Sept. 29, 1953 R. C. McKINNIE 2,653,399

LATCH CONSTRUCTION FOR FOLDING IRONING BOARDS

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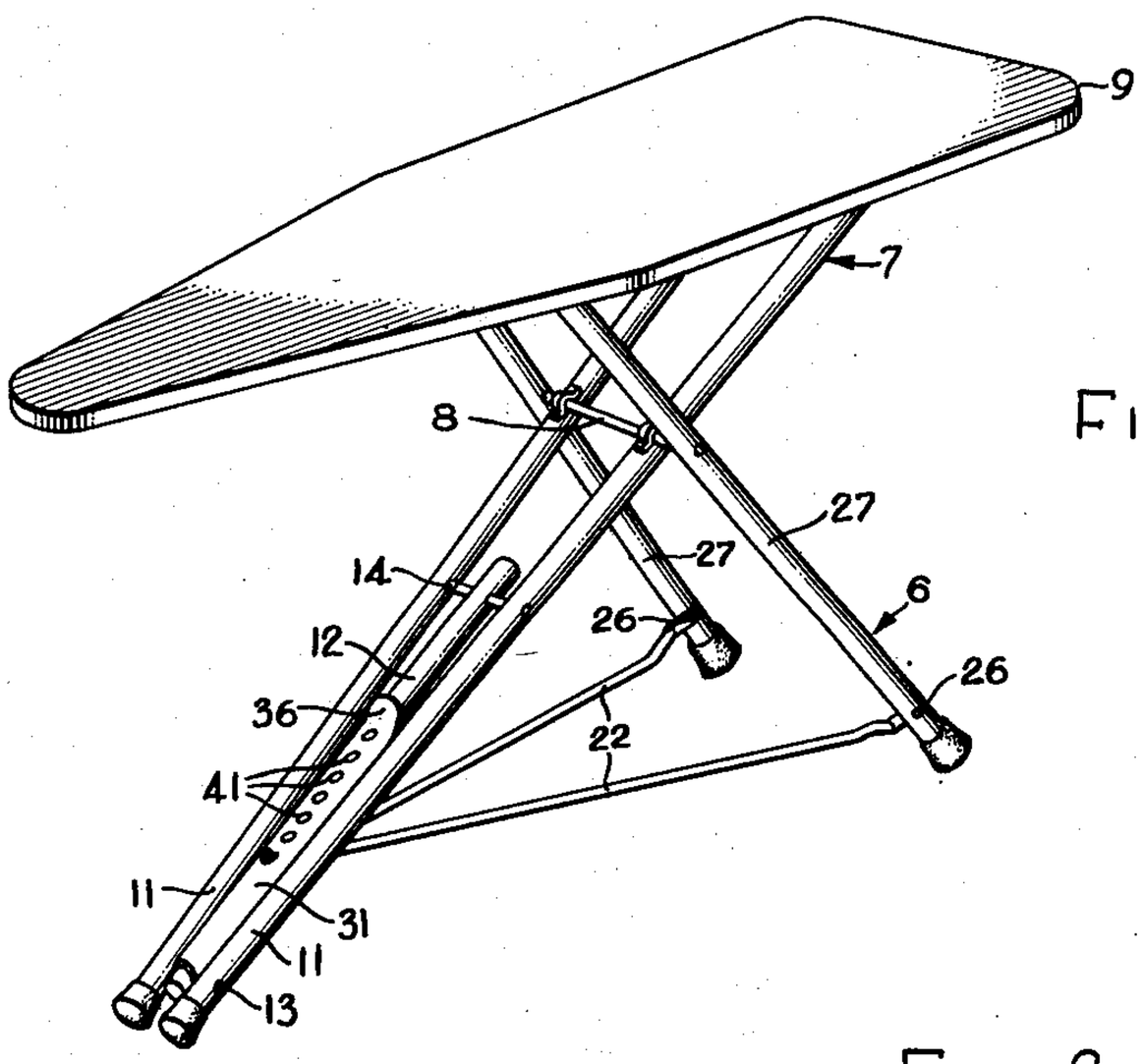


