame member angling inward. Moreover, the engagement edge extends only in a horizontal plane rather than angling vertically as well.

[0005] British patent 1 458 509 shows an adjustable stand for a typewriter. The '509 British patent shows telescoping members, but does not have spacer or spreader members.

[0006] In addition, a typical problem with tri-height stages is the small amount of overlap between the telescoping leg members when extended. The minimal amount of overlap in the extended position may affect the stability of the telescoping legs and may result in a more wobbly leg and more play between the inner and outer portions of the telescoping leg. Additional overlap provides increased stability, but may increase the minimum height of the stage or may limit the vertical adjustment range.

[0007] It can be seen then that a new and improved tri-height folding stage is needed. Such a stage should provide for guiding of an inner leg member with a guiding surface angling in both a vertical and horizontal plane. In addition, such a stage should provide for more stable telescoping of the leg without affecting the height or vertical adjustment. The present invention addresses these as well as other problems associated with folding stages.

Summary of the Invention

[0008] The present invention is directed to a folding stage adjustable to several heights. The stage includes a pair of stage decks which fold from a planar position to a substantially vertical storage position wherein upper surfaces of the decks substantially oppose one another. The stage includes a linkage which folds the panels and outer support legs between the use and storage positions. Inner support legs fold independently proximate the folding axis of the stage. Outer support legs fold with the linkage between a retracted position against the bottom of the stage decks and an extended support position. Both the inner support legs and outer support legs telescope to raise and lower the stage surface.

[0009] It can be appreciated that as the inner support legs fold independently of the linkage, it is important that the inner support legs be fully extended in a vertical position extending at a right angle to the stage decks. The present invention includes a caster plate supporting the casters and having an angled edge extending inwardly. The angled edge includes a flange that extends downward and includes an outer and upward angling lower surface. The caster plates are arranged and configured so that if an inner support leg is not totally unfolded, the inner support leg engages the edge of the caster plate flange and is moved into a fully unfolded vertical position. It can be appreciated that the flange provides both an angled surface in the horizontal plane as well as an angled surface in the vertical plane.

[0010] To accommodate low stage heights and maximum elevational adjustment, the amount of overlap between telescoping support leg sections is minimized. The present invention utilizes a spacer system having a spreader member and a spacer member having flanges extending radially outward. The spacer system assembly attaches to an upper end of an inner telescoping leg member and inserts within the outer telescoping leg member. When the spreader member is tightened, it presses the flanges of the spacer member to extend outward and engage the inner surface of the outer telescoping leg member. In addition, the lower edge of the outer telescoping member is crimped inward to form a smaller rectangular opening. The corners where the lower cramped portions intersect form flanges extending diagonally outward. This intersection is welded to maintain the close tolerances between the inner support member and the rectangular opening of the outer telescoping member.
[0011] In particular the invention provides a folding stage, comprising: a frame, stage decks mounted to the frame and forming an extended stage surface; a linkage folding the stage along a centre axis from a used position to a folded storage position; telescoping legs associated with each of the stage decks, each of the telescoping legs including: an outer telescoping member; an inner telescoping member inserted into the outer telescoping member, and having a mounting portion; the telescoping legs having a spreader member with an orifice formed there through; a spacer member having a bore formed there through and a plurality of tabs extending axially upward and radially outward and a connecting member inserted through the orifice and the bore to the mounting portion, the connector member retaining the spreader member against the spacer member and the spacer member against the inner telescoping member, the spreader member engaging the tabs and forcing the tabs against the outer telescoping member.

[0012] These features of novelty and various other advantages which characterize the invention are pointed out with particularity in the claims annexed hereto and forming a part hereof. However, for a better understanding of the invention, its advantages, and the objects obtained by its use, reference should be made to the drawings which form a further part hereof, and to the accompanying descriptive matter, in which there is illustrated and described a preferred embodiment of the invention.

