June 10, 1958 R. C. EMMERT 2,838,353

FOLDING LEG HINGE AND LATCH STRUCTURE

Filed Sept. 21, 1956

FIG. 1.

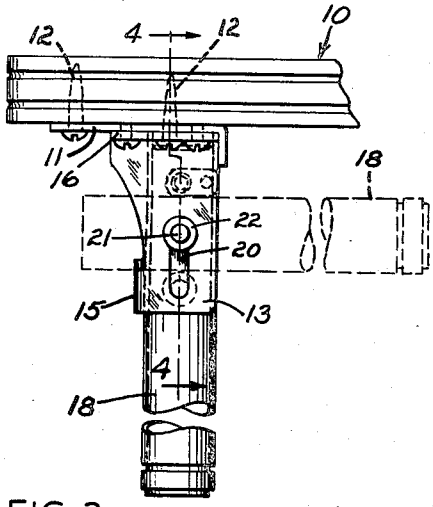


FIG. 2.

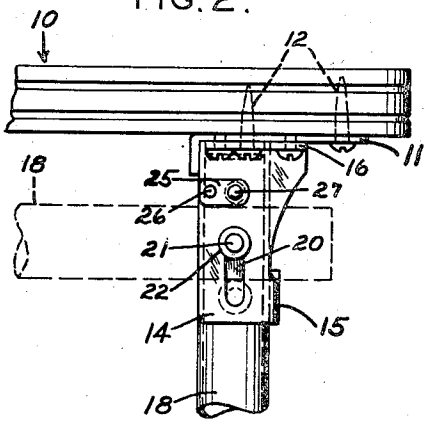


FIG. 3.

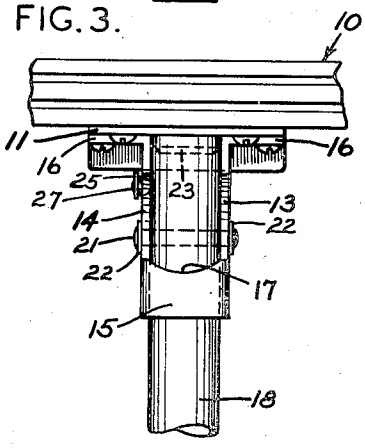


FIG. 4.

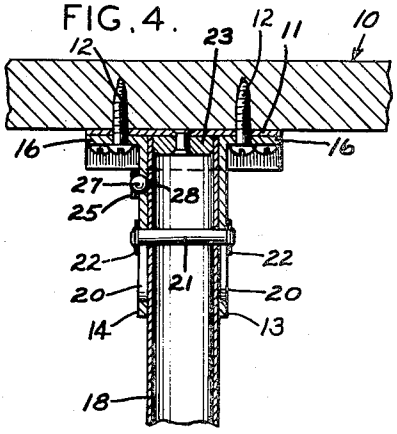


FIG. 5.

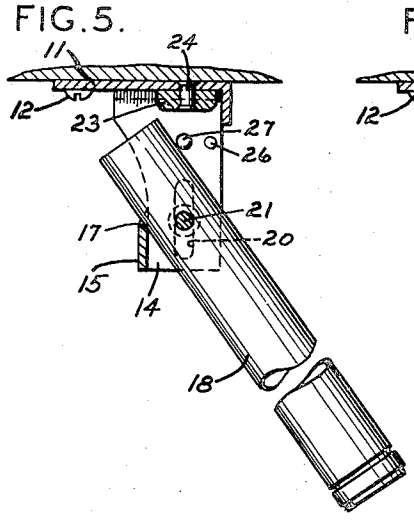
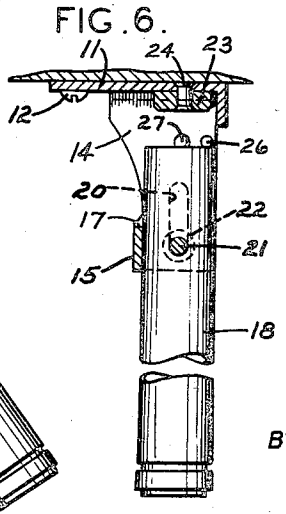


FIG. 6.



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FOLDING LEG HINGE AND LATCH STRUCTURE

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3 Claims. (Cl. 311—99)

This invention relates to improvements in a folding leg hinge and latch structure.

It is a major objective of the present improvements to provide a folding leg structure embodying a hinge and stop assembly that automatically locks the leg in place when such leg is moved to the operative extended, furniture-supporting position.

An important object is realized by the mechanical construction of the foldable leg structure in that it is durable, easy to assemble and install, and inexpensive to manufacture.

Another important objective is achieved by the improved hinge and stop assembly that permits the leg to be rigidly locked automatically in the extended position, and permits such leg to be easily unlocked automatically and moved to a folded position, the structural arrangement affording complete one-hand operation.

