Dec. 8, 1953 W. E. FOWLER ET AL 2,661,850

CURTAIN ROD

Filed Feb. 23, 1950

Fig. 1.

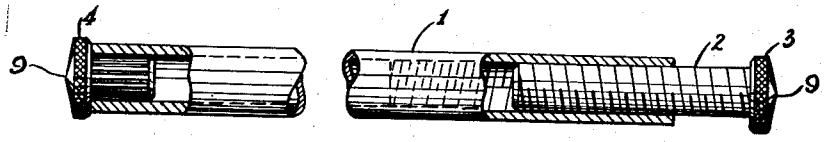


Fig. 2.

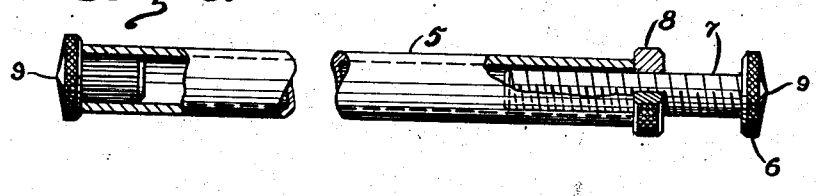


Fig. 3.

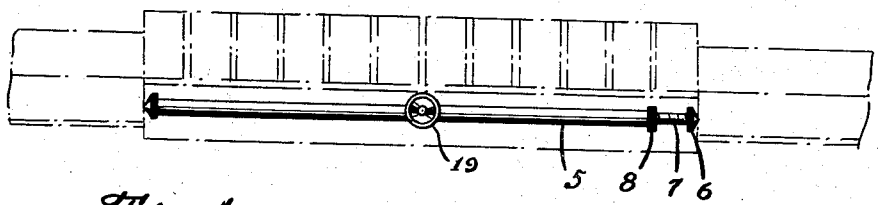


Fig. 4.

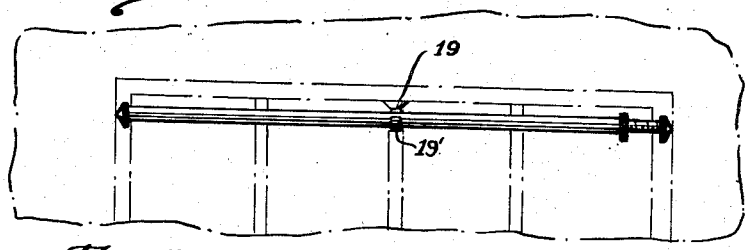


Fig. 5

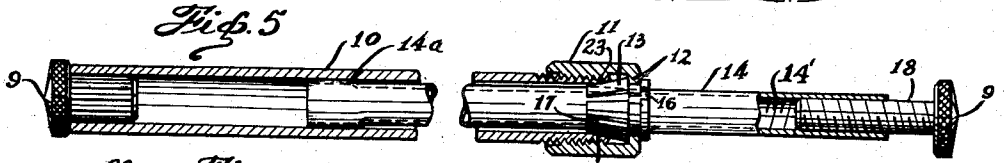


Fig. 6.

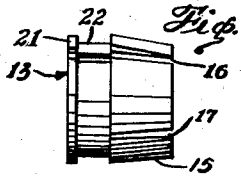
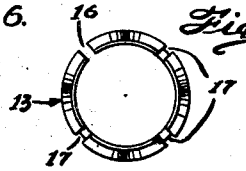


Fig. 7



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CURTAIN ROD

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4 Claims. (Cl. 211—105.4)

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This invention relates to curtain rods, and more particularly, to an adjustable curtain rod of such construction that it may be quickly and easily mounted in place in a window frame or the like without the necessity of tools or supporting brackets. While the rod is designed primarily for hanging curtains and drapes on window openings, for example in the space between a Venetian shade and the window pane to provide privacy, it is likewise suitable for use in supporting shower curtains, or in closets for supporting clothes hangers or, in fact, for a wide variety of uses wherein a supporting rod is to be mounted in place between opposing and confronting wall surfaces by frictional engagement of the ends of the rod with such surfaces.

