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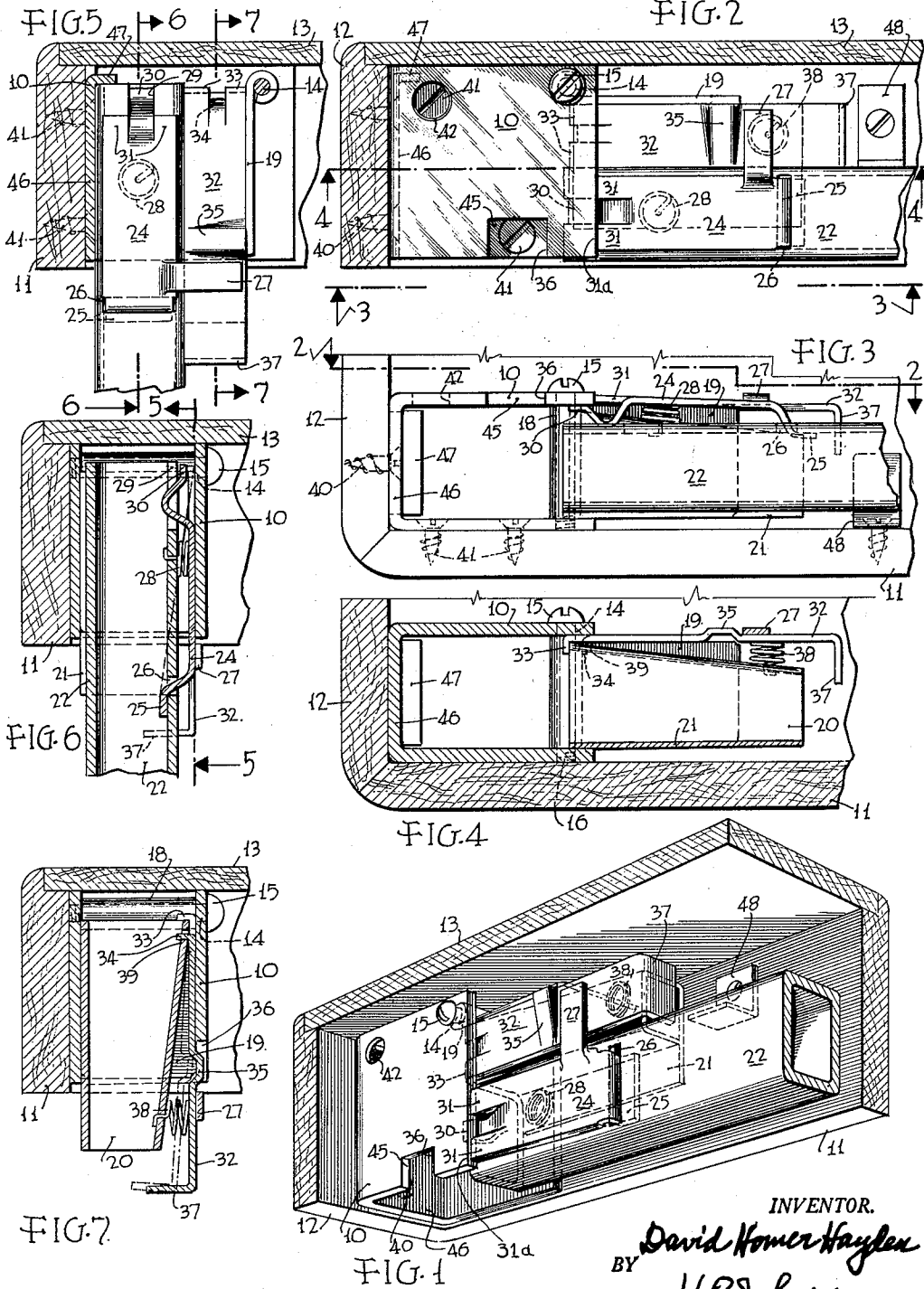
D. H. HAYDEN

