Oct. 25, 1955 D. B. CHESKIN 2,721,628

FOLDING LEG SYSTEM

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Figure 1

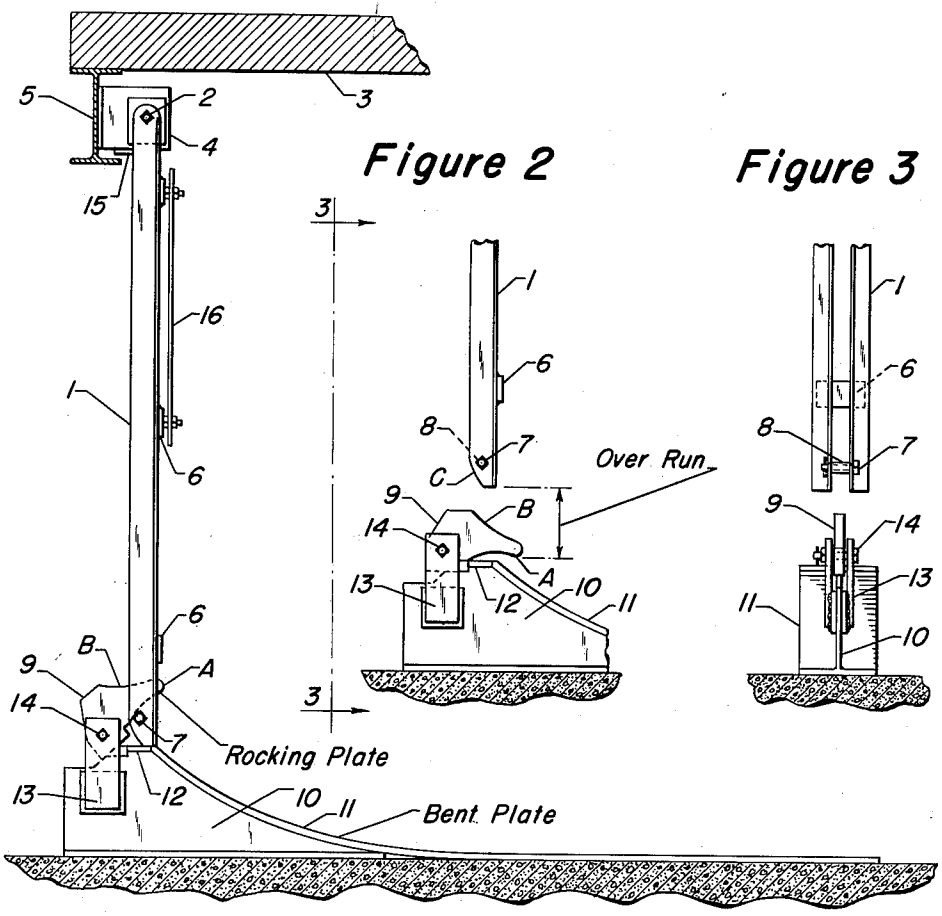


Figure 2

Figure 3

Figure 4

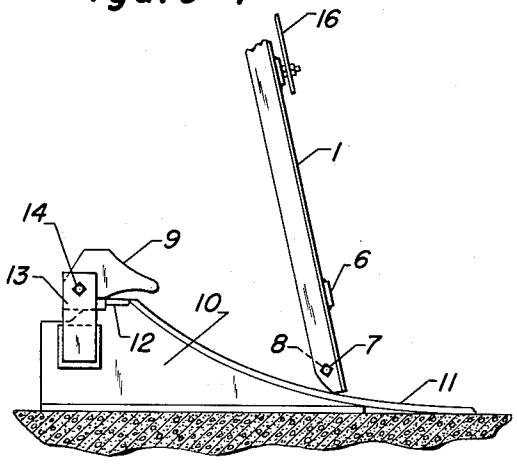
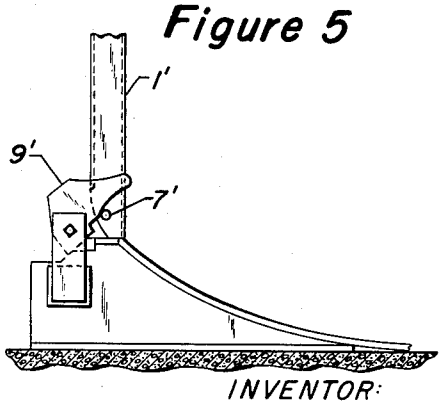


Figure 5



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FOLDING LEG SYSTEM

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This invention relates to a folding leg arrangement for movable platforms and the like and more particularly to a folding leg supporting system which will automatically fold or position a hinged supporting leg connecting to vertically movable platform means.

