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ADJUSTABLE SUPPORT FOR A PLATFORM

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Fig. 1.

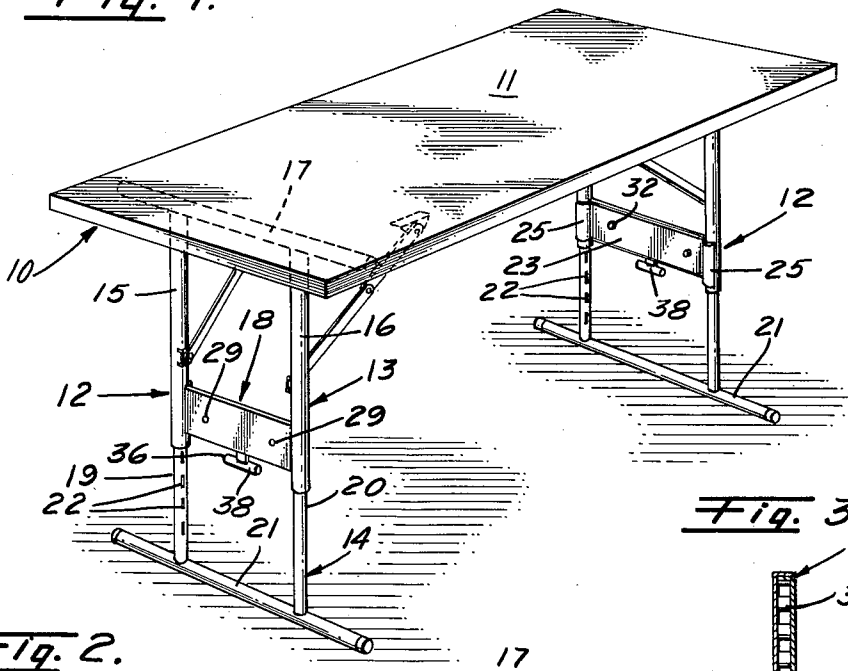


Fig. 2.

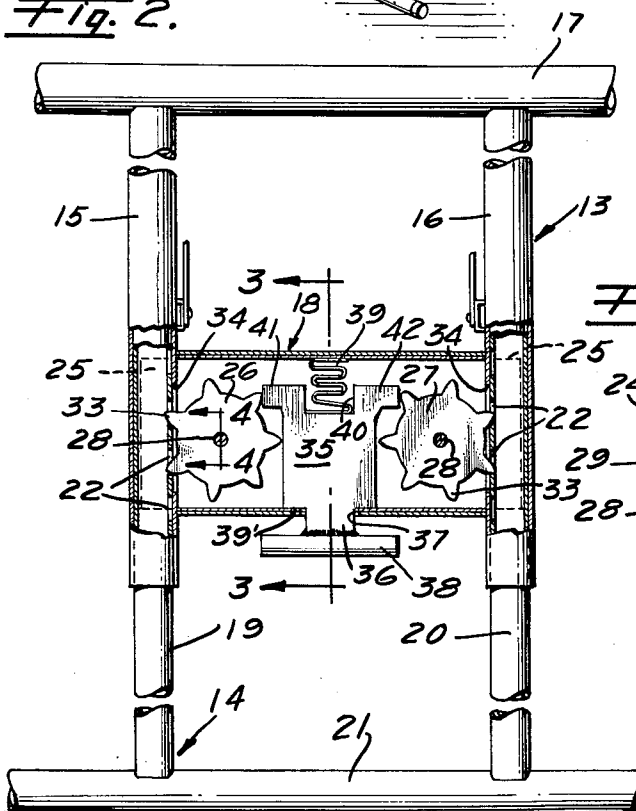


Fig. 3.

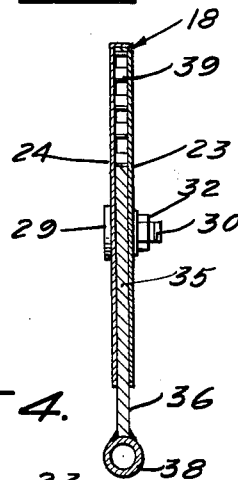
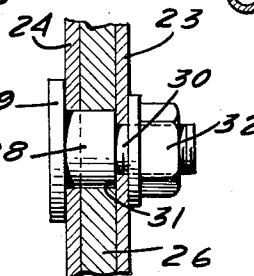


Fig. 4.



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ADJUSTABLE SUPPORT FOR A PLATFORM
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The present invention relates generally to furniture construction, and is more particularly concerned with improved means for adjustably varying the height of tables, benches, chairs, and the like by means of extensible supporting leg members.

