April 5, 1960 V. H. HIERS ET AL 2,931,128

ANTI-TOPPLING FURNITURE EXTENSION LEG

Filed Sept. 16, 1957

Fig. 2

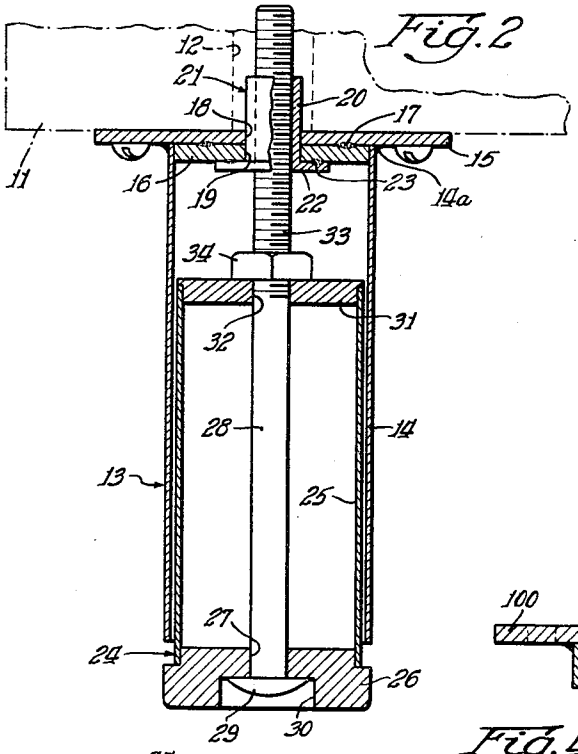


Fig. 1

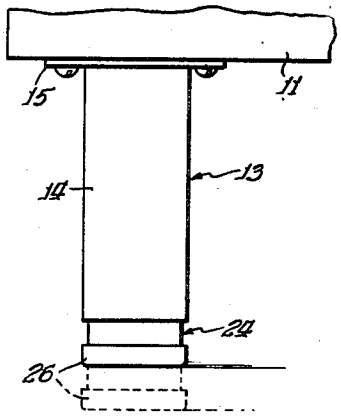


Fig. 6

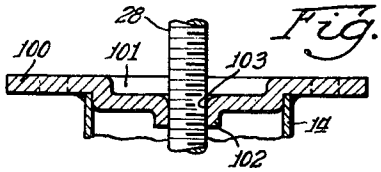


Fig. 4

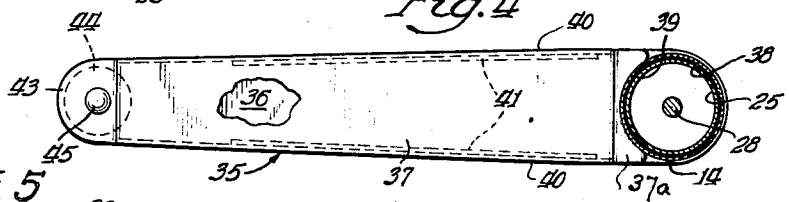


Fig. 5

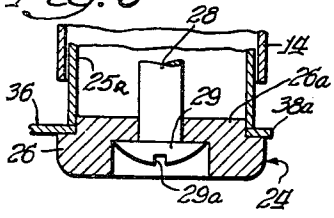


Fig. 3

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United States Patent Office 2,931,128 Patented Apr. 5, 1960

2,931,128

ANTI-TOPPLING FURNITURE EXTENSION LEG

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Application September 16, 1957, Serial No. 684,056

3 Claims. (Cl. 45—139)

This invention relates to furniture extension leg more particularly for use with engineers' desks, drafting tables and the like in such professional fields where adjustability of the height of the desk or table within relatively small ranges is desirable for the purpose for example of contributing to the comfort and efficiency of the engineer or draftsman and thereby enhancing his productive capacity.

Among other objects, the invention aims to provide a simple and economical structure of the class described which is readily adaptable, without change in design or manufacture, to different tables or desks and which can be readily manipulated by the owner or user to adjust the height of a piece of furniture from the floor, each such leg being identical with the other and being embodied in an operatively unitary device the operation of which may be achieved without the use of tools or instruments.