It is frequently desirable to have supporting leg means for lifts, elevators, platforms, etc. which are moved between different levels, as for example, hydraulically raised loading platforms moving from a basement level to a street level, or from a street level to a car level. Such vertically movable platform means may have a plurality of legs which fold under the platform, as it is lowered, and conversely, a construction which permits the leg means to unfold when the platform is raised, with such leg means providing suitable vertical supports for the platform while it is in use in its raised position. However, many types of folding leg supporting means do not operate entirely automatically and require manual operations to fix them in the raised position, or may at least require manual operations to initiate the folding action.

It is thus the principal object of the present invention to provide a folding leg construction which incorporates means to automatically effect the folding of the leg means as the platform is made ready for lowering into its lowermost position, as well as means which will permit the legs to come to bear on a suitable supporting seat.

Briefly, the present invention provides a folding leg supporting system for a movable platform means and the like, comprising in combination, a leg member having a top hinging means connecting it with a movable platform means, a horizontal pin member connecting with the lower end of the leg member, a raised seat and guide section positioned below said leg member, with the seat and guide section having a flat leg supporting upper surface and a downwardly sloping leg guiding section extending from the edge of the supporting surface, a movable vertically positioned curved plate pivotally connected to the seat section and positioned in a manner to lie across the flat leg supporting surface, the curved plate being positioned in substantial vertical alignment below the horizontal pin at the lower end of the leg member and further having a downwardly sloping edge portion providing a nose-like projection extending beyond the flat surface of the raised seat section and a short distance over the upper part of the downwardly sloping leg guiding section, whereby the sloping edge portion of the curved vertically positioned plate may engage the horizontal pin at the lower end of the leg member when the latter is being lowered and effecting a sliding and folding of the leg means as the latter subsequently follows the downwardly sloping leg guiding section as the platform means is being lowered, and whereby a lower edge surface of the projecting nose-like piece of the curved plate engages the horizontal pin member at the lower end of said leg member when the platform is being raised causing the leg member to pivot and lift the curved plate member from the upper flat supporting surface of the seat and guide section and permit the lower end of the

leg member to rest vertically on said flat supporting surface.

The actual construction of the folding leg supporting system and its advantages in actual operation will be better understood by reference to the accompanying drawing and the following description thereof.

Figure 1 of the drawing shows, in elevational view, the folding leg arrangement with the leg member in its vertical position resting on its lower seat and guide section.

Figure 2 of the drawing shows, in elevational view, the lower end of the folding leg member raised slightly above the leg supporting and guide section in the "overrun" position of the platform, (which is effected just prior to lowering the platform to a lower level).

Figure 3 of the drawing is also an elevational view of the lower end of the leg and the seat and guide section, as indicated by the line 3—3 shown in Figure 2.

Figure 4 of the drawing illustrates the lower end of the folding leg member following the guide plate along its downwardly sloping surface so that the leg member is ultimately folded under the lowered platform.

Figure 5 shows an alternate construction for the lower end of the hinged leg member.

Referring now to the drawing, there is shown in Figure 1, a folding leg member **1** pivotally connected by means of pin means **2**, to the underside of a vertically movable platform **3**. The pin means **2** is shown as extending through a bracket **4**, which in turn connects to an I-beam member **5** on the under side of the platform **3**. However, other types of pivot connections or hinged means may be utilized at the top of the leg member **1** to suitably pivotally connect the latter to the underside of the movable platform **3**. The leg member **1**, in this embodiment, is formed with two spaced structural angle members which are tied together by suitable spaced batten plates **6**, while at the lower end is a bolt or pin member **7** and an intermediate spacer **8** which acts as a horizontal contact pin for engaging and moving a pivotally movable vertically positioned rocking plate **9**.