Still another important object is realized in the arrangement of the hinge connection of the leg with the supporting bracket structure, the hinge pin of such leg being movable in a slot to enable relative movement of the leg and bracket structure to permit engagement of the leg end with a stop member when the leg is disposed in an extended position, the stop member retaining the extended leg securely and rigidly in place and preventing pivotal movement of such leg. Other advantages are realized in that the hinge pin is relatively movable in the slot to enable selectively, movement of the leg into and out of operative engagement with the stop member.

Still another important object is realized by the provision of a resilient locking means carried on the bracket structure and adapted operatively to engage the leg when the leg is disposed in the extended position, the locking means preventing any unwanted or unintentional disengagement of the stop member from the leg structure.

The foregoing and numerous other objects of the invention will more clearly appear from the following detailed description of a preferred embodiment, particularly when considered in connection with the accompanying drawing, in which:

Fig. 1 is a side elevational view of the hinge and stop assembly for a furniture leg, showing the assembly attached to a table top section, the dotted lines indicating the folded position of such leg;

Fig. 2 is a side elevational view of the opposite side of the hinge and stop assembly shown in Fig. 1;

Fig. 3 is an end elevational view of the hinge and stop assembly as seen from the left of Fig. 1;

Fig. 4 is a cross sectional view as seen along line 4—4 of Fig. 1;

Fig. 5 is a view, partly in cross section, as seen in a plane taken medially through the bracket structure, and

Fig. 6 is a cross sectional view similar to Fig. 5, but showing the leg in an extended position.

Referring now by characters of reference to the drawing, it will be apparent that the leg assembly is illustrated as being attached to an article of furniture such as a table top or chair seat referred to generally at **10**. Of course,

the leg assembly may be conveniently attached to any furniture piece requiring legs, but is preferably constructed and designed for connection to a table top such that the legs may be folded or extended selectively incident to storage or operative use of such table.

The leg structure includes an improved hinge and stop assembly that enables the leg to be moved selectively to either a folded or extended position, and enables the leg to be automatically locked in the extended position and readily unlocked by only one-hand manipulation. The hinge and stop assembly includes a base plate **11** adapted to be attached to the table section **10** by connecting elements **12**.

The bracket structure of the hinge and stop assembly consists of a pair of spaced, parallel bracket plates **13** and **14** connected by an integral, transverse member **15** bridging the rear side of plates **13—14** at their lowermost ends. Lateral flanges **16** are provided at the upper end of each bracket plate **13—14**, the lateral flanges **16** being secured as by screws to base plate **11**. Transverse member **15** is provided with an arcuate recess **17** more clearly shown in Fig. 3, adapted to engage and receive the end of tubular leg **18**, and hence assist in determining the folded position of leg **18**.

Formed in bracket plates **13** and **14** are elongate, vertical slots **20** arranged in horizontal alignment. A hinge pin **21** is fixed to the upper end of leg **18** and is located in each of slots **20**. Retaining washers **22** are attached to the ends of hinge pin **21** and engage the outer surfaces of bracket plates **13** and **14** to prevent unintentional withdrawal of pin **21**. It is seen that hinge pin **21** connects leg **18** between bracket plates **13** and **14**, the spacing between plates **13—14** closely approximating the outer diameter of tubular leg **18**. This hinge connection enables leg **18** to be moved selectively about the axis of hinge pin **21** to a folded position shown in dotted lines in Figs. 1–2, or to the extended position shown by full lines. The dotted line showing of hinge pin **21** and washer **22** in Figs. 1 and 2 merely indicate the limit of their travel in slots **20** during manipulation of the leg.

A stop member **23** is fastened to the underside of base plate **12** by rivet **24**, the stop member **23** being disposed in vertical alignment with leg **18** when in the extended position. For reasons which will later more clearly appear, the stop member **23** is of a size to interfit closely the end of tubular leg **18**, and serves to lock leg **18** rigidly in the extended position.

An auxiliary locking means is provided between the bracket structure and tubular leg **18** to prevent any unintentional or unwanted movement of leg **18** from its rigidly locked position shown in Figs. 3–4. This auxiliary locking means includes a resilient leaf spring **25** fixed at one end **26** to bracket plate **14**. The opposite free end of spring **25** engages a ball element **27** and tends to urge the ball element **27** through an aperture formed in bracket plate **14** and into engagement with the upper end of leg **18**. When tubular leg **18** is disposed in its fully locked position shown in Figs. 3–4, the ball element **27** is urged under spring loading into a small recess **28** formed in leg **18**. The engagement of ball element **27** in recess **28** prevents leg **18** from moving axially relative to bracket plates **13—14** under gravitational effects of its own weight, and hence prevents unwanted or unintentional disengagement of leg **18** from stop member **23**.