Fig. 1

Fig. 2

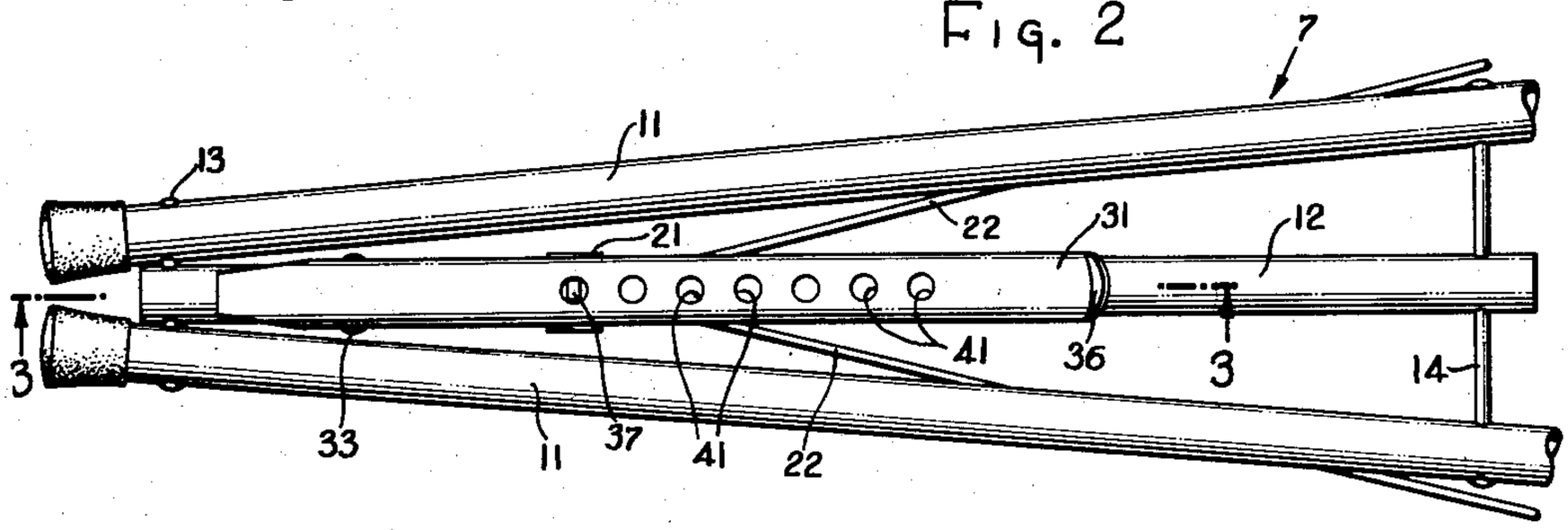
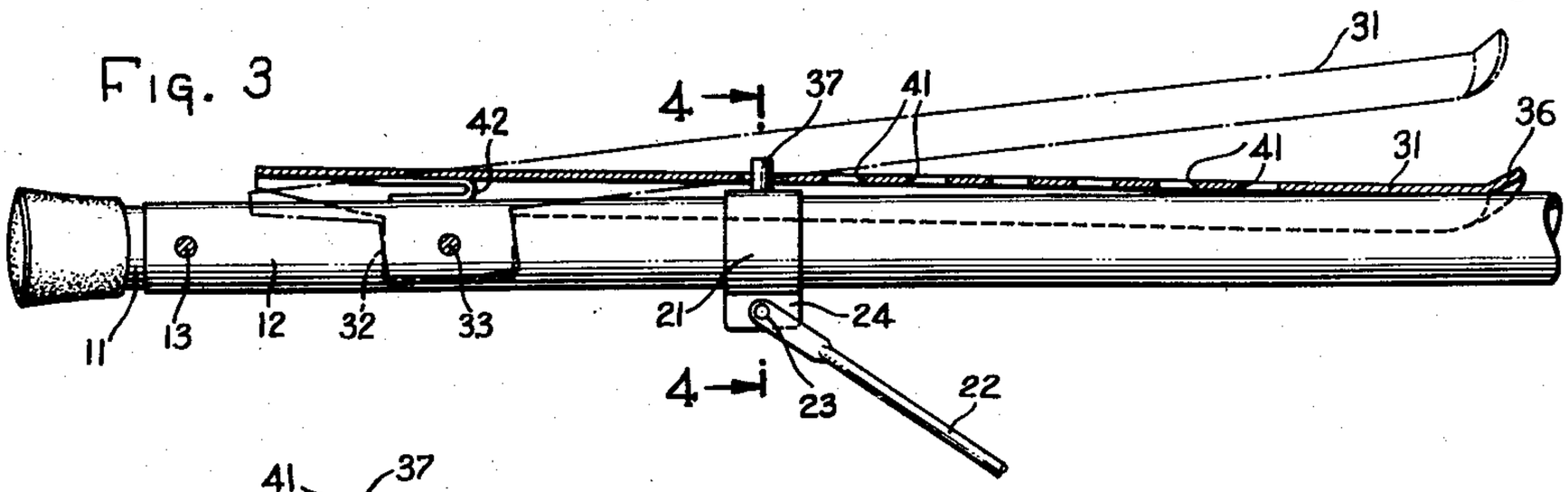