Directly below the leg supporting member **1**, on a suitable base or foundation, there is provided a leg supporting seat and guide section **10**. The section **10** has a downwardly sloping bent plate member **11** extending from an upper leg supporting flat seating surface **12** to the base or foundation surface whereby the pivotally hinged leg member may be guided outwardly into a substantially horizontal folded position as the platform is ultimately lowered to a lower level. As may be noted from both Figures 1 and 3, the seat and guide section **10** is formed in part from a section of an I-beam structural member, while the bent plate member **11** is welded or otherwise connected to a cut out edge portion of the base **10**. Connecting to the seat and guide section **10** are spaced pin supporting plates **13**, which in turn hold a bolt or pin member **14** that passes through one side of the pivotally movable rocking plate **9**.

The movable plate **9** has a special construction and arrangement which is adapted to work with the horizontal pin member or spacer **8** at the lower end of the leg member **1** such that the latter is automatically guided to its proper position. In Figure 1, it will be noted that the curved plate member **9** passes between the angle members of leg member **1** and is resting on the top of the spacer **8** while the leg member is in turn resting on the flat upper surface **12** of the seat and guide section **10**. This positioning is obtained automatically as the pivoting leg member **1** unfolds when the platform **3** is raised and the lower end of the leg member **1** is dragged along the guide plate **11** to ultimately have its lower end rest on the seating surface **12**. In other words, the curved plate member **9** is especially constructed to extend with a nose-like projection A a short distance over the upper end of

the plate **11** so that it will be picked up by the spacer **8** on horizontal pin **7** and the plate **9** rocked back into the position shown in Figure 1 of the drawing, pivoting about the pin **14**.

When it is desired to lower the platform **3** and effect the folding of the leg member **1**, the platform is mechanically lifted, or otherwise raised, upwardly for a suitable short overrun, indicated in Figure 2 of the drawing, such that the lower end of the leg member **1** rises free of the seat and guide section **10** and above the vertically movable pivoted plate **9**. Thus, the plate **9** automatically falls down into the position shown in Figure 2 and extends across the seating surface **12** and projects, with its nose-like portion A, a short distance over the bent plate **11**. It will be noticed that plate **9** is also provided with a downwardly sloping or curved upper edge portion B which is utilized to contact the lower side of the spacer **8** on pin **7** and effect the guiding and positioning of the lower end of the leg member **1** outwardly and over the projection A and on to the sloping surface of bent plate **11**. The latter guides the leg member still further outwardly and into a folded position as the platform continues to lower. Although not necessary, it may be desirable to provide a small curve to the lower end of the leg member **1** such as C which will cause the latter to ride more smoothly along the bent plate **11** and effect its folding and unfolding without undue catching, or frictional resistance. Figure 4 of the drawing shows the lower end of the leg member **1** moving along the surface of the curved bent plate **11**. This figure also shows that the vertically movable pivoted plate **9** is in its lowered position resting across the seating surface **12** and projecting outwardly a short distance over the upper end of the bent plate **11**. Thus, when the raising of the platform **3** is effected, it will be seen that the lower end of the leg member **1**, as it is allowed to gradually straighten out and come into a substantially normal position, will have the lower pin **7** and spacer **8** engage the lower edge of the nose-like projection A of plate **9** and move or rock back the latter into the position shown in Figure 1 of the drawing. The weight of the leg member **1** itself will permit the leg to assume its proper vertical position for supporting purposes, with the very lower extremity of leg member **1** coming to rest on the upper seating surface **12** a short distance away from the upper end or edge of the plate member **11**. Counterweight means **16** may be added to one side of the leg member, such as to the batten plates **6**, so that the leg will come to a proper vertical position. However, to assure that the leg member **1** comes into a vertical position without swinging too far into an off-center position which might not provide adequate supporting means, a suitable stop member **15** is provided at the upper hinged end of the leg member **1**. The stop member **15** being attached to the under side of the connecting plate **4** and positioned properly so that it engages one vertical edge of the leg member **1** to effect its proper vertical positioning.

In effecting the lowering of the platform **3** and the folding of the leg member **1**, from the position shown in Figure 1 of the drawing, it is of course necessary on each occasion to effect a slight lifting of the platform and the leg member **1** as indicated by Figure 2, whereby, as previously described, the platform may then be lowered and the leg member **1** will pass over the edge of plate **9** and onto plate **11** to effect the aforedescribed folding.