Brief Description of the Drawings

[0013] In the drawings, wherein like reference letters and numerals indicate corresponding structure throughout the several views:

Figure 1 shows a partially broken away side elevational view of a tri-height folding stage according to the principles of the present invention in an unfolded position and shown in phantom in a folded position; Figure 2 shows a bottom plan view of the stage shown in Figure 1 in an unfolded use position; Figure 3 shows a side elevational view of the bottom of a stage deck for the stage shown in Figure 1 in a folded storage position; Figure 4 shows a bottom perspective view of a caster plate and associated guide flange for the stage shown in Figure 1; Figure 5 shows a perspective view of the caster plate shown in Figure 4 with an inner support leg unfolded and engaging the edge of the caster plate; Figure 6 shows a perspective view of the caster plate shown in Figure 4 with the stage partially folded and the inner leg engaging the guide flange; Figure 7 shows an exploded side view of an inner support leg for the stage shown in Figure 1; Figure 8 shows an end perspective view of an inner telescoping member for the leg shown in Figure 7; Figure 9 shows a side sectional view of an upper portion of the inner support leg shown in Figure 1; Figure 10 shows a side elevational view of a first embodiment of an upper spacer assembly at the upper end of the inner telescoping member shown in Figure 8; Figure 11 shows a side sectional view of the upper portion of the inner support leg shown in Figure 7 with the spacer assembly in a non-engaging position; Figure 12 shows a side sectional view of the upper portion of the inner support leg shown in Figure 7 with the spacer assembly engaging the outer telescoping member; Figure 13 shows a top plan view of a flanged spacer member for the spacer assembly; Figure 14 shows a side elevational view of the flanged spacer member shown in Figure 13; Figure 15 shows a bottom plan view of a crimped bottom portion of an outer telescoping member for the inner support leg shown in Figure 7; Figure 16 shows an exploded side view of a second embodiment of a spacer assembly and an inner support leg for the stage shown in Figure 1; Figure 17 shows an exploded top plan view of the inner support leg and spacer assembly shown in Figure 16; and Figure 18 shows side sectional view of the inner support leg and spacer assembly shown in Figure 16.

Detailed Description of the Preferred Embodiment

[0014] Referring now to the drawings, and in particular to Figure 1, there is shown a mobile folding stage, generally designated 20. The stage includes a folding frame 22 supporting a pair of stage decks 24. As shown in Figure 1, in an unfolded position the stage decks 24 extend horizontally forming a horizontal planar stage surface. As shown in phantom, the stage decks 24 fold to a storage position wherein the stage decks are just past vertical with upper faces of the stage decks 24 opposing one another. The stage 20 is supported on inner support legs 32 and outer support legs 34 which project vertically at a support position, as shown in Figure 1. When the stage 20 is folded, as shown in Figure 2, the inner support legs 32 and the outer support legs 34 retract to a position lying substantially flat against the lower surface of the stage decks 24. The bottom of the stage decks 24 extend substantially vertically and face outward when in the folded storage position.

[0015] As shown in Figure 1, the stage 20 is rolled on casters or rollers 26 which are mounted on caster plates 38 mounted at opposite ends along the folding axis and center line beneath the stage 20. As shown in Figure 4, each caster plate 38 includes an angeld end portion as also shown in Figures 5 and 6, with a flange 98 extending vertically downward from the edge 96.
Shown most clearly in Figure 7, the inner legs 32 include an upper outer portion 62 with a guide bracket 64 attached thereto. The guide bracket 64 includes a rounded inner comer portion which engages the flange 98, as explained hereinafter to guide the inner support legs 32 into an aligned vertical position when unfolded. As also shown in Figure 7, the inner support legs 32 include a lower telescoping portion 68 with a foot 70 extending inwardly toward the folding axis of the stage at a lower portion of each leg 32. The foot 70 includes a curved lower surface to support and slide the legs 32 into position when the stage is folded and unfolded. The inner support legs 32 also include a spring loaded pin assembly 72 which engages orifices 74 on the lower portion 68 to provide for incremental height adjustment.

In a similar manner, as shown in Figure 1, the outer support legs 34 include an upper telescoping portion 50 and a lower inner telescoping portion 52. The outer support legs 34 also include a spring loaded pin assembly 56 engaging orifices in the lower telescoping portions 52 for incremental height adjustment.

The stage 20 includes a folding linkage 40 which includes a linkage plate 42 at each end along the center folding axis, that forms a pair of channels receiving the decks when the stage is in the folded storage position. The linkage includes a U-shaped channel link member 46, a short link member 48 and an extended link member 44 which connects to the outer legs. The operation of the linkage provides for smooth folding between the folded and unfolded positions, as explained in U.S. Patent No. 5,613,450 to Wagner and incorporated herein by reference.