It has heretofore been proposed to utilize telescoping pairs of supporting legs for tables and other furniture of similar character in which a common latch means has been utilized for retaining the telescoping legs in adjusted position. In these prior concepts, the latch mechanism has included pivoted detents which extended through registered openings in the telescope leg portions so as to interlock the leg portions against movement in retracted direction. However, these arrangements were inherently objectionable in that to permit extending the leg portions, it was necessary to entirely disengage the detent. It was, therefore, possible under certain conditions for the mechanism to operate in an unbalanced manner, and jam. Moreover, the detents being spring pressed were prone to cause undue wear of the parts and mar the finish on the telescoped leg portions.

Having in mind the inherent disadvantages of the above noted conventional arrangements, the present invention proposes to provide improved simple and economical latching means for extensible and retractable leg supports, which utilizes rolling detents so that the surface finish on the legs will not be marred, and in which there will be a minimum of wear.

A further object is to provide a structure for the herein described purpose, which utilizes latching means for releasably holding telescopic leg sections in adjusted position, the latching means including a detent carried by one leg section having rolling engagement with the associated other leg section.

Another object is to provide a pair of spaced telescopic legs having their upper sections and lower sections respectively interconnected for simultaneous extension and retraction, and common latching means which permits automatic extension of the legs, and which will limit their extension at full elevated or extended positions.

Still another object is to provide in devices of the herein described type, latching means which includes detents in the form of sprockets respectively associated with telescoped sections of each leg and which are self-aligning, a common latch member extending between the sprockets associated with a pair of adjustable legs so arranged as to balance the distribution of pressures between the sprockets.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing the invention without placing limitations thereon.

Referring to the accompanying drawings, which are for illustrative purposes only:

FIG. 1 is a perspective view of an article of furniture, in this case a table, having adjustable supports embodying the features of the present invention;

FIG. 2 is an enlarged fragmentary sectional view showing the latching mechanism for connecting the leg portions of the upper and lower sections of the supports;

FIG. 3 is a transverse sectional view through the latching mechanism, taken substantially on line 3-3 of FIG. 2; and

FIG. 4 is an enlarged fragmentary sectional view showing

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ing the manner in which the sprockets are rotatably mounted, taken substantially on line 4-4 of FIG. 2.

Referring more specifically to the drawings, for illustrative purposes, the invention is shown in FIG. 1 as being applied to an article of furniture, such as a table. It will be appreciated that while the invention will hereinafter be described as applied to a table, the invention is susceptible of general application and may be utilized in connection with chairs, benches, beds and other similar structures.

More specifically, the table, as generally indicated by the numeral 10, comprises a top or platform 11, which may be constructed of any desired shape, but is illustrated herein as being substantially rectangular. The top 11 is supported at its opposite ends by an adjustable leg structure 12 which is arranged for extensible and retractable movements so as to raise and lower the height of the table top. Each of the support structures embody the present invention.

Each support structure 12 comprises an upper section 13 and a lower section 14, each of these sections being fabricated of suitable tubing to provide a substantially strong, lightweight construction. The upper section 13, as best shown in FIG. 2, is composed of a pair of spaced apart upper leg portions 15 and 16 which are sufficiently separated to provide for lateral stability. At their uppermost ends, the leg portions 15 and 16 are connected to a tubular cross member 17 by which the upper section may be hingedly or otherwise secured to the table top. At their lowermost end portions, the upper leg portions 15 and 16 are interconnected by a housing structure 18 for the latching mechanism, which will subsequently be described in detail.

The lower section of the leg structure comprises lower leg portions 19 and 20 which are respectively telescopically supported within the upper leg portions 15 and 16 for sliding movement to extended and retracted positions. The lower leg portions 19 and 20 at their lowermost ends are secured to a tubular footrail 21. The facing sides of the leg portions 19 and 20 are respectively provided with an aligned series of spaced apart openings 22.

The housing structure 18 is composed of an inner or back panel 23, and an outer or front panel 24 as shown in FIG. 3, these panels being in spaced apart relation and provided with overlapping upper and lower edge flanges. The back panel 23 forms a tie member between the leg portions 15 and 16, this panel having curved end wings or extensions 25 which are welded or otherwise secured to the adjacent upper leg portions.

As shown best in FIG. 2, a pair of sprocket wheels 26 and 27 are rotatably supported upon spacer studs 28 inwardly of the ends of the housing 18. As shown in FIG. 4, the spacer stud 28 has a head portion 29 which is adapted to overlie the plate 24, while the other end of the spacer stud has a contracted threaded end 30 which forms an abutment shoulder 31 for engaging the inner surface of back panel 23 when the threaded end 30 is engaged by a securing nut 32.

The sprocket wheels 26 and 27 are similarly constructed with spaced projecting teeth 33 on their periphery, and each wheel is so mounted that a portion of its periphery will project through a slot 34 of the adjacent upper leg portion sufficiently to permit the teeth to extend into the aligned openings 22 of the adjacent associated lower leg portion so that, as the leg support structures are extended or retracted, the sprocket wheels 26 and 27 will be rotated about their pivots. It will be observed that the spacing of the teeth of the sprocket wheels is such that at least one tooth will be in engagement with and project into an opening 22 at all times.