3,141,645

FOLDING LEG MECHANISM FOR TABLES

Filed April 1, 1963

2 Sheets-Sheet 1



INVENTOR.
David Homer Hayden
BY *H.R. Johns*
ATTORNEY

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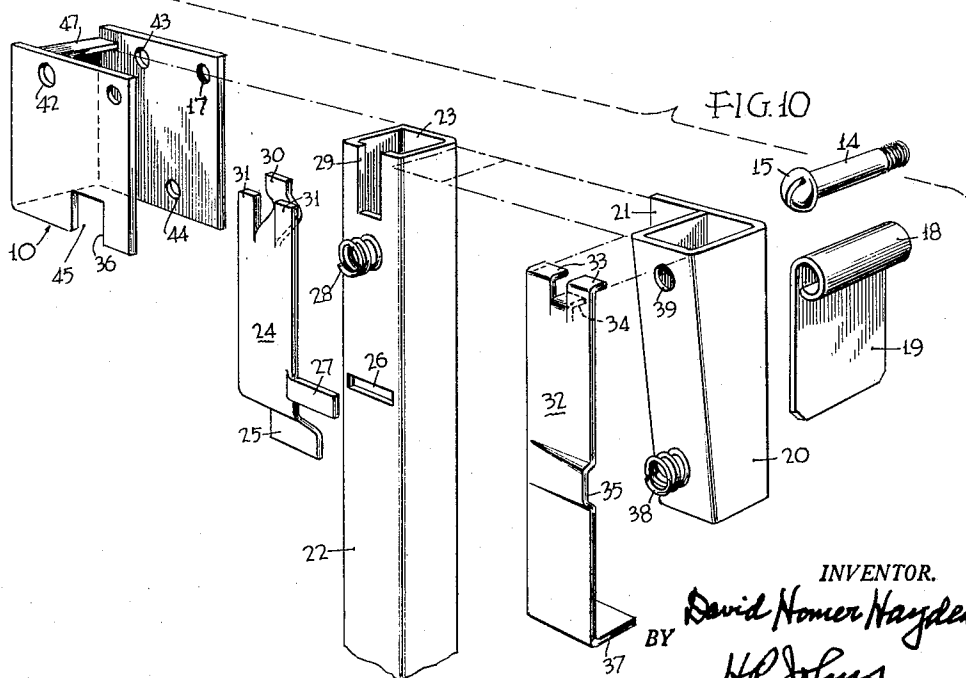
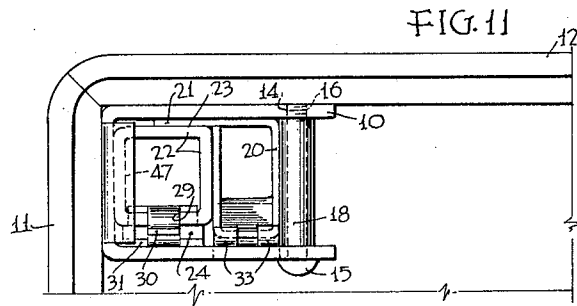
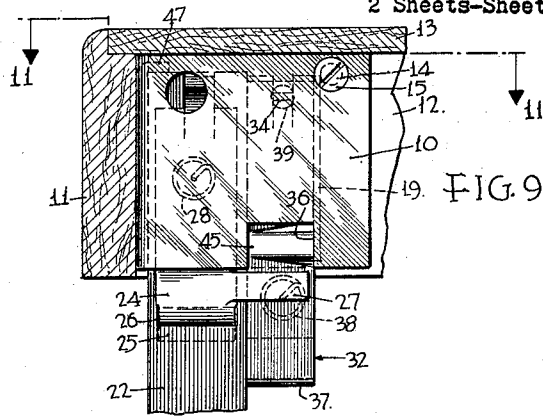
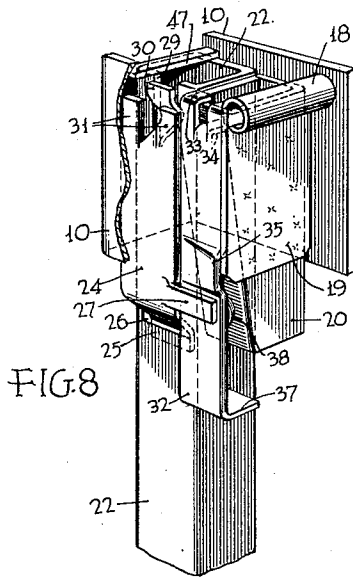
D. H. HAYDEN

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2 Sheets-Sheet 2



INVENTOR.
David Homer Hayden
BY *H. H. Johns*
ATTORNEY

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FOLDING LEG MECHANISM FOR TABLES

David Homer Hayden, 513 Venice Lane, Siesta Key, Sarasota, Fla.

