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TELESCOPING EXTENSION

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Fig. 1

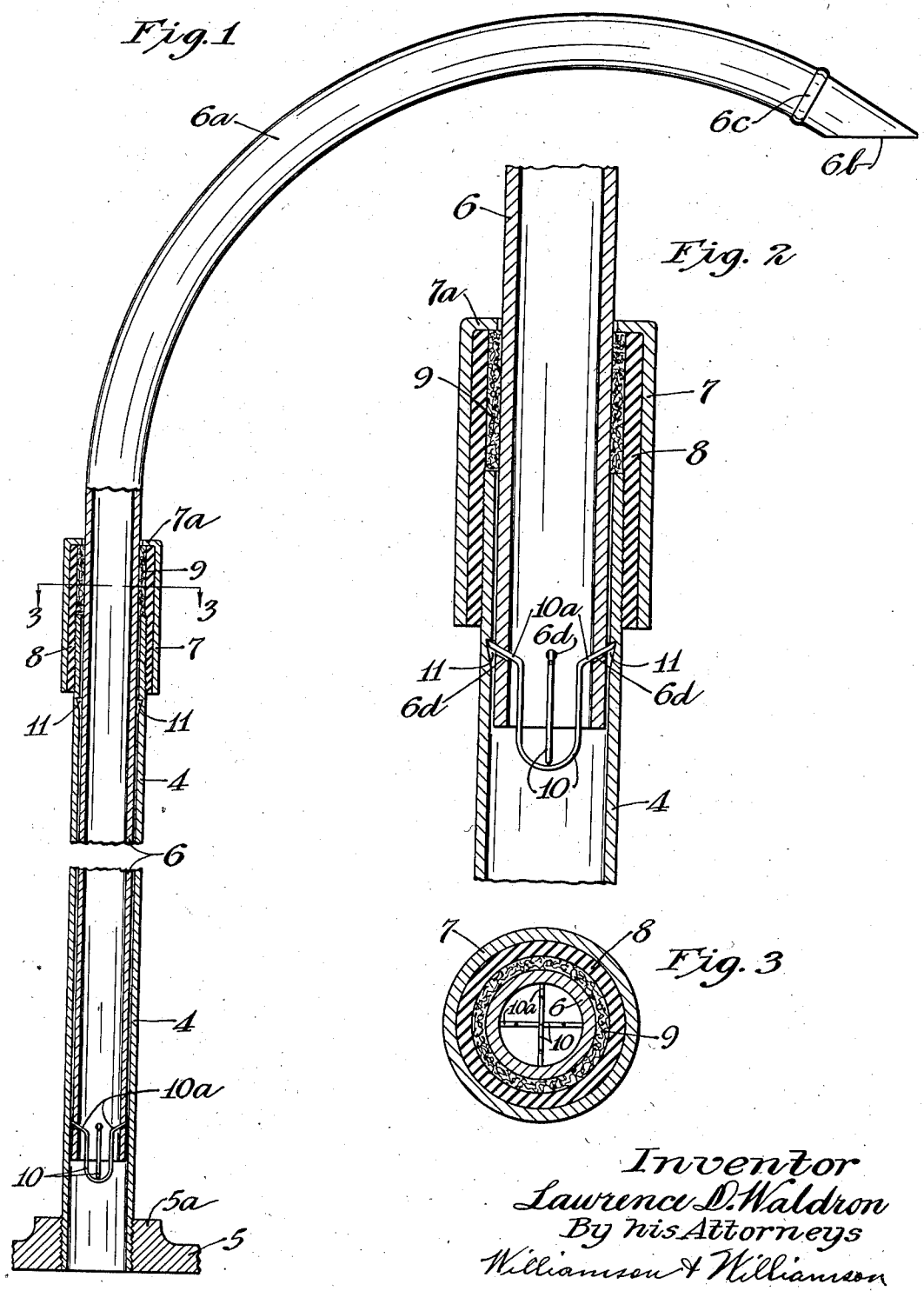


Fig. 2

Fig. 3

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TELESCOPING EXTENSION

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7 Claims. (Cl. 285—199)

My invention relates to extensible tubular standards and particularly to such standards arranged for conduction of fluids therethrough.

An object of my invention is to provide an adjustably extensible telescopic standard for conducting fluid to and supporting a shower bath spray head or the like and including novel and efficient means for sealing the movable part of the standard to the stationary part and holding the movable part of the standard in any desired adjusted position.