It is known in the art to provide curtain rods having a tubular portion and a screw threaded portion threadedly connected thereto whereby the parts may be adjustably extended to the desired distance between stiles or opposing vertical walls of a window frame. These rods have end surfaces which are generally made large so as to provide greater frictional contact area with the opposing wall surfaces as the rod portion is unscrewed from the internally threaded tubular portion. An outstanding disadvantage of this type of construction is that despite the enlargement of the area of the end surfaces, the curtain rod has a great tendency to creep, either while it is being mounted in place, or as the result of the hanging of heavy drapes or the like thereon, therefore will not remain in a given position. A common type of adjustable rod is one employing a compression spring therein and adapted to be frictionally held between the opposing wall surfaces of a window frame by the pressure of the ends of the rod against such surfaces. A disadvantage of this type of rod is that the compression of the spring is generally insufficient for creating the necessary force for securely supporting the rod on the opposing surfaces, particularly when heavy loads are suspended by the rod—furthermore, the compression of the spring will vary from time to time and cannot be relied upon to maintain the rod in a fixed supporting position at all times.

A still further disadvantage of common types of quickly mountable or dismountable curtain rods is that while they are adjustable in length, the degree of adjustment thereof is relatively small, therefore limiting the rod to use in a small range of widths of a window framing, etc., thus requiring different sized rods for different purposes.

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An object of the present invention is to provide an adjustable curtain rod which is devoid of the above-named disadvantages of conventional types of rods.

A still further object of the present invention is to provide an adjustable curtain rod which is relatively simple in construction, inexpensive to manufacture, aand which may be quickly mounted in place or removed by hand without the necessity of any tools or supporting means whatsoever, also which is quickly extensible in length, making it useful for a relatively wide range of widths of wall spacing, therefore making the rod adaptable for a variety of purposes, such as in door frames, window frames, closets, for supporting drapes, window curtains, shower curtains, and the like.

Other objects and advantages of the present invention will be apparent from a study of the following description taken with the accompanying drawings wherein:

Fig. 1 is a plan view of an adjustable curtain rod shown partly in longitudinal cross-section and embodying the principles of the present invention;

Fig. 2 is a view similar to Fig. 1 but showing a modification of the curtain rod;

Fig. 3 is a top view showing the curtain rod of Fig. 2 mounted within a window frame;

Fig. 4 is a plan view of the window framing shown in Fig. 3, showing the supported position of the curtain rod therein;

Fig. 5 is a longitudinal cross-sectional view of a still further modification of the curtain rod shown in Figs. 1 and 2;

Fig. 6 is an enlarged side view of the split ring shown in Fig. 5, and

Fig. 7 is an end view of the ring shown in Fig. 6.

Referring more particularly to Fig. 1, numeral 1 denotes an elongated hollow, cylindrical tube of anay suitable material, preferably of aluminum or other metal, and having an internally threaded portion at the right end portion thereof as viewed in the figure. A screw threaded rod 2 is in screw threaded engagement with said internally threaded portion and has integrally secured to the other end thereof a knurled head 3. At the opposite end of tube 1 there is slip fitted therein a short piece of tubing integrally secured to a knurled nut 4 to close this end of the tube. This short piece of tubing may be grooved on its outer surface to provide greater frictional engagement with the interior surface of tube 1. The end surfaces of the knurled heads 3 and 4 are pref-

erably conically shaped, tapering to points 9. The cone surfaces form a relatively small acute angle with a vertical plane, namely, an angle of about 10°, although it should be realized that this angle may be smaller or larger, such as within a range of about 3° to 25°.

It will be readily apparent that when it is desired to mount the curtain rod between opposing vertical walls of a window frame or the like, knurled head 3 is turned by hand so as to unscrew the threaded rod 2 to the desired curtain rod length. As the result of such unscrewing, the end surfaces of the knurled heads 3 and 4 come into tight frictional contact with the opposing wall surfaces of a window frame or the like, points 9 partially penetrating the surfaces and anchoring the curtain rod thereto so as to prevent the possibility of creeping. Such anchoring means is particularly suitable for either wood or metal frames or in openings having plaster returns.

Fig. 2 shows a modification of the curtain rod wherein an elongated cylindrical tube 5 has telescoped (but without threaded engagement) in one end portion thereof a threaded rod portion 7 on the end of which is integrally formed a knurled head 6. The threaded rod portion 7 is in screw threaded engagement with an internally threaded knurled nut 8 adapted to abut against the end of tube 5. Thus, as the knurled nut 8 is rotated by hand, it will cause increase or reduction in the length of the curtain rod, depending upon the direction of rotation thereof. Thus in mounting nut 8 acts as a tightener to force the pointed end surfaces of nuts 9 into the supporting wall surfaces.