In an important aspect the invention contemplates telescoping leg parts suitably arranged for cooperative relationship with each other and with the supported article of furniture.

In another aspect, the invention contemplates a brace member that may be associated with means for extending the leg vertically and may be associated with vertically extensible parts of the leg for bracing the piece of furniture against toppling, where, for example, the piece of furniture may be a drafting table that in some adjustable position of the drafting board may be relatively high with respect to the area of its base, such brace being readily connected in operative position with the vertically extensible leg part.

These and other objects and advantages will be apparent from the following description, taken together with the accompanying drawing, showing an illustrative embodiment of the invention, and in which drawing—

Figure 1 is an elevational view of an extension leg embodying the present invention associated with an article of furniture shown fragmentarily and showing in dotted lines a further vertically extended adjustment;

Figure 2 is an enlarged axial section of the extension leg of Fig. 1;

Figure 3 is another elevational view showing the brace member associated with the leg;

Figure 4 is a plan section on the line 4—4 of Fig. 3;

Figure 5 shows a modification; and

Figure 6 shows a detail of one form of connection between the leg and brace member, being a fragmentary axial section of the leg.

Referring in detail to the illustrative construction shown in the drawing, the numeral **11** may indicate a fragment or lower corner of a desk or cabinet, generally of the class hereinbefore referred to and commonly including a recess **12** for a purpose presently explained and to which the extension leg of the present invention is attached as next described.

In accordance with the present invention, the extension leg includes a hollow pedestal **13** that is here shown

comprising an outer metal tube **14** depending from a mounting plate **15** as by being secured to a centering disc **16** that is welded as at **17** to the mounting plate **15**. Both the mounting plate and the centering disc are perforated as at **18** and **19** respectively to pass therethrough the stem **20** of a hollow internally threaded socket or T-nut **21** that has a depending flange **22** that is welded as at **23** to the centering plate **16**.

For cooperation with the hollow pedestal **13**, the invention contemplates a cylindrical plug **24** that is here shown comprising an inner tube **25** that snugly but slidably fits within the outer tube **14**. At its lower end, the tube **25** carries a radially enlarged foot **26** that is centrally perforated to pass therethrough a headed bolt **28**, the head **29** of which is received in a central counterbore **30** in the lower face of the plug foot **26**.

At its upper end, the tube **25** carries a closure or cap **31** that is perforated centrally as at **32** to pass therethrough the shank of the bolt **28** which at its upper end is screw-threaded as at **33** to be threadedly received in the socket **21** carried by the pedestal **13**. The bolt **28** is desirably threaded from adjacent the plug cap **31** to its upper end and has screwed thereon the nut **34** which is clampingly locked against the cap **31** to prevent rotation of the bolt **28** with respect to the plug **24**. The recess **12** in the furniture **11** receives the tubular socket **21** as well as the upper end of the bolt **28** so as to prevent interference with the operation of the latter, into and out of the socket **21**.

It will be manifest that rotation of the plug **24** with respect to the pedestal **13** will move the plug in or out, as the case may be, of the pedestal and will shorten or extend the overall length of the leg comprising the pedestal and plug jointly. For example, the plug may be moved from the position shown in full lines in Fig. 1 to that shown in broken lines indicating an extension of the leg for elevating the height of the table of which the fragment **11** is a part. The foot **26** not only serves as a closure for the lower end of the plug and as a centering member for the bolt **28** but also limits inward movement of the plug with respect to the pedestal to a position in which the foot **26** is in abutment with the lower end of the pedestal, such being the maximum contracted condition of the leg. The maximum extended position of the leg would be one in which the bolt **28** is partially withdrawn from the threaded socket **21** but leaving sufficient interengagement of the bolt with the socket to prevent the plug from dropping out of the pedestal.