Referring to Figure 2, in the folded position, the linkage 40 folds the outer legs 34 to a folded position flat against the under side of the decks 24. Similarly, the inner support legs 32 fold independently substantially flat against the under side of the stage decks 24. In this manner, the stage 20 has a smaller profile and takes up substantially little floor space during storage. It can be appreciated that the low height and the desired elevational adjustment of the present invention provides a stable, non-wobbling, telescoping leg configuration. As shown in Figures 9-12, the upper portion of the lower leg includes a spacer assembly 80 which allows for the leg portions 62 and 68 to telescope relative to one another while providing very little play between the members. Although reference is being made to the upper portion 62 and lower portion 68 of the lower support legs 32, it can be appreciated that the outer support legs 34 with upper portions 50 and lower inner telescoping members 52 also utilize spacer assemblies.

A first embodiment of a spacer assembly, designated 80, includes a spreader member 86 shown as a washer, having a lower tapered edge 88. A clover leaf type spacer member 82 includes outer tab or flange portions 84 which extend radially outward and are angled slightly upward. The spreader member 86 and the spacer member 82 shown in Figures 13 and 14, mount to a mounting section 90 at the upper portion of the lower leg 68. A connector member 92 such as a screw or a bolt threadably connects to the mounting section 90 and retains the spreader member 86 and the spacer member 82 as shown in Figure 8.

It can be appreciated that to provide a snug fit, the tabs 84 of the spacer member 82 engage the inner portions of the sides of the upper leg member 62. During assembly, as shown in Figures 9 and 11, the tapered lower edge 88 of the spacer member 86 engages the upper portion of the tabs 84 of the spacer member 82. As the connector member is tightened, the tapering edges 88 force the tabs 84 outward to engage the inside of the outer leg 62, as shown in Figure 12. It can be appreciated that the spacer member 86 and the spacer member 82 are aligned relative to one another with the connector member 92. It can also be appreciated that the spacer member 86 will seat substantially within the flanges 84 and force the tabs 84 into engagement with the inner wall of the outer leg member 62.

Referring to Figures 16-18, there is shown a second embodiment of a spacer assembly, generally designated 100. The spacer assembly 100 also provides for a better fit between the leg portions 62 and 68. The spacer assembly 100 includes a spacer member 102 having tapered tabs 104 extending outward. The tapered tabs 104 are angled obliquely to the plane of the spacer member 102 for engaging the interior of the upper leg member 62. The spacer member 102 includes an orifice extending therethrough for receiving a screw or other connector member 108. The screw member 108 inserts into a mounting section 90 at the upper end of the lower leg member 68. A spreader element 106 is substantially rectangular and includes an orifice formed therethrough for receiving the screw member 108. The spreader element 106 is placed to engage the angled tabs 104. The connector member 108 includes a resistance portion 110 which helps to lock the screw member 108 in a stationary position in the mounting section 90. The resistance portion 110 has a plastic plug inserting into a recess in the screw body, or other locking substance for engaging threads of the mounting section 90 and resisting rotation.

In operation, the spacer assembly 100 is placed on the mounting section 90. The screw assembly 108 is inserted through the orifices in the spacer member 102 of the spacer element 106. The spreader element 106 is oriented so that it is aligned lengthwise with the tabs 104 of the spacer member 102 and is engaging the inner angled surfaces of the tabs 104. It can be appreciated that as the screw 108 is tightened against the mounting section 90, the spreader element 106 is forced against the inner angled surfaces of the tabs 104, pushing the tabs 104 outward. When the tabs 104 are pushed outward sufficiently to engage the inner walls of the upper leg 62, the tabs 104 provide spacing and alignment between the inner leg 68 and the upper
leg 62. The tabs 104 facilitate easy telescoping between the inner leg 62 and outer leg 68 without providing too much resistance so that the telescoping members cannot slide. It can be appreciated that the tabs 104 taper to the corners and are aligned such that they engage the inner comers of the upper leg 68. The tapering and the angling of the tabs 104 facilitates easy insertion and alignment taking into account irregularities and tolerances of the legs 62 and 68. In addition, should adjustment be required, the spacer assembly 100 can be easily loosened or tightened by turning the screw member 108.

Although the spacer assembly 100 is shown with the spacer member 102 having the tabs angling upward and the spacer spreader element 106 above the spacer member 102, it can be appreciated that the elements may be reversed so that the tabs 104 extend downward with the spreader element 106 below the spacer member 102.

In addition to making a tight fit between an upper end of the inner leg member 68 and outer leg member 62, it is also important that a tight fit be made between the lower portion of the outer leg 62 and the outer surface of the inner leg member 68. As shown in Figures 9 and 15, the lower portion of the outer leg member 62 is crimped to form an inward angled portion 76. As shown in Figure 15, this inward crimping creates a substantially rectangular opening through the bottom of the upper leg member 62. The corners form tabs 78 which may be welded to provide additional support and alignment. The inner leg member 68 inserts through the rectangular opening.