Fig. 3



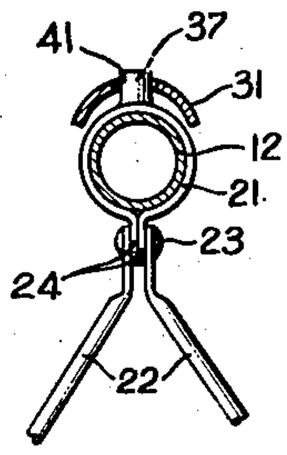


Fig. 4

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LATCH CONSTRUCTION FOR FOLDING IRONING BOARDS

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4 Claims. (Cl. 38—121)

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This invention relates to latch construction, and has for an object the provision of an improved, simplified, and highly efficient latch designed especially for, but not necessarily limited to, the collapsible legs of a folding ironing board of the type disclosed in my co-pending applications, Serial No. 767,976, filed August 11, 1947, now Patent No. 2,596,267, dated May 13, 1952, and Serial No. 33,856, filed June 18, 1948, and in application, Serial No. 228,439, filed May 26, 1951, by Vernon C. Wear and by him assigned to me.

A more detailed object of the present invention is to provide a latch adapted to releasably secure a pair of pivotally interconnected leg members in any selected one of a plurality of positions of angular adjustment with respect to each other, so as to rigidly, and yet releasably, retain the supporting legs of a folding ironing board in that certain position of angular adjustment which enables them to support the ironing board at the working height selected by its user.

In still further detail, it is an object of the present invention to provide a two-part latch structure, one part of which slides along one of the pivotally interconnected legs in response to variation in the angular adjustment of the legs with respect to each other, and the other part of which is in the form of a latch plate carried by the same one of the legs and extending therealong through the portion of the distance traveled by the slide when the ironing board is being adjusted from one extreme to the other of its possible working heights. Then, a pin carried by the slide can optionally be engaged in any selected one of a plurality of apertures in the latch plate to releasably lock the legs in that certain position of angular adjustment with respect to each other which will enable them to support the ironing board at a certain working height. The number of spacing of the apertures provided in the latch plate, therefore, determine the range of optional working heights to which the board can be adjusted.

Yet another object is to provide a latch construction of the general character indicated, which is characterized by such strength that it is enabled to retain the ironing board at selected working height with maximum rigidity, without, however, impairing its exceptional ease of operation, both in erecting the board and to whichever working height might be desired, and in collapsing the board for storage during periods of non-use.

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The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred forms of my invention which are illustrated in the drawings accompanying and forming part of the specification. It is to be understood that I do not limit myself to the showing made by the said drawings and description, as I may adopt variations of the preferred forms within the scope of my invention as set forth in the claims.

Referring to the drawings:

Figure 1 is a perspective view of a folding ironing board having the latch construction incorporating the principles of the present invention operatively installed thereupon.

Figure 2 is an enlarged top plan view of the lower part of one of the supporting legs of the ironing board of Fig. 1, the better to reveal constructional detail of the latch of the present invention.

Figure 3 is a longitudinal, medial, vertical sectional view, the plane of section being taken upon the line 3—3 of Fig. 2, with the direction of view as indicated.

Figure 4 is a transverse, vertical sectional view taken upon the line 4—4 of Fig. 3, with the direction of view as indicated.