As shown in Fig. 3, the curtain rod illustrated in Fig. 2 may be supported between the opposing vertical surfaces or stiles of a window framing, coextensive with the outside sill, all shown in dash-and-dot lines. There is additionally shown a suction cup 19 having integrally formed thereon a hook 19' encircling and supporting the central portion of the tube. Thus by providing a vacuum fit between the suction cup and the top wall surface of the window frame, the curtain rod may have additional support centrally, particularly in the case of a very long span or for a rod which is to support a heavy load. Of course, the suction cup and hook 19' may be omitted in cases where the additional central support is unnecessary.

Fig. 5 shows a still further modification of the curtain rod and illustrates a type wherein the rod is readily extensible and adjustable over a wide range of lengths. The curtain rod comprises an elongated hollow, cylindrical main tube 10 which is externally threaded at one end and has screw threaded onto such end a knurled sleeve 11, which sleeve has a radially inwardly extending flange portion 12. Fitted within the sleeve 11 is a split ring 13 of thin spring metal or other suitable material adapted to encircle and provide clamping engagement with an extension tube 14 telescopically fitted within the main tube 1. Split ring 13 has a slightly tapered surface 15 at one end and has a flange 21 and circular recess 22 at the other as shown more clearly in Fig. 6. A gap 16 separates the ends thereof to permit slight expansion or contraction of the ring as the tapered portion 15 is longitudinally moved and slid inside the correspondingly tapered portion 23 at the inside end portion of the main tube 10. A plurality of longitudinally extending slots 17 are also provided to form arcuate spring fingers

in the split ring. The extreme end of extension tube 14 is internally threaded at 14' and is screw threaded to the rod 18 which has integrally formed at the end thereof a knurled nut. The other end 14a is expanded by swedging to provide a closer bearing fit and avoid rattling and the necessity of close tolerances or fit of tube 14 in tube 10. The knurled nuts at the ends of the curtain rod are preferably conical as described hereinabove to prevent creeping, although in some cases flat surfaces would suffice.

In operation, sleeve 11 is first unscrewed sufficiently to allow split ring 13 to expand and disengage the extension tube 14, thereby permitting tube 14 to be freely pulled out of the telescopically fitting main tube 10 to adjust the curtain rod to any desired length, slightly short of the gap between the walls upon which the curtain rod is to be supported. After the curtain rod has been lengthened to the extent desired, knurled sleeve 11 is screwed onto the threaded portion of tube 10, thereby longitudinally moving split ring 13 therewith to the left as viewed in the figure so that its taper 15 will slide inside the correspondingly tapered end portion 23 of tube 10 and thus cause the split ring 13 to contract or decrease in internal diameter, thereby causing the gap 16 thereof to be reduced. As a result thereof, split ring 13 tightly encircles and grasps an outer surface portion of extension tube 14, thereby restraining extension tube 14 from longitudinal sliding or other movement with respect to tube 10. Then finally, in order to provide a vernier adjustment and to tightly clamp the curtain rod to opposing wall surfaces of a window frame or the like, rod 18 is unscrewed by its knurled nut until the pointed knurled nuts at the ends of the curtain rod engage the supporting wall surfaces. Of course, when it is desired to remove the curtain rod, the knurled nut at the right end is screwed inwardly of extension tube 14 and knurled sleeve 11 is unscrewed so as to release the clamping engagement of split ring 13 with the extension tube 14 and thereby permit telescopic sliding of sleeve 14 into tube 10.

Thus it will be seen that we have provided a highly efficient adjustable curtain rod which is relatively simple in construction, inexpensive to manufacture, and which is easily and quickly adjustable to any length desired, also which may be positively held into tight frictional engagement with opposing wall surfaces of a window frame or door frame or the like without the possibility of creeping, and which has a wide variety of useful purposes, such as for hanging curtains or drapes, shower curtains, coat hangers, etc.—or adjustable crutches, tubular antennas or other uses wherein an extensible tubular member is required. Although the adjustable tubular rod is described as being of metal, it may be of plastic or other suitable material instead.

While we have illustrated and described certain specific embodiments of our invention, it will be understood that these are by way of illustration only, and that various changes and modifications may be made within the contemplation of our invention and within the scope of the following claims.