Referring to Figures 4-6, it can be appreciated that as the inner support legs 32 are unfolded independently of the operation of the linkage 40 or the outer support legs 34, alignment of the inner support legs to provide a stable base for the stage 20 is important. It can also be appreciated that without proper guidance and alignment devices, the inner support legs 32 may become misaligned. Should the inner support legs 32 not be fully unfolded to vertical when the stage 20 is unfolded, the inner portion of the decks 24 may not be properly supported, increasing the risk of the center of the stage 20 collapsing. The inner support legs 32 include a guide bracket 64 which extends inward and includes an arcing lower surface which is utilized in aligning and guiding the inner support legs. Each caster frame 38 includes a pair of edges 96 with a flange 98 extending downward therefrom. It can be appreciated that the flange 98 extends at an angle from a lowermost center position to a raised upper position at the outer end of the edge 96. It can be appreciated that if the inner support leg 32 is not fully unfolded, the guide bracket 64 engages the edge 96 and the flange 98 including the bottom angled edge of the flange 98, as shown in Figure 6, to guide the inner support leg 32 into a vertical position. It can be appreciated that the caster plate 38 provides alignment for the inner support legs 32, when fully unfolded as shown in Figure 5. The present arrangement of the inner support leg 32 with the guide bracket 64 at a curved lower edge provides for easier sliding between the caster plate 38 and the inner support legs 32. It can also be appreciated that the flange 98 angles along the edge 96, but also includes a lower surface which angles upward. This provides for a two dimensionally aligned guidance surface at the lower edge of the flange 98 providing for alignment not only in a vertical plane but also at an angled, horizontal direction as well. Since an only partially unfolded inner support leg 32 requires vertical and horizontal guidance to fully align the leg to its fully unfolded position, the flange 98 provides improved alignment.

It is to be understood, however, that even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

Claims

1. A folding stage (20), comprising:

- a frame (22):
  - stage decks (24) mounted to the frame (22) and forming an extended stage surface;
  - a linkage (40) folding the stage along a center axis from a use position to a folded storage position;
  - telescoping legs (32,34) associated with each of the stage decks (24), each of the telescoping legs including:
    - an outer telescoping member (50,62);
    - an inner telescoping member (52,68) inserting into the outer telescoping member (50), and having a mounting portion (90);

characterised in that the telescoping legs (22, 34) have a spreader member (86, 106) with an orifice formed there through;

- a spacer member (82,102) having a bore formed there through and a plurality of tabs (84, 104) extending axially upward and radially outward; and
- a connector member (92,108) inserted through the orifice and the bore to the mounting portion (90), the connector member (92,108) retaining the spreader member (86,106) against the spacer member (82, 102) and the spacer mem-
ber against the inner telescoping member (52, 68), the spreader member (86, 106) engaging the tabs (84, 104) and forcing the tabs against the outer telescoping member (50, 62).

2. A folding stage (20) according to claim 1, wherein the connector member (92, 108) is threaded and wherein the connector member threadably connects to the mounting portion (90).

3. A folding stage (20) according to claims 1 or 2, wherein the outer telescoping member (50, 62) and inner telescoping member (52, 68) comprise rectangular elements.

4. A folding stage (20) according to claim 3, wherein a lower portion of the outer rectangular element (52, 68) crimps inward.

5. A folding stage (20) according to any one of claims 1 to 4 wherein the spreader member (86, 106) and the spacer member (82, 102) include orifices formed therein for receiving the connector member.

6. A folding stage (20) according to any one of claims 1 to 5, wherein the spreader member comprises a disk (86) engaging the tabs (84).

7. A folding stage (20) according to any one of claims 1 to 5, wherein the spreader member (106) comprises a rectangular element engaging the tabs (104).

8. A folding stage (20) according to any one of claims 1 to 7, wherein the tabs (104) extend diagonally engaging inner corners of the outer telescoping member (50, 62).

9. A folding stage (20) according to any one of claims 1 to 8, further comprising folding inner support legs (32) associated with each of the stage decks; a caster plate (38) having angled edge portion (96) and a vertical flange (98) extending downward from the edge portion, the flange having a lower engaging surface angled upward from a lowermost center section, wherein the lower engaging surface is configured for engaging an inner surface of the inner support legs during folding.

10. A folding stage (20) according to claim 9, wherein each of the inner support legs (32) includes a guide bracket (64) extending inward from the inner support legs for engaging the lower engaging surface of the caster plate (38) and aligning the associated support legs.