It is thought that the theory of operation and functional advantages have become fully apparent from the foregoing detailed description of parts, but for completeness of disclosure, assume that the initial at-rest position of tubular leg **18** is folded as is shown in dotted lines in Figs. 1–2. In this position, the hinge pin **21** occupies an uppermost position in slots **20**. As the leg **18** is hingedly moved to the extended position, the upper end of leg **18**

engages shoulder 17 and hinge pin 21 is moved downwardly in slots 20 as is indicated in Fig. 5. When the leg 18 is moved to the vertical extended position, hinge pin 21 is located in the lowermost position in slots 20 as indicated in Fig. 6. Then, leg 18 is moved vertically upwardly to the position shown in Figs. 3–4 in which the stop member 23 closely interfits the hollow upper end of leg 18. The slidable movement of hinge pin 21 in slots 20 permits such vertical, translatory leg movement. Stop member 23 effectively engages leg 18 to prevent any pivotal movement, and hence serves to prevent collapse of the leg during use.

The ball element 27 is urged into recess 28 by leaf spring 25 when leg 18 is disposed in its extended, latched position as shown in Figs. 3 and 4. This locking means prevents the weight of the leg from causing unwanted disengagement of leg 18 from stop element 23 when the table or other item of furniture is lifted off of the supporting surface or floor. Thus it is seen that the hinge and stop assembly effectively locks leg 18 in the extended position.

To move leg 18 from the extended position to the folded position, the leg 18 is gripped and moved axially away from stop member 23, the hinge pin 21 moving to its lowermost position in slots 20. In this position as is shown in Fig. 6, the upper end of leg 18 is effectively disengaged from stop member 23. Then, the leg 18 is pivotally moved as is illustrated in Fig. 5 about the axis of hinge pin 21. During this pivotal movement, the end of leg 18 engages shoulder 17 and the hinge pin 21 is caused to move upwardly in slots 20 to the uppermost position shown in full lines in Figs. 1–2. When pivotally moved to the fully folded position, the leg 18 is located substantially horizontally as indicated by the dotted lines in Figs. 1–2.

It will be apparent that the hinge and stop assembly enables the leg to be manipulated readily by one-hand operation to either a folded or extended, locked position. The only element of this assembly that requires manipulation is leg 18.

Although the invention has been described by making detailed reference to a single preferred embodiment, such detail is to be understood in an instructive, rather than in any restrictive sense, many variants being possible within the scope of the claims hereunto appended.

I claim as my invention:

1. A folding leg hinge and latch structure comprising a bracket, a leg located adjacent said bracket, the bracket being provided with an elongate slot aligned with the longitudinal axis of said leg when in an extended position, a hinge pin carried by said leg and received in said slot, the leg having a tubular end, a stop member normally interfitting the tubular leg end when the leg is disposed in an extended locked position to prevent pivotal movement of said leg, the hinge pin being movable to another position in said slot so that said stop member operatively disengages the tubular leg end to permit pivotal movement of said leg from the extended position to the folded position, the bracket including a shoulder disposed at one side of the slot transversely in the path of the leg and engaging the leg end to move the hinge pin along said slot upon folding and extending said leg.

2. A folding leg hinge and latch structure comprising a bracket, a leg located adjacent said bracket, the bracket being provided with a slot, a hinge pin carried by said leg and received in said slot, said leg being movable to a folded position and to an extended position, the slot being aligned with the longitudinal axis of said leg when in an extended position, the leg having a tubular end, a stop member on said bracket closely interfitting the tubular leg end, the hinge pin being movable along said slot to enable relative movement of the leg to said bracket when the leg is disposed in an extended position so as to engage and disengage operatively the leg end with the stop member, said stop member engaging the leg end to prevent pivotal movement of the leg from the extended position, a resiliently mounted lock element carried by said bracket and engaging the leg end when the leg is disposed in the extended position in which stop member interfits the leg end, said resilient lock element preventing unintended disengagement of the stop member and leg end, the bracket including a shoulder disposed at one side of the slot and disposed transversely in the path of the leg so as to engage the leg end upon pivotal movement of said leg to a folded position after operative disengagement of the stop member from the tubular leg end, the bracket shoulder causing movement of the hinge pin along said slot.

3. A folding leg hinge and latch structure comprising a bracket, a leg located adjacent said bracket, the bracket being provided with an elongate slot aligned with the longitudinal axis of said leg when in an extended position, a hinge pin carried by said leg and received in said slot, a stop member engaging one end of said leg when the leg is disposed in an extended locked position to prevent pivotal movement of said leg, the hinge pin being movable to another position in said slot so that the stop member operatively disengages the leg to permit pivotal movement of said leg from the extended position to the folded position, the bracket including a shoulder disposed at one side of the slot transversely in the path of the leg and engaging the leg end to move the hinge pin along said slot upon folding and extending said leg.

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