As illustrated in Figure 1, the latch construction of the present invention is designed primarily for use in conjunction with a folding ironing board of the type adapted to be supported in working position by a pair of crossed leg members 6 and 7, respectively, pivotally interconnected intermediate their ends as by a transversely extending pivot pin or rod 8 permitting the leg members 6 and 7 to be adjusted easily and quickly in any selection positioned of angular relationship with respect to each other. At their upper ends, the leg members 6 and 7 are connected to the under surface of the ironing board body 9 by any suitable construction, the details of which do not constitute a portion of the present invention, but different optional forms of which are disclosed in the hereinabove identified pending applications. Suffice it for the purpose of the present disclosure to explain that the upper end of one of the leg members, say the leg 7, is pivotally connected to the undersurface of the body 9 whereas the upper end of the leg member 6 is connected to the body 9 for pivotal as well as for sliding movement longitudinally of the body 9, thus permitting the legs to be folded upwards into position closely adjacent the undersurface of the body 9 so that the

folded board can be stowed within a minimum of space during periods of non-use, or can be swung downwards away from the body 9 to extended position wherein they are adapted to support the body 9 at working height, as illustrated in Figure 1. In the form in which they are illustrated, each of the leg members 6, 7 comprises a pair of spaced rods or tubes, those of the member 6 flaring apart as they extend away from the body 9, whereas those of the leg member 7 converge downwardly from the body 9, thus permitting a substantial "three point" support for the erected ironing board the rigidity of which is not seriously impaired by unevennesses in the surface upon which the structure is supported.

Between the converging lower ends of the rods or tubes 11 of the leg member 7, an auxiliary rod or tube 12 is rigidly mounted as by rivets or rods 13 and 14 adjacent the lower and upper ends, respectively, of this auxiliary leg member 12. For convenience of terminology herein, this leg member 12 will hereinafter be termed a tube inasmuch as this is its preferred construction. A cross-head or slide, preferably in the form of a collar 21 is mounted for sliding reciprocatory movement upon the auxiliary tube 12; and a pair of links or rods 22 are pivotally connected at one end of each rod 22 to the collar 21 as by a rivet 23 extending through the rod 22 adjacent their ends and through radially extending flanges 24 rigid and preferably integral with the collar 21. The other end of each of the rods 22 is pivoted, as by a suitable rivet 26, to one of the rods or tubes which comprise the first-mentioned leg member, the point of attachment of the rod 22 to the tubes 27 of the leg member 6 being closely adjacent the lower end at such distance from the axis of pivotal interconnection between the leg members 6 and 7 that as variation occurs of the angular position of the leg members 6 and 7 with respect to each other the rods 22 operate to slide the collar 21 along the auxiliary tube 12 forming an integral portion of the other leg member 7. Consequently, by providing means for anchoring the collar 21 against movement with respect to the tube 12, the leg members 6 and 7 may be locked against pivotal movement with respect to each other in such a manner that they provide adequate, rigid support for the body 9 of the ironing board.

Such anchoring means is conveniently provided in the form of a latch plate 31 of elongated form and preferably of arcuate cross-section pivotally mounted upon the auxiliary tube 12 of the leg member 7. Adjacent its lower end, the side edges of the latch plate 31 are extended in parallel flanges 32 spaced apart far enough to embrace the auxiliary tube 12 of the leg member 7. These flanges 32, therefore, provide facile means for pivotally mounting the latch plate 31 upon the auxiliary tube 12 for locking movement about a transverse axis adjacent the lower end of the leg member 7, a suitable pivot pin or rod 33 being extended through the flanges 32 and through the tube 12 for this purpose. From this position of pivotal mounting of the latch plate 31 upon the tube 12, the latch plate 31 extends upwards along the auxiliary tube 12 overlying that portion of the auxiliary tube 12 upon which the collar 21 is located when the ironing board 9 is supported in any one of its optional working heights. That is to say, the latch plate 31 does not extend throughout the entire length of the tube 12, or necessarily throughout even the entire portion of its length which is traversed by the collar 21 in moving from one extreme to the other of the collar's sliding movements along the auxiliary tube when the leg members 6 and 7 are swung all the way from their fully collapsed to their fully extended positions. Instead, it is necessary only for the latch plate 31 to extend for only a relatively slight distance beyond the position assumed by the collar 21 when the leg members 6 and 7 are in those respective positions thereof which they occupy when the body 9 of the ironing board is at its lowest actual working height.