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11 Claims. (Cl. 248-188)

This invention relates to a folding table leg mechanism which has many applications, such as for card, display, banquet tables, mortar boards, mechanics benches, garden benches, field tables, etc. It is disclosed for use in connection with a card table because it is the most common use for the mechanism. An object of this invention is to produce a rigid construction that will stay rigid, be dependable, light in weight, have full clearance underneath, and have no projecting parts or ends on which to snag clothing or cause the table to collapse prematurely. Another object is to provide a mechanism of this type which is easy to operate by an accessible push button release.

Card players and others have long needed a firm, rigidly supported table and the like which is easy to operate and has unimpeded leg room. According to this invention, a spring pressed push button type latch release mechanism is accessibly provided on an inner surface to rigidly hold the leg in one of its two positions and to enable a folding leg to be easily moved from either of its extreme positions. To avoid noticeable yield in long braces that heretofore have been used with folding legs, this invention has substituted more rigid braces by providing two metal plates firmly secured to a leg for engaging a rigid brace along edge portions where there is substantially no yield in either the brace or plates.

Referring to the drawings:

FIG. 1 is a perspective view of this mechanism showing the leg in folded position and taken from below and inside the rectangle formed by four table legs.

FIG. 2 is a side view taken on the line 2-2 of FIG. 3.

FIG. 3 is a view from below the view in FIG. 2 and taken on the line 3-3.

FIG. 4 is a section on the line 4-4 of FIG. 2 and showing a side view of the inactive latch plate which holds a leg in an extended position.

FIG. 5 is a section on the line 5-5 of FIG. 6 and showing a leg in extended position with one side of a U bracket removed.

FIG. 6 is a longitudinal section on the line 6-6 of FIG. 5 showing the end portion of the plate for holding the leg in its folded position.

FIG. 7 is a longitudinal section on the line 7-7 of FIG. 5 showing the upper end of the plate for holding the leg in its extended position.

FIG. 8 is a perspective of the mechanism with the leg in extended position with one side of the bracket broken away.

FIG. 9 is a view somewhat similar to FIG. 5 but without having one side of the bracket broken away.

FIG. 10 is an exploded view of the parts of the present mechanism shown in perspective.

FIG. 11 is a view looking down on the assembled leg just before having hinge pin inserted in the rolled end of the hinge leaf.

Referring to FIGS. 1 and 10, a U-shaped bracket 10 is secured to a frame as is customary, having side frame members 11 and 12, to which a table top 13 is secured. Through an upper inner corner of the bracket is passed hinge pin 14 having a head 15 with its opposite end tight threaded 16 for engagement with cooperating threads 17 in the bracket side portion opposite the head. Around pin 14 is a rolled over portion 18 of hinge leaf 19. This hinge leaf is of a lateral width to slide between the inner side faces of the bracket 10 and take the wear off the

leg. Though not used because the adjustment of clamping of the bracket sides against the side edges of the hinge leaf 19 is usually made at the factory, nevertheless it is possible to have this adjustment made by the consumer. In attaching an assembled leg mechanism to the bracket, the insertion of pin 14 through rolled over end 18 of hinge leaf 19 is the last act in putting a leg in operative position.

The hinge leaf 19 is secured by welding, or in other well known ways to the right side 20 of the tapered tubular member shown in FIG. 10 as being of rectangular cross-section. A wing 21 projects from the left side of this tubular member and to the front side of this wing is secured a leg 22. This leg is preferably of a metal such as sheet steel or aluminum but when made of wood will need to be wider to have both latch plates mounted thereon and no tubular tapered member 20 will be needed. The side 23 of leg 22 is secured to wing 21. Immediately over one side of leg 22 is a latch release plate 24 for holding the leg 22 in its folded or out-of-the way position within the frame of the table as shown in FIGS. 1 and 2. The lower end portion of this plate 24 is provided with an inwardly bent off-set end 25 for insertion in the stamped out hole 26 in leg 22, thus constituting a pivotal support for a lower end portion of this plate 24 about which it may be rotated toward the leg compressing a spring 28 for releasing the leg from its folded position. A lateral extension 27 of this plate 24 projects over a latch plate 32 for holding the leg 22 in its extended position. Spring 28 has one end inserted into a wall of the leg 22 or otherwise secured thereto. An upper end portion of leg 22 is provided with a longitudinal slot 29 open at its upper end within which the bent tongue 30 extends. The width of tongue 30 is adapted to fit within but be freely movable within this slot 29. The upper end edges of portions 31 of plate 24 engage an upstanding edge 31a of bracket 10 as shown for example in FIGS. 1 and 2 to rigidly hold leg 22 in its folded position.