Further in accordance with the present invention, there is here shown associated with the extensible leg, thus far described, the brace member **35** which comprises a lower bracket element **36** and an upper bracket element **37**. The lower bracket element **36** has a ring end or circular opening **38** therein that may snugly receive the tube part **25** of the plug **24** so that the lower bracket element **36** may be in abutment with the foot **26** of the plug. In this form the foot **26** prevents the bracket element **36** of the brace **35** from falling off the plug.

The upper bracket element **37** carries a crotch portion **37***a* at its inner, upper end that has an arcuate notch **39** therein that snugly but partially receives the tube **14** of the pedestal **13** in sliding engagement. Between the brace lower element **36** and upper element **37** the latter has a pair of tapered side walls **40** that act as strut elements between elements **36** and **37** and that lap the upturned edges **41** of the lower element **36** and are spot welded thereto as at **42**. The upper element **37** slopes downwardly from its inner end to meet the lower also tapered element **36** as at **43**. At their outer ends, where the elements **36** and **37** converge they may be secured

together as by welding, and a pad **44** is secured on the lower face of the element **36** by a rivet **45** that passes through both elements, the pad thus resting on the floor. As seen by Figs. 3 and 4 the brace **35** is tapered in both the horizontal and vertical planes thereof.

As the plug **24** is screwed in or out of the pedestal **13** the brace member **35** moves with the plug and moves relatively to pedestal **13**, the latter sliding in the arcuate notch **39** of the brace. Thus the brace is always at the lower end of the leg regardless of the extent to which the plug is withdrawn from or invaginated with the pedestal.

In one form just described, where the ring **38** slips onto the tube **25**, the brace **35** is free to rotate on a horizontal plane with the leg as a pivot thus adapting itself to any lateral direction in which it is desired to place the brace, independently of extension or contraction of the leg, for the purpose of assisting and preventing any toppling action of the furniture piece **11**.

In the construction shown in Fig. 5, which may be the preferred form, the ring **38***a* is shown having an internal diameter to fit onto the reduced shank **26***a* of the foot **26** to which it is clamped by lower end of tube **25***a* so that the tube **25***a*, foot **26** and brace **35** turn together as a unit, the brace moving in a spiral path about the axis of the leg. Thus for a given radial location of the brace member, the least vertical adjustment of the leg would be the equivalent of one turn of the adjusting screw, or desirably not more than one-eighteenth inch, which is commercially acceptable.

In the modification of Fig. 6, the mounting plate **15** is replaced by the mounting **100** that integrally incorporates a centering member **101** in place of the disc **16**, and an integral socket element **102** that takes the place of the T-nut **21** and is internally threaded as at **103** to have the bolt **28** screwed thereinto, thus simplifying the construction.

Bolt head **29** may have kerf **29***a* for convenience of manipulation.

Arc weld **14***a* is shown securing tube **14** to the mounting plate.

It may not be essential that all features of the invention be used conjointly and such changes or adaptations may be made as fall within the scope of the appended claims without departing from the spirit thereof.

What is here claimed is:

1. In anti-toppling furniture extension leg arrangement for use with rotatably and vertically relatively movable cylindrical leg members including a lower member telescoped within the upper member and an internal screw threaded connection therebetween, the lower member having an enlarged foot below the upper member, the combination therewith of a laterally extending brace device comprising a pair of upper and lower bracket elements and a vertical strut element, said device being triangular in a vertical plane with its larger vertical dimension adjacent its inner end, said inner end being spaced from said leg elements to provide play therebetween, said upper bracket element sloping upwardly from the device outer end to its inner end, a circular ring-like extension on said lower bracket element encircling said lower leg member and resting on said foot and a parti-circular crotch-like extension on said upper bracket element partially encircling the said upper leg part, said extensions being vertically held apart by said strut element, said crotch-like extension having sliding vertical and rotative engagement with the upper leg member in movements of the lower leg member inwardly and outwardly of the upper leg member.

2. The structure of claim 1 wherein the brace is rigidly connected to the said lower leg member to rotate therewith.

3. The structure of claim 1 wherein the brace is relatively rotatable on the lower leg member.

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