The upper end of the latch plate 31 is provided with an upwardly, outwardly flanged lip 36, the sloping under surface of which is adapted to be engaged by the collar 21 and/or a detent pin 37 carried by the collar 21, as the collar 21 slides downward along the tube 12 and comes into engagement with the upper end of the latch plate 31. This lip 36, therefore, is capable of developing a wedging action, lifting the latch plate 31 in pivotal motion about the axis of its pivot pin 33 and thus enabling the collar 21 and its pin 37 to slide under the latch plate. This co-operative action of the latch plate 31 and the sliding collar 21 automatically occurs as the leg members 6 and 7 of the board are swung downwards from their collapsed position and as they approach their respective positions of supporting the board in its lowest working height.

The latch plate 31 is provided with a plurality of spaced apertures 41 within which the detent pin 37 of the collar 21 is selectively receivable. The latch plate 31, therefore, serves to releasably anchor the collar 21 in any one of a plurality of optional positions of adjustment along the auxiliary tube 12 of the leg member 7. Under normal circumstances, the weight alone of the latch plate 31 will serve to retain it in position of engagement with the detent pin 37; however, as a precautionary measure, I prefer to provide a spring 42, preferably a flat strip of spring steel bent to U-shaped configuration and interposed between the under surface of the latch plate 31 and the auxiliary tube 12 closely adjacent the pivot pin 33. This spring is so proportioned and arranged that it continually exerts yieldable pressure upon the latch plate 31, urging it to that position, indicated in full line in Figure 3, in which the detent pin 37 can extend through any one of its apertures 41, and yet permitting raising the latch plate 31 to the position indicated in broken lines in Figure 3, in which the detent pin 37 is released from the latch plate so that the collar 21 is free to slide along the tube 12.

It is believed that the manner of operation of the latch construction of the present invention will be readily apparent from the hereinabove description of its constituent parts. Mention should be made here, however, of the extreme east of operation which permits the operator to erect the board from its folded or collapsed position to any one of its several optional working heights and, when desired, again to fold the board to its position which permits stowage within a minimum of space. All that an operator has to do in order to unfold the board and thus make it available for use, is to hold the body 9 in a substantially horizontal position, thus permitting the leg members 6 and 7 to fall downwards away from the board. As this occurs, the collar 21 will be slid, because of the action of the rods 22, from adjacent the upper end of the tube 12 downwards toward and into engagement with the lip

36 of the latch plate 31. As hereinabove explained, as this occurs the latch plate 31 will be wedged upwards permitting the collar 21 and its detent pin 37 to slide under the latch plate and further downwards along the tube 12 until the detent pin reaches the uppermost of the several apertures 41 in the latch plate. The weight of the latch plate 31 and the spring 42 will then co-operate in forcing the latch plate downwards to seat the detent pin 37 in that uppermost aperture 41, locking the collar 21 against further movement downwards along the tube 12. The operator may then set the ironing board down on the floor and its body 9 will be supported at its lowest elevation. However, in the event that the operator prefers to use the board at a higher elevation all that is necessary is for the operator to lift the entire structure so that the lower ends of the legs are clear of the supporting floor, and then to raise the lipped end of the latch plate 31 to release the detent pin 37 from the aperture 41 within which it is seated. The weight of the leg members 6 and 7 will then cause them to swing downwards again into position of greater angularity with the under surface of the body 9. This, of course, will be accompanied by further sliding movement of the collar 21 downwards along the tube 12. When the leg members 6 and 7 reach the position in which the board will be supported at the height which the operator then desires, it is necessary only for the operator to release the latch plate 31 so that its spring 42, and the force of gravity, jointly, will move it back towards the tube 12. If at that time the detent pin 37 is aligned with one of the apertures 41, of course it will become engaged within that aperture, thus effectually locking the ironing board at the height which the operator has selected. However, in the event that such alignment of the detent pin 37 with any one of the apertures 41 does not occur at that moment, of course the latch plate 31 will come to rest upon the upper end of the pin 37. Then only a slight movement of the collar 21 in either direction along the tube 12 will be necessary before the pin 37 will move into alignment with an adjacent one of the apertures 41 whereupon the latch plate 31 will snap into its position of engagement and effectually lock the ironing board in selected, working height.