The latch release plate 32 has upper bent ends 33 to lie over the upper end of tubular tapered member secured to the hinge leaf 19 for supporting this plate 32. Another inwardly bent portion 34 extends into the hole 39 in the tapered tubular member for holding plate 32 (upper end) against lateral displacement when the leg is in its extended position shown in FIGS. 5, 7, 8, and 9. A stamped up edge portion 35 of the latch release plate 32 is formed to engage a substantial length of an upstanding edge 36 in a lower cut out portion of bracket 10 as shown in FIGS. 1, 2, 7, 9, and 10. The lower end of plate 32 is provided with a right angle bend 37 as an abutment engaging the right side of the leg 22 as shown in FIGS. 5 and 2. This leg 22 is provided with several abutments mentioned later to hold it rigidly in its upright position.

The bracket 10 has a base 46 of the U-shaped bracket illustrated in FIGS. 3 and 4 constituting an abutment limiting movement of the leg 22 to the extended position and a second abutment 47 in FIGS. 3, 4, and 10 for the same purpose engaging the top of leg 22. Raised edge 35 engages edge 36 of the recess in a lower part of bracket side substantially simultaneously upon leg 22 contacting abutments 46 and 47 so that the leg is rigidly held in its extended position without perceptible play. An abutment for holding the leg in its folded position may extend downward from the table top underside and take the form of an angle bracket 48 (FIG. 1) engaging leg 22 while the top edges 31 of the plate 24 hold the leg rigidly against the upstanding edge 31a of bracket 10 as shown in FIGS. 1 and 2. However, no stress of usage is placed on the leg in its folded position so that the need for an abutment 48 for the leg is not as acute as is the need for either of the two abutments 46 and 47 for the leg

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in its extended position. Also projection 30 has one face in frictional contact with an inner face of a bracket side to avoid any shock in normal handling from disengaging the rigid stops 31 from the bracket side edge.

The plate 32 when its edge 35 engages the edge 36 of recess in a bracket lower side, needs to be backed against lateral shifting in order that the engagement may be rigid. The tongue 34 at the upper portion of plate is prevented from shifting by its engagement with the left side of hole 39. The lower portion of plate 32 is prevented from lateral shifting by the end projection 37 contacting the right side of leg 22 as shown in FIGS. 2 and 5. Plate 24 is held against longitudinal shifting by the bend between the main body of the plate and its lower portion 25 engaging the bottom edge of recess 26 in the leg 22. Lateral shifting of this plate 24 is prevented at the top by the sides of off-set portion 30 engaging the sides of recess 29 and at the lower portion by the edges of bent portion 25 engaging the sides of recess 26.

The assembly of the foregoing parts will, it is thought, be apparent from the above description. When that assembly is complete, then assuming leg 22 is in its extended position, on pressing a lower portion of latch plate 32 inward against the spring 38, the raised edge 35 of latch plate 32 is moved below the plane of the bracket side enabling leg 22 to be moved toward its folded position shown in FIGS. 1 and 2. This pressing of plate 32 is readily accomplished because both plates 24 and 32 are mounted on an inner side of leg 22 and neither projects more than about 1/4 inch or less out from the plane of the leg in order not to provide any conspicuous projection on which an article of clothing might catch and be torn. The plate 24 is held below the plane of the adjacent bracket side portion until the leg reaches its folded position. At that time spring 28 presses the upper portion of plate 24 outward about its pivot on the edge of recess 26. At that instant the off-set projection 30 engages an inner surface of a bracket side portion to limit outward movement of plate 24 with the edges 31 of plate contacting an upstanding edge of bracket 10 as shown in FIG. 1, with a slight sound or click of projection 30 moving outward and contacting the inner surface of bracket side. To release the leg from its folded position the leg 22 is usually able to fall to its extended position as mentioned after pressing plates 24 and 32 inward toward leg 22 as shown in FIG. 2 to enable the outer surface of the portions 31 to get under the inner surface of bracket 10 side portion.