While the aforedescribed embodiment illustrates the leg member **1** as being formed of two structural angle members being spaced apart to permit the plate member **9** to pass therebetween at the lower edge and engage the spacer **8** on pin **7**, it should, of course, be noted that various modifications can be made in the design and arrangement of the lower end of the leg member **1**. For example, where a single structural angle member is used, or a channel member, or any other desired shape, then a horizontal pin member may project from merely one side

of the leg supporting member and engage the seat and guide section and all of its actuating portions in a manner similar to that set forth. In Figure 5 of the drawing, there is shown a leg member indicated as **1'** that is of a channel construction with a pin such as **7'** projecting from the back web portion of the channel member which is adapted to engage the movable rocking plate member **9**. In this folding leg arrangement, a vertical alignment between the guide and seat section may be substantially as shown in the previously described arrangement, except that the vertical alignment between the plate member **9** and the back of the leg member **1'** must be such that the movable plate **9** will not contact the lower end of the leg member but will engage the horizontally projecting pin member **7'**. Thus, the leg member can be guided for folding purposes in the same manner as herein described in connection with the embodiment having the spaced angle member construction.

I claim as my invention:

1. A folding leg supporting system for movable platform means and the like, comprising in combination, a leg member having a top hinging means connecting with a vertically movable platform means, a horizontal pin member through the lower end of said leg member, a raised seat and guide section positioned below said leg member, said seat and guide section having a flat leg supporting upper surface and a downwardly sloping leg guiding portion extending from the edge thereof, a vertically movable and vertically positioned curved plate pivotally connected to said seat section and positioned to move across said flat leg supporting surface thereof, said curved plate being maintained in vertical alignment with the horizontal pin portion of the lower end of said leg member whereby to engage the latter, said vertically positioned curved plate further having a downwardly sloping edge portion providing a nose-like projection extending across said flat seating surface and a short distance over the upper part of the downward sloping portion of the seat and guide section, the sloping edge portion of said curved plate adapted to engage said horizontal pin at the lower end of said leg member when the latter is being lowered and effecting a sliding and folding of the leg when said platform means is being lowered, and the lower surface of said nose-like projection of said curved plate adapted to engage said pin member at the lower end of said leg member whereby the latter lifts the curved plate member vertically from the upper supporting surface of the seat and guide section when said leg member is raised vertically and allowed to rest on the supporting surface.

2. The folding leg supporting system of claim 1 further characterized in that said top hinged leg member has a bifurcated lower end portion and said horizontal pin means extends through the spaced portions of the bifurcated leg member end, said vertically movable curved plate means connecting to the seat and guide sections maintained in vertical alignment between said spaced portions of the bifurcated lower end of said leg member and the interior portions of said horizontal pin member through the bifurcated lower end of said leg member to contact said curved plate member between the spaced portions of the lower end of said plate member.

3. A folding leg supporting system for a movable platform means and the like, comprising in combination, a leg member having a top hinging means connecting it with a vertically movable platform means, a horizontal pin member extending through the lower end of said leg member, a raised seat and guide section positioned below said leg member, said seat and guide sections having a flat leg supporting upper surface and a downwardly sloping leg guiding plate extending from the edge of said upper surface, a vertically movable and vertically positioned curved plate member pivotally connected to said seat section and maintained in a position across said flat leg supporting surface of said seat section in vertical alignment under the horizontal pin member at the lower end of said leg mem-

ber, pivot means extending upwardly from said seat section and connecting with said pivotally connected curved plate whereby the latter may rock vertically upwardly and downwardly from pivot means, said vertically positioned curved plate further having a downwardly sloping edge portion providing a nose-like projection extending across said flat leg supporting surface and a short distance over the upper end of said downwardly sloping guide plate of said guide section, said sloping edge portion of said curved plate adapted to engage said horizontal pin at the lower end of said lift member to cause the latter to move outwardly and over said bent downwardly sloping

plate, said seat and guide section when said leg member holds with the lowering of said platform means, and the lower surface of said nose-like projection of said curved plate adapted to engage said pin member at the lower end of said plate member whereby the latter will lift said curved plate member vertically from said upper leg supporting surface of the seat and guide section when said platform means is being raised and said leg member is raised vertically and allowed to have its lower end rest on said flat supporting surface.

No references cited.