11. A folding stage (20) according to claims 9 or 10, wherein the caster plate vertical flange (98) includes opposed upward angling lower engaging surfaces.

12. A folding stage (20) according to claim 11, wherein the angled ledge portion (96) includes a center section and a section extending obliquely to the center section.

Patentansprüche

1. Faltbühne (20), welche aufweist:
   einen Rahmen (22),
   Bühnendecks (24), die am Rahmen (22) angebracht sind und eine ausgedehnte Bühnenoberfläche bilden,
   eine Verbindung (40), die die Bühne längs einer Mittenachse aus einer Gebrauchsposition in eine gefaltete Aufbewahrungsposition faltet,
   Teleskopbeine (32, 34), die jeweils mit einem der Bühnendecks (24) verbunden sind, wobei jedes Teleskopbein einschließt:
   ein äußeres Teleskopelement (50, 62),
   ein inneres Teleskopelement (52, 68), welches in das innere Teleskopelement (50) eingreift und einen Montageabschnitt (90) hat,
   dadurch gekennzeichnet, dass
die Teleskopbeine (22, 34) weiter Folgendes aufweisen:
ein Spreizelement (86, 106) mit einer hindurchgehend gebildeten Öffnung,
ein Abstandshalterelement (82, 102), welches eine durchgehende Bohrung und eine Mehrzahl von Lappen (84, 104), die sich axial nach oben und radial nach außen erstrecken, hat, und ein Verbinderelement (92, 108), das durch die Öffnung und die Bohrung in den Montageabschnitt (50) eingesetzt ist, wobei das Verbinderelement (92, 108) das Spreizelement (86, 106) gegen das Abstandshalterelement (82, 102) und das Abstandshalterelement gegen das innere Teleskopelement (52, 68) hält, wobei das Spreizelement (86, 106) in die Lappen (84, 104) eindringt und die Lappen gegen das äußere Teleskopelement (50, 62) drückt.

2. Faltbühne (20) nach Anspruch 1, wobei das Verbinderelement (92, 108) ein Gewinde aufweist und wobei das Verbinderelement im Gewindeeingriff mit dem Montageabschnitt (90) steht.
3. Faltbühne (20) nach Anspruch 1 oder 2, wobei das äußere Teleskopelement (50, 62) und das innere Teleskopelement (52, 68) rechteckige Elemente aufweisen.

4. Faltbühne (20) nach Anspruch 3, wobei ein unterer Abschnitt des äußeren rechteckigen Elementes (62, 68) einwärts faltet.

5. Faltbühne (20) nach einem der Ansprüche 1 bis 4, wobei das Spreizelement (86, 106) und das Abstandshalteelement (82, 102) darin gebildete Öffnungen zur Aufnahme des Verbinderelementes einschließen.

6. Faltbühne (20) nach einem der Ansprüche 1 bis 5, wobei das Spreizelement eine mit den Lappen (84) im Eingriff stehende Scheibe (86) aufweist.

7. Faltbühne (20) nach einem der Ansprüche 1 bis 5, wobei das Spreizelement (106) ein mit den Lappen (104) im Eingriff stehendes rechteckiges Element aufweist.

8. Faltbühne nach einem der Ansprüche 1 bis 7, wobei die Lappen (104) sich diagonal im Eingriff mit inneren Ecken des äußeren Teleskopelementes (50, 62) erstrecken.

9. Faltbühne (20) nach einem der Ansprüche 1 bis 8, welche weiterhin aufweist:

   faltbare innere Stützfüße (32), die jeweils einem Bühnendeck zugeordnet sind, eine Schwenkplatte (38) mit einem abgewinkelten Kantenabschnitt (96) und einem vertikalen Flansch (98), der sich vom Kantenabschnitt nach unten erstreckt, wobei der Flansch eine von einem untersten Mittenabschnitt nach oben abgewinkelte untere Eingriffsfläche hat, wobei die untere Eingriffsfläche zum Eingriff mit einer Innenoberfläche der inneren Stützfüße während des Falten konfiguriert ist.

10. Faltbühne (20) nach Anspruch 9, wobei jeder der inneren Stützfüße (32) eine Führungsklammer (64) einschließt, die sich von den inneren Stützfüßen zum Eingriff mit der unteren Eingriffsfläche der Schwenkplatte (38) nach innen erstreckt und die zugehörigen Stützfüße ausrichtet.