An advantage in the leg being tubular resides in the fact that when made of wood it is desirable to have the lower edge of plate 24 bent to engage a narrow saw cut with the result the leg must be weakened more than is the case when made of metal. In the prior parent application the leg was of wood and a recessed portion was needed to receive the equivalent of spring 38 and these two recessed portions came too near to being in a same longitudinal portion of the leg. Instead of having the leg thus weakened, that in the parent application had the plate 32 with its lower end bent away from the leg far enough to receive spring 38. That was regarded as less desirable than is the present construction. By use of a tubular tapered element 20, it is now no longer necessary to have neither of the latch plates 32 nor 24 provided with a lower end that projects as far away from the plane of the adjacent surface of the leg. Less than a quarter turn of bolt 14 is adequate to adjust the desired degree of friction between the hinge leaf 19 and sides of the bracket.

From the drawing it may be seen that the latch plates 24 and 32 are about 60% or more of the thickness of the bracket 10 and the same may be said of the leg 22 and the hinge leaf 19.

With edge 35 that is raised being as long as three or more times the thickness of the latch plate 24 or 32, it can be seen that rigidity of the leg clamped in its ex-

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tended position is an outstanding advantage of the present construction. The plates 24 and 32 being on an inner side of leg 22 are projecting out from the leg less than about a quarter of an inch where there is a minimum likelihood of their catching on any article of clothing. The side edges of the hinge leaf 19 and the inner surface of the side portions of the bracket are made harder and more wear resisting than the other metal surfaces, and the edge portions of plates 24 and 32 subjected to wear are also similarly hardened. In this way the present construction is not only long lived but possessed of greater rigidity for heavier loads. The latch plates are the equivalents of push button releases for ease of manipulation.

I claim:

1. A folding leg mechanism comprising a frame, a U-shaped bracket secured to said frame, an adjustable threaded hinge pin passing through upper corners of said bracket remote from said base, a hinge leaf suspended from said hinge pin, a leg secured to said hinge leaf, said hinge leaf being wider than the leg to which it is secured whereby the side edges of said leaf have a sliding contact with inner faces of said bracket sides, and adjustment of said hinge pin and bracket sides controls the pressure and friction between the bracket sides and the leaf side edges to avoid wear on said leg, which need not contact either bracket side.

2. A folding leg pivotally secured to a U-shaped bracket, means for rigidly locking said leg in its folded and extended positions, said means including at least one latch plate located on an inner side portion of said leg, a spring between said plate and a leg portion, a portion of said plate being provided with an edge portion of substantial extent for engagement with an edge portion of said bracket also of substantial extent for holding said leg non-yieldably in one of its extreme positions, said plate edge portion in edgewise engagement with said bracket being releasable on movement of said plate toward said leg with stressing of said spring for movement of the plate edge engaging portion beneath a bracket side for release of said leg from its locked position.

3. A folding table leg mechanism comprising a U-shaped bracket, a leg pivotally secured to said bracket, a latch plate for releasing said leg from its extended position, said plate having a raised longitudinal edge portion of substantial length intermediate the ends of said plate, said bracket having a recess in a lower portion of one side, said plate being pivotally secured to a leg for limited movement, a spring between said leg and plate for holding said plate edge portion in engagement with a side of said recess, an abutment against which said leg is held when said raised edge portion engages a side of said bracket recess, said leg being released from its extended position on pressing said plate toward the plane of a side of said leg compressing said spring and moving said raised edge portion beneath a side of said bracket, and means for holding said plate against being moved away from said spring and leg.

4. A combination according to claim 3 in which said leg is provided with a tapered tube of rectangular cross-section to which said plate is pivotally secured, and a hinge leaf by means of which said tube and leg are pivotally secured to a hinge pin through said bracket.

5. A combination according to claim 3 in which a second latch release plate is carried by said leg beside the first mentioned plate, said second plate being pivotally secured to said leg below the pivot for the first plate, said second plate being provided with an extension over the first mentioned latch plate and another extension offset beneath the plane of said second plate at an upper end of said plate for holding the leg in a folded position by engagement with an end edge of said bracket, said last mentioned plate being movable to depress its upper end beneath said bracket, a spring between said leg and plate.

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6. A folding table leg mechanism comprising a U-shaped bracket, a pivot pin securing a leg to an upper rear corner portion of said bracket, a latch pivotally secured to said leg and having an upper edge portion offset beneath the plane of said plate, said offset upper portion being located to hold the leg in its folded position by engaging an upper end of said plate, with an upstanding end edge of said bracket while said offset upper portion lies beneath a side of said bracket, and a spring between said leg and plate pressing said plate outward whereby said leg is automatically held in its folded position as said leg is moved from its extended position.