We claim:

1. A curtain rod of widely adjustable length comprising a main tube and an extension tube telescopically fitted within said main tube, a knurled nut and integral tubular portion slip fitted to one end of said main tube, the other end of said main tube being externally threaded, a

knurled sleeve screw threaded to said externally threaded end, a split ring enclosed within said knurled sleeve and having a tapered portion extending longitudinally and into engagement with a correspondingly tapered portion on the inner peripheral end portion of said main tube, said split ring having a plurality of longitudinally extending slots to provide a plurality of spring fingers and having a flanged end portion, said knurled sleeve having a radially inwardly extending end flange portion adapted to engage a recessed portion of said split ring, whereby rotation of said threaded sleeve in one direction will clamp said main and extension tubes together through said split ring, and rotation in an opposite direction will unclamp said main and extension tubes, the extremity of said extension tube being internally threaded, and a threaded rod screw threaded to said extension tube extremity and having an integral knurled nut at the end thereof for providing vernier adjustment in the length of the curtain rod.

2. A curtain rod as recited in claim 1 wherein said knurled nuts have conical end surfaces engageable with opposing wall surfaces between which the curtain rod is to be suspended, the angle of said conical surfaces being a relatively small acuate angle with respect to the opposing wall surfaces of the order of 3° to 25°.

3. A tubular rod of widely adjustable length for suspending curtains or other articles comprising a main tube and an extension tube telescopically fitted within said main tube, said main tube having a threaded end portion at its telescoping end, an interiorally threaded sleeve screw threaded to said end portion, said sleeve having an integral radially inwardly extending flange, a split ring enclosed within said sleeve and having an inwardly recessed peripheral depression into which is fitted said radially inwardly extending flange and having an outer peripherally disposed flange portion adapted to abut against the outer end surface of said sleeve, said split ring having a tapered portion extending longitudinally and into engagement with a correspondingly tapered portion on the inner peripheral end portion of said main tube, said split ring having a plurality of longitudinally extending slots to provide a plurality of spring fingers adapted to grip the outer surface of said extension tube, whereby rotation of said sleeve will longitudinally move said split ring and whereby rotation of said sleeve in one direction will cause a clamping action of said split ring to lock said main and extension tubes together, and rotation in an opposite direction will unclamp said split ring from said extension tube and allow free longitudinal sliding movement between said tubes, together with a threaded rod screw threaded to the outer extremity of said extension tube and having an integral knurled nut at one end thereof with a slight projection centrally of its end surface, a second knurled nut closing the outer extremity of said main tube and including a slight projection centrally of its end surface, the inner telescoping end of said extension tube being radially expanded slightly to provide a closer fit inside said main tube.

4. A tubular rod of widely adjustable length for suspending curtains or other articles comprising a main tube and an extension tube telescopically fitted within said main tube, said main tube having a threaded end portion at its telescoping end, an interiorally threaded sleeve screw threaded to said end portion, said sleeve having an integral radially inwardly extending flange, a split ring enclosed within said sleeve and having an inwardly recessed peripheral depression into which is fitted said radially inwardly extending flange and having an outer peripherally disposed flange portion adapted to abut against the outer end surface of said sleeve, said split ring having a tapered portion extending longitudinally and into engagement with a correspondingly tapered portion on the inner peripheral end portion of said main tube, said split ring having a plurality of longitudinally extending slots to provide a plurality of spring fingers adapted to grip the outer surface of said extension tube, whereby rotation of said sleeve will longitudinally move said split ring and whereby rotation of said sleeve in one direction will cause a clamping action of said split ring to lock said main and extension tubes together, and rotation in an opposite direction will unclamp said split ring from said extension tube and allow free longitudinal sliding movement between said tubes, together with a threaded rod screw threaded to the outer extremity of said extension tube and having an integral knurled nut at one end thereof with a slight projection centrally of its end surface, a second knurled nut closing the outer extremity of said main tube and including a slight projection centrally of its end surface, the inner telescoping end of said extension tube being radially expanded slightly to provide a closer fit inside said main tube, said knurled nuts having conical end surfaces engageable with opposing wall surfaces between which the curtain rod is to be suspended, the angle of said conical surfaces being a relatively small acute angle with respect to the opposing wall surfaces of the order of 3° to 25°.

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