

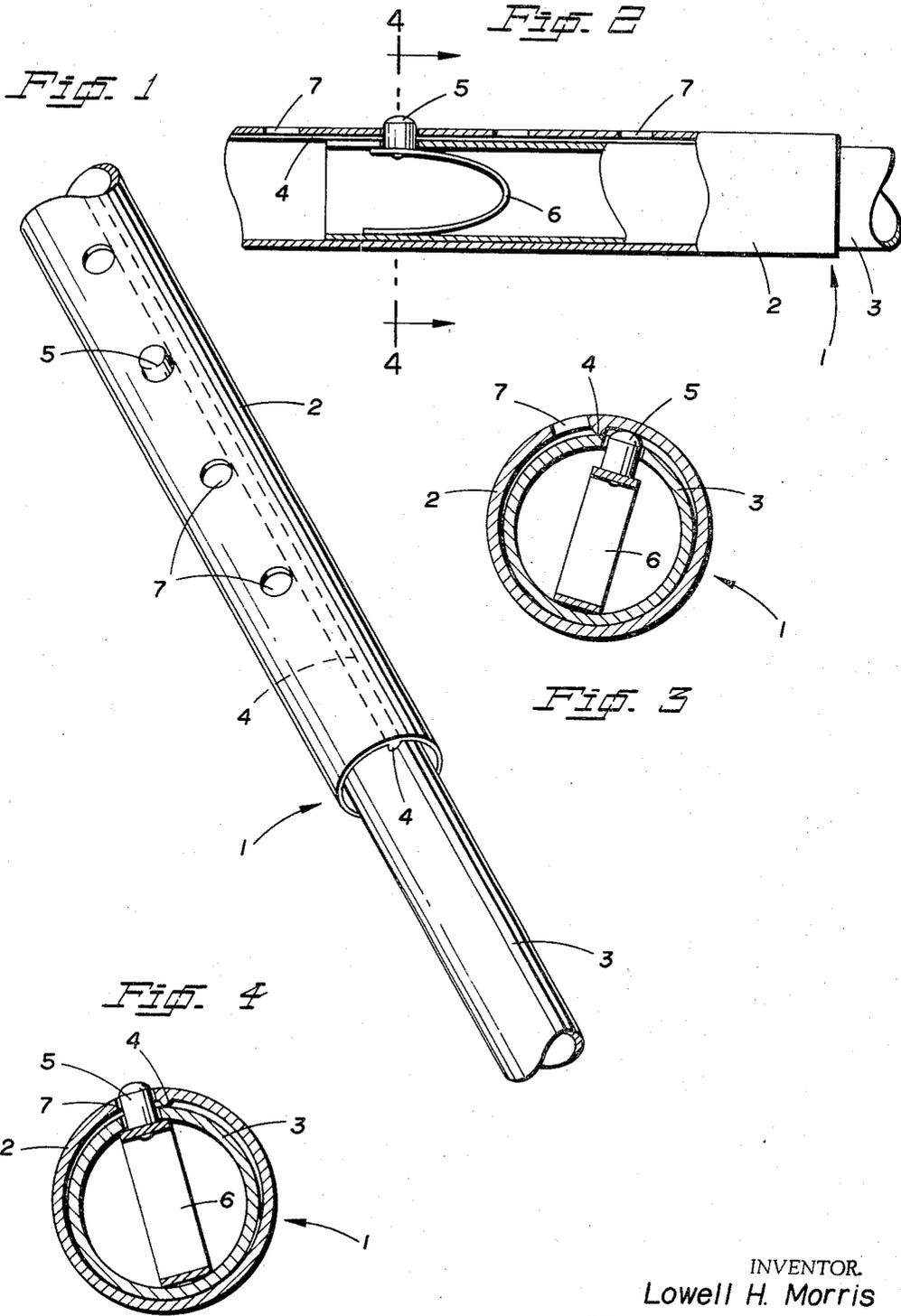
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DETENT GUIDE FOR TELESCOPIC TUBE UNITS

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DETENT GUIDE FOR TELESCOPIC TUBE UNITS
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ABSTRACT OF THE DISCLOSURE

A telescopic tube unit, to provide an adjustable leg for tents or the like, which includes a pair of tubular members turnably and slidably associated with each other, the outer member having a longitudinal row of holes and the inner member having a spring-biased detent to selectively engage in the holes; the unit being provided with a guide for locating the detent for travel clear of the row of holes whereby to then permit of free relative longitudinal sliding movement of the members.

Heretofore in such a unit, the telescopic sections (which are cylindrical inner and outer metal tubes) have been arranged to slidably and turnably fit one within the other without any guide with respect to their relative rotative positions. Since the inner tube is provided with a radially spring-advanced detent, while the outer tube is provided with a row of holes extending lengthwise of the tube for selective engagement by the detent, such lack of a guide makes it difficult to locate the detent relative to the row of holes and to then engage the detent in one such hole.

It is, therefore, the major object of this invention to remedy such difficulty by constructing the outer tube in such a manner that (while maintaining the desired cylindrical form of the tubes) a guide for the detent relative to the row of holes is provided whereby when the inner tube is inserted in the outer tube, the detent can be positioned to travel in a path parallel with and close to the row of holes. By reason of this feature, the detent—once the tubes are in substantially the desired longitudinally adjusted position—can be readily engaged in a then adjacent one of the holes by merely a slight relative rotative movement of the tubes, accompanied by a slight relative longitudinal movement of said tubes if necessary.

A further object of the invention is to provide a detent guide for telescopic tube units which is designed for ease and economy of manufacture, and convenience of use.

A still further object of the invention is to provide a practical, reliable, and durable detent guide for telescopic tube units and one which is exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

FIG. 1 is a fragmentary perspective view of the telescopic tube unit, showing the detent in an engaged position.