7. In a folding table leg mechanism having a U-shaped bracket secured to a frame, a leg pivotally secured to an upper inner portion of said bracket, and a pivot pin supporting said leg and passing through said bracket sides, the combination therewith of the improvement for rigidly holding said leg in its extended position, said improvement including an abutment portion of said frame for engaging said leg in its extended position and limiting its movement to such position, a pivotal latch release plate mounted on an inner side of said leg and generally parallel thereto, a portion of an edge portion of said plate being raised for a length of more than the plate thickness, a lower inner side portion of said bracket being cut out to provide a generally upstanding edge engaged by the raised edge of said plate holding said leg against said limiting abutment and against said upstanding edge of the cut out bracket side, and means whereby said plate may be moved toward said leg to release said leg from its extended position.

8. A folding table leg mechanism comprising a U-shaped bracket, a pivot pin extending through side portions of said bracket adjacent an upper inner portion thereof, a leg hung from said pin, a latch release plate on an inner side of said leg pivotally attached thereto for rigidly holding said leg against movement away from its folded position, a spring between said plate and leg, an upper edge portion of said plate engaging an upstanding edge portion of said bracket when said leg is in its folded position, and another upper edge portion of said plate being bent backward away from an outer face of said plate, the outer face of said bent back portion being shaped to contact an inner face of a bracket when said leg is in its folded position, the release of a leg from its folded position being accomplished by pressing an upper portion of said plate toward said leg compressing said spring moving said bent back upper portion of said plate out of contact with an inner face of said bracket and disengaging the plate upper edge portion from contacting the bracket edge whereby an upper outer face portion of said plate may frictionally engage an inner face of a bracket side portion in said leg being moved to an extended position.

9. In a folding leg mechanism having a U-shaped bracket from which said leg is pivotally supported and having means for releasably holding the leg in extended and folded positions, the combination therewith of the improvements enabling a table leg to be rigidly supported in each such position, to be easily released from each of said positions, said improvements including a hinge pin from which a leg is supported, a hinge leaf having a rolled end through which said hinge pin is passed, the side edges of said leaf having an adjustable and sliding contact with inner surfaces of the bracket sides whereby wear is taken off said leg, a tubular and tapered member of rectangular cross-section to which said hinge leaf is secured, a lateral wing projecting from said tapered member and to which said leg is secured, a latch release

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plate pivotally secured to said leg, an upper edge of said plate having a portion of substantial width engaging an upstanding edge of a bracket side for rigidly holding said leg in its folded position, said plate being on an inner side of said leg and releasable on inward movement of said plate upper end toward said leg, a tongue projecting above said edge portions of said plate and engaging an inner surface of a bracket side engaged by the upper edge of said plate, a spring between said leg and plate, a second plate pivotally secured to said tubular tapered member with a raised edge portion of substantial extent for engagement with an upstanding edge of a recess in a lower bracket side portion for holding said leg rigidly in an extended position, said second plate being longitudinally disposed laterally beside said first mentioned plate, a spring between said second plate and tapered tubular member, and at least one abutment for said leg in its extended position cooperating with raised edge portion for rigidly holding said leg between them, the raised edge portion of said second plate being pivotally movable inward against said second spring for releasing said second plate and leg pushing said raised edge portion of the second plate being moved to slide under a bracket side portion.

10. In a folding leg mechanism comprising a U-shaped leg supporting bracket, a supporting frame to which said bracket is secured, a hinge pin for said leg and provided with means whereby the spacing of the U bracket sides may be adjustably spaced, the combination therewith of the improvement for obtaining greater rigidity in means for rigidly holding said leg in either its folded position within said frame or in its extended position generally normal to said frame, said improvement comprising a latch release plate mounted on an inner side of said leg for releasing said leg from one of its extreme positions, an abutment against which said leg is held in an extreme position, said plate having an edge portion of substantial extent for engagement with an edge portion of said bracket when the engaged bracket edge portion is also of substantial extent, a spring between said plate and leg, said spring being compressible on movement of the plate toward said leg and freeing the plate engaged edge portion from its holding of the leg in an extreme position of its travel, said leg being movable about its hinge pin toward its other extreme position on being released from one extreme position, at least some portion of said plate surface adjacent said edge portion just released and away from said leg being pressed by said spring against an inner surface of a bracket side portion adjacent the edge thereof just disengaged, and for at least a portion of its angular travel away from the bracket edge just disengaged.

11. A combination according to claim 1 in which at least said hinge leaf side edge portions and the inner faces of the bracket sides are of harder material than much of the rest of the mechanism including the bracket base and leg.

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