11. Faltbühne (20) nach Anspruch 9 oder 10, wobei der vertikale Flansch (98) der Schwenkplatte einander gegenüberliegende nach oben abgewinkelte untere Eingriffsflächen enthält.

12. Faltbühne (20) nach Anspruch 11, wobei der abgewinkelte Fußabschnitt (96) einen Mittenabschnitt und einen sich schräg zum Mittenabschnitt erstreckenden Abschnitt hat.

Revidications

1. Etage pliant (20) comprenant :

   un cadre (22) ;
   des planchers d'étage (24) montés au cadre (22) et formant une surface d'étage étendue ;
   une tringlerie (40) pliant l'étage le long d'un axe central à partir d'une position d'utilisation vers une position de stockage pliée ;
   des béquilles télescopiques (32, 34) associées à chacun des planchers d'étage (24), chacune des béquilles télescopiques comprenant :

   un élément télescopique extérieur (50, 62) ;
   un élément télescopique intérieur (52, 68) s'insérant dans l'élément télescopique extérieur (50) et présentant une partie de montage (90) ;

   caractérisé en ce que les béquilles télescopiques (22, 34) présentent une élément formant barre d'écartement (86, 106) avec un orifice formé à travers celui-ci ;

   un élément formant entretoise (82, 102) présentant un alésage formé à travers celui-ci et une pluralité de languettes (84, 104) s'étendant axialement vers le haut et radialement vers l'extérieur ;
   et un élément formant connecteur (92, 108) inséré à travers l'orifice et l'alésage sur la partie de montage (90), l'élément formant connecteur (92, 108) retenant l'élément formant barre d'écartement (86, 106) contre l'élément formant entretoise (52, 68), l'élément formant barre d'écartement (86, 106) mettant en prise les languettes (84, 104) et forçant les languettes contre l'élément télescopique extérieur (50, 62).

2. Etage pliant (20) selon la revendication 1, dans lequel l'élément formant connecteur (92, 108) est fileté et dans lequel l'élément formant connecteur est relié de manière filetée à la partie de montage (90).

3. Etage pliant (20) selon la revendication 1 ou 2, dans lequel l'élément télescopique extérieur (50, 62) et l'élément télescopique intérieur (52, 68) comprennent des éléments rectangulaires.

4. Etage pliant (20) selon la revendication 3, dans lequel une partie inférieure de l'élément rectangulaire
extérieur (52, 68) ondule vers l'intérieur.

5. Etage pliant (20) selon l'une quelconque des revendications 1 à 4, dans lequel l'élément formant barre d'écartement (86, 106) et l'élément formant entretoise (82, 102) comprennent des orifices formés en leur intérieur destinés à recevoir l'élément formant connecteur.

6. Etage pliant (20) selon l'une quelconque des revendications 1 à 5, dans lequel l'élément formant barre d'écartement comprend un disque (86) mettant en prise les languettes (84).

7. Etage pliant (20) selon l'une quelconque des revendications 1 à 5, dans lequel l'élément formant barre d'écartement (106) comprend un élément rectangulaire mettant en prise les languettes (104).

8. Etage pliant (20) selon l'une quelconque des revendications 1 à 7, dans lequel les languettes (104) s'étendent de manière diagonale mettant en prise les coins intérieurs de l'élément télescopique extérieur (50, 62).

9. Etage pliant (20) selon l'une quelconque des revendications 1 à 8, comprenant en outre des béquilles de pliage à support intérieur (32) associées à chacun des planchers d'étage ; une plaque à roulettes (38) présentant une partie formant bord en biais (96) et une bride verticale (98) s'étendant vers le bas à partir de la partie formant bord (96), la bride présentant une surface de mise en prise inférieure en biais vers le haut à partir d'une section centrale la plus basse, dans laquelle la surface de mise en prise inférieure est configurée pour mettre en prise une surface intérieure des béquilles à support intérieur pendant le pliage.

10. Etage pliant (20) selon la revendication 9, dans lequel les béquilles à support intérieur (32) comprennent un support de guidage (64) s'étendant vers l'intérieur depuis les béquilles à support intérieur pour mettre en prise la surface de mise en prise inférieure de la plaque à roulettes (38) et aligner les béquilles de support associées.

11. Etage pliant (20) selon les revendications 9 ou 10, dans lequel la bride verticale de la plaque à roulettes (98) comprend des surfaces de mise en prise inférieures vers le haut opposées.

12. Etage pliant (20) selon la revendication 11 à 4, dans lequel la partie formant bord en biais (96) comprend une section centrale et une section s'étendant de manière oblique vers la section centrale.