FIG. 2 is a fragmentary longitudinal elevation of the tube unit, mainly in section, and showing the detent in an engaged position.

FIG. 3 is an enlarged cross section of the tube unit, showing the detent as disengaged and positioned for guiding in the outer tube.

FIG. 4 is a similar view, but taken on line 4—4 of FIG. 2 to show the detent engaged.

Referring now more particularly to the drawings and to the characters of reference marked thereon, the improved telescopic tube unit, indicated generally at 1, comprises an outer tube 2, and an inner tube 3 slidably therein.

Formed inside the outer tube 2 is a shallow longitudinally extending bead or rib 4; the outside diameter of the inner tube 3 being slightly less than the diametral distance

between the inner edge of the bead 4 and the opposite inner face of the tube 2 so that said inner tube 3 may freely slide in the outer tube 2.

Projecting from the inner tube 3 (through a side opening near the end which projects into the outer tube 2) is a preferably cylindrical radially slidable detent 5; the outer end of the detent being of rounded form. The detent is mounted at its inner end and within tube 3 on one end of a folded leaf spring 6 disposed within said tube 3; such spring acting to yieldably urge the detent radially outward.

The outer tube 2 is provided with a longitudinally extending row of evenly spaced detent-receiving holes 7 which are disposed closely adjacent but to one side of the bead 4; said row of holes being parallel to such bead.

When it is desired to set the two tubes of the unit in a given position of longitudinal adjustment, the inner tube 3 is initially inserted into the outer tube 2 with the normally radially projecting detent 5 depressed and engaged in tube 2 against the side of the bead 4 opposite the row of holes 7. The inner tube 3 is then further advanced into the outer tube 2 until the proper position of longitudinal adjustment is reached; the detent riding bead 4 as a guide and then being in the zone of the row of holes 7.

Nextly, relative rotative pressure is applied to the tubes in a direction to cause the detent 5 to snap across the bead 4 to the other side thereof and into the plane of said row of holes. If the detent is not then alined with one of said holes 7 so as to drop into the same, a slight relative longitudinal movement of the tubes in one direction or the other (while keeping the detent 5 engaged with the side of the bead 4) will aline the detent with said hole and allow said detent to engage therein.

If, when assembling the tubes, it is desired that the detent shall initially seat in the first hole 7 in the row, the inner tube 3 is inserted into the tube 2 with the detent 5 engaged with and guided by the side of the bead 4 nearest the row of holes. By so doing, the detent remains in longitudinal alinement with said nearest hole 7 and will engage in the same upon the necessary relative longitudinal movement of the tube 3 being effected.

In either case, and to subsequently shift the detent from one hole to another, it is only necessary to depress and free the detent from said one hole and to then keep the detent abutted against the bead 4 while the tubes are relatively longitudinally slidably adjusted to the position in which the detent engages in said other hole.

It will be noted that since the inner tube 3 engages the inner edge of the bead 4 and at the same time bears against the opposed inner surface of the outer tube 2, said inner tube is obviously eccentric to the outer tube, as clearly shown in FIGS. 3 and 4. This, of course, leaves a space on either side of the bead 4, and so that the radially exposed or projecting portion of the detent can engage said bead (from one side or the other) in guided relation.

With a telescopic tube unit constructed as described and including the novel arrangement of the guide bead 4 and spring-pressed detent 5, such tube unit can be readily and easily manually set in an adjusted position wholly by the "feel" of the position of the parts and without need of any visual assistance. This is of great value—for example—in setting-up and adjusting the telescopic legs of a tent frame embodying the instant invention.

From the foregoing description, it will be readily seen that there has been produced such a detent guide for telescopic tube units as substantially fulfills the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the detent guide for telescopic tube units, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful and upon which Letters Patent is desired:

1. In a telescopic tube unit which comprises an outer cylindrical tube and an inner cylindrical tube slidable and turnable in the outer tube, a longitudinally extending bead projecting radially into the interior of the outer tube and rigid therewith said bead being narrow in circumferential cross section so as to allow relative rotation of said tubes, the outer tube having a row of detent-receiving holes parallel to and immediately adjacent the bead, said bead being of continuous extent throughout the longitudinal extent of the row of said holes, the diameter of the inner tube being such as to have a sliding fit between the radially inner edge of the bead and the opposed surface of said outer tube, and a radially outwardly spring biased detent means mounted in the inner tube and projecting through an aperture therein for radially inward yielding movement from a fully advanced hole-engaging position; the detent, when free of any said hole, being engaged at its outer end with the inner surface of the outer tube and engageable at a side with either side of the bead as a guide.

2. In a telescopic tube unit which comprises an outer cylindrical tube and an inner cylindrical tube slidable and turnable in the outer tube, the outer tube having a longitudinal row of holes therein and the inner tube having a radially outwardly projecting detent mounted for radially inward yielding movement, resilient means constantly urging said detent radially outwardly so that said detent will

project into one of said holes when alined therewith, a longitudinal bead in the outer tube projecting radially inward parallel to and immediately adjacent the row of holes so as to be engaged on one side with the detent when the latter is alined with the row of holes and on the opposite side with said detent when the latter has been relatively circumferentially shifted to be on said opposite side of the bead; said bead being continuous throughout the longitudinal extent of the row of said holes, the diameter of the inner tube being such as to have a sliding fit between the radially inner edge of the bead and the diametrically opposed surface of the outer tube.

3. A unit, as in claim 2, in which the bead is of relatively small size and of substantially semicircular form in cross section.

References Cited

UNITED STATES PATENTS

747,379	12/1903	Connelly et al.	285—303
3,162,469	12/1964	Shohan	285—5

FOREIGN PATENTS

206,600	12/1959	Germany.
642,417	9/1950	Great Britain.

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