A latch plate 35 is positioned between the sprocket wheels 26 and 27, this latch plate having a lower con-

tracted extension 36 which extends through an opening 37 at the bottom of the housing. The extension 36 at its outermost end is affixed to a tube 38 which forms a handle below the housing 18. The contracted portion 36 provides abutment shoulders 39' which limit the downward movement of the latch plate under the action of a compression spring 39 having its lowermost end retained within a recess 40 at the upper end of the latch plate, and its upper end bearing against the upper overlapped flanges of the housing 18. The upper end of the latch plate 35 is provided with end projections 41 and 42 which are respectively associated with the sprocket wheels 26 and 27. In the normal position of the latch plate 35, wherein it is biased in a downward direction to a limiting position in which the shoulders 39' engage the lower flanges of the housing, the projections form abutments in the path of movement of the teeth and oppose clockwise rotation of the sprocket wheel 26 and counterclockwise rotation of the sprocket wheel 27, whereby lowering or retracted movement of the leg portions is prevented. The leg portions are thus retained in adjusted position. However, the projections 41 and 42 may be moved to a release position by manually applying pressure against the tube 38 in a direction to move the latch plate 35 upwardly against the action of spring 39, whereupon the table may be lowered and retraction movement of the leg portions permitted.

It will be observed, however, that the sprocket wheels 26 and 27 are free to rotate in an opposite direction, that is, the sprocket wheel 26 may rotate in a counterclockwise direction and the sprocket wheel 27 may rotate in a clockwise direction, and that in so doing, the teeth will automatically raise the latch plate 35 by engaging the end projections 41 and 42 and raising them against the spring pressure sufficiently to permit passage of the sprocket wheel teeth. The leg structure may therefore be extended automatically to raise the table, and when in the desired elevated position, the latch plate will automatically move to latching position to prevent retractive movement of the leg structures.

Another feature of the structure described above resides in the fact that when the table has been raised to its maximum height, and wherein the last uppermost hole 22 of the series is reached, the next tooth, having no hole 22 to enter, will come against the adjacent surface of the leg portion and thus limit further rotation of the sprocket wheel. This serves as an automatic limit stop.

The construction described provides a balanced arrangement wherein the pressures and forces will be equally balanced and distributed, and due to the rolling motion of the sprocket wheels, there will be positive engagement with the associated leg portions through the openings 22, and there will be a minimum of wear and marring of the surface of the leg portions.

From the foregoing description it will be appreciated that the invention as thus described accomplishes the objects which have previously been stated.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of my invention, and, hence, I do not wish to be restricted to the specific form shown or uses mentioned, except to the extent indicated in the appended claims.

I claim:

1. An adjustable support for a platform, comprising spaced apart upper tubular members secured to said plat-

form for unitary raising and lowering movements therewith and depending therefrom; lower interconnected members respectively telescopically slidable in said upper members as a unit, said lower members each having a linear series of spaced apart openings; a frame structure interconnecting the lowermost end portions of said upper members and movable therewith; rotatably mounted members carried by said frame structure respectively having projections successively positionable in the openings of said lower members, and being rotatable in response to telescoping movements thereof; at least one projection of each said rotatably mounted members being in engagement with the openings of one of said lower members at all times; a latch common to said rotatable members comprising projecting elements engageable with the projections of said rotatable members, said latch being supported for movement into latched position simultaneously with respect to both of said rotatable members and into released position simultaneously with respect to both of said rotatable members.

2. The adjustable support of claim 1 including manually engageable means for moving said latch into said releasable position.

3. The adjustable support of claim 1 wherein the latch is spring biased into a latched position.

4. The adjustable support of claim 2 wherein the manually engageable means for moving said latch comprises an extension of the latch in the form of a handle which is movable in a direction for raising said platform.

5. An adjustable support for a platform, comprising, spaced apart upper tubular members secured to said platform for unitary raising and lowering movements therewith and depending therefrom; lower interconnected members respectively telescopically slideable in said upper members as a unit, said lower members having a linear series of inwardly facing spaced apart openings therein; a frame member bridging the lowermost ends of said upper tubular members and movable therewith; a peripherally toothed wheel rotatably supported on said bridging member adjacent each set of telescoped tubes with its teeth arranged to successively mesh with the openings of the adjacent lower member, and being rotatable in response to telescopic movements of said tubes; at least one projection of each of said peripherally toothed wheels being in engagement with the openings of one of said members at all times; a spring pressed latch plate common to said wheels biased to a position opposing rotation of said wheels in directions responsive to telescopic movements of the tubes to lower the platform height, but enabling rotation of the wheels in directions responsive to telescopic movements to raise the platform; and manually engageable handle means for moving said latch plate into released position.

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