Collapsing of the board for stowage during periods of non-use is most easily accomplished by standing the board, with its leg members 6 and 7 extended on its broad flat end, i. e., with its pointed end uppermost. The operator can steady the board in this position with one hand and, with the other hand, first lift the lipped end of the latch plate 31 until the detent pin 37 is withdrawn from engagement with the latch plate, whereupon the operator can, by pulling the portion of the leg member 7 with which the latch plate 31 is associated toward the body 9 of the board, cause both leg members 6 and 7 to be folded to their collapsed position.

I claim:

1. A latch construction for releasably locking pivotally interconnected legs in selected degree of angular adjustment with respect to each other, one of said legs including a guide member of substantial length in the direction of the associated leg's major axis, said latch construction comprising a slide slidable upon said guide member, a pin rigid with and extending outward from said slide, a rod pivotally connected at one end to said slide and at its other end to the other of said legs at a location spaced from the axis of said

legs' pivotal interconnection whereby said slide is caused to move along said guide member when variation occurs in the angularity of said legs with respect to each other, and a latch plate pivotally connected to said guide member for rocking movement about an axis extending transvers of the associated leg and outside the range of movement of said slide, said latch plate overlying said guide member and the face of said plate proximal to said guide member being concave in substantial conformity with the adjacent portion of said guide member, said latch plate extending along said guide member and having a plurality of spaced apertures therein within which said pin is selectively receivable.

2. A latch construction for releasably locking pivotally interconnected legs in selected degree of angular adjustment with respect to each other one of said legs including a guide member of substantial length in the direction of the associated leg's major axis and of circular cross-sectional configuration, said latch construction comprising a collar encircling and slidable upon said guide member, a pin rigid with and extending outward from said collar, a rod pivotally connected at one end to said collar and at its other end to the other of said legs at a location spaced from the axis of said legs' pivotal interconnection whereby said collar is caused to move along said guide member when variation occurs in the angularity of said legs with respect to each other, a latch plate pivotally connected to said guide member for rocking movement about an axis extending transversally of the associated leg and outside the range of movement of said collar, said latch plate overlying said guide member and being of arcuate cross-sectional configuration whereby the lateral edges of said latch plate substantially embrace and conceal said collar and said plate presents a shield overlying said collar and guide member, said latch plate extending along said guide member and having a plurality of spaced apertures therein within which said pin is selectively receivable, and a spring interposed between said latch plate and its said associated leg and urging said plate toward that position in which it is engaged by said pin.

3. A latch construction for releasably locking pivotally interconnected legs in selected degree of angular adjustment with respect to each other, one of said legs having a guide member substantially round in cross-sectional configuration, said latch comprising a collar slidable upon said guide member, a pin rigid with and extending outward from said collar, a rod pivotally connected at one end to said collar and at its other end to the other of said legs at a location spaced from the axis of said pivotal interconnection of said legs whereby said collar is caused to slide along said guide member when variation occurs in the angularity of said legs with respect to each other, a latch plate of arcuate cross-section overlying and substantially conforming to the curvature of said guide member, parallel flanges rigid with the side edges of said latch plate adjacent one end thereof and embracing said guide member, and a pin extending through said flanges and said guide member at a location outside the range of movement of said collar, said latch plate extending along said guide member and having a plurality of spaced apertures therein within which said pin is selectively receivable.

4. A latch construction for releasably locking pivotally interconnected legs in selected degree of angular adjustment with respect to each other,

one of said legs having a guide member substantially round in cross-sectional configuration, said latch comprising a collar slidable upon said guide member, a pin rigid with and extending outward from said collar, a rod pivotally connected at one end to said collar and at its other end to the other of said legs at a location spaced from the axis of said pivotal interconnection of said legs whereby said collar is caused to slide along said guide member when variation occurs in the angularity of said legs with respect to each other, a latch plate of arcuate cross-section overlying and substantially conforming to the curvature of said guide member, parallel flanges rigid with the said edges of said latch plate adjacent one end thereof and embracing said guide member,

a pin extending through said flanges and said guide member at a location outside the range of movement of said collar, said latch plate extending along said guide member for a distance less than the range of possible movement of said collar, and an outwardly flaring lip on the other end of said latch plate in position to be engaged and lifted by said pin as said collar approaches said latch plate.

ROXTON C. McKINNIE.

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Number	Name	Date
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