Another object is to provide such a standard including extensibility limiting means of extremely simple and inexpensive construction.

These and other objects and advantages of the present invention will more fully appear from the following description, made in connection with the accompanying drawing, wherein like reference characters refer to the same or similar parts throughout the various views, and, in which,

Fig. 1 is a broken side view of my telescopic standard shown partially in vertical section;

Fig. 2 is a vertical sectional view at enlarged scale showing a portion of the standard when in fully extended position;

Fig. 3 is a cross-sectional view taken along the line 3—3 of Fig. 1, as indicated by the arrows.

Referring to the drawing, a vertically disposed tubular casing 4 is provided at its lower end with external screw-threads by means of which it is mounted in an apertured and internally screw-threaded bossed portion 5*a* of a base 5. The base 5, only a portion of which is shown, may be hollow so as to comprise a reservoir from which water or other fluid may be delivered to the interior of the tubular casing 4 under pressure.

A tubular member 6, which is straight throughout its medial and lower portions and is bent in its upper portion to form a curved neck, is provided for telescopic, longitudinally slidable connection with the casing 4. The straight portion of the tubular member 6 is disposed in the cylindrical interior space of the casing 4 and obviously will be projectable and retractible relative to the casing 4.

The free end 6*b* of the upper portion of the tubular member 6 is cut on a skew and may be used as an outlet nozzle. A short distance inwardly of the free end 6*b* thereof an annular collar or ring 6*c* is formed on or secured to the outer periphery of the tubular member 6, as shown, to facilitate retention on the member 6 of spray heads or the like mounted thereon by means of a rubber neck portion.

Means is provided sealing the upper end of the casing 4 to the tubular member 6 and yet permitting adjustive longitudinal movement of the tubular member 6 relative to the casing 4. A cap 7 is open at its lower end and is provided at its upper end with a closure 7*a* centrally apertured to permit extension of the tubular member 6 therethrough. A bushing or sleeve 8, formed of compressible elastic material such as rubber, is disposed immediately adjacent the interior periphery of the cap 7 and is cemented or otherwise secured thereto. The lower portion of the sleeve 8 is mounted upon the upper end of the casing 4, as shown, to tightly grip the same and the portion of the casing 4 gripped by the sleeve 8 may be roughened to prevent slippage of the sleeve 4 relative thereto. The annular space defined by the upper closure 7*a* of the cap 7, the internal periphery of the sleeve 8, the upper end of the casing 4 and the external periphery of the tubular member 6 is filled with compressible packing material 9 such as oil-impregnated felt or the like. The dimensions of the packing 9 and the sleeve 8 are such that both of them are held between the cap 7 and the tubular member 6 in highly compressed condition so that the compressible elastic sleeve 8 will constantly exert radially inwardly directed pressure upon the packing 9. Due to this pressure the annular packing 9 will grip the tubular member 6 with considerable force to effect an efficient seal between the casing 4 and the tubular member 6 and to afford frictional restraining means permissive of adjustment of the position of the tubular member 6 relative to the casing 4 but capable of firmly holding the member 6 in any adjusted position thereof.

In assembling the cap 7, bushing 8 and packing 9 with the casing 4 and tubular member 6, the tubular member 6 is placed in telescoped relation with the casing 4. Then the packing 9 and the bushing 8 are placed in position on the casing 4 and tubular member 6. The outer periphery of the bushing 8 and/or the inner periphery of the cap 7 is then coated with a suitable cementing liquid which has the characteristics of a lubricant while in liquid form. Liquid shellac has been found suitable for this use. The cap 7 is then slidingly forced downwardly over the bushing 8 after which the cementing liquid is allowed to set so as to cement the bushing 8 to the cap 7.

Means is provided to limit the extensibility of the standard and to assist in holding the tubular member 6 in an adjusted position relative to casing 4. A pair of resilient members 10 are

formed of spring wire or other suitable resilient material bent into a U-shape and further bent to form short elements 10*a* projecting upwardly and outwardly from the respective free ends of the U. Adjacent the lower end of the tubular members 6 a pair of diametrically located upwardly and outwardly sloping apertures 6*d* are formed in the wall of the member 6 to receive the elements 10*a* of the resilient members 10. The elements 10*a* project upwardly and outwardly through the apertures 6*d* to normally engage the internal periphery of the casing 4 as shown in Fig. 1. The resilient springs 10 are tensioned to maintain the outer ends of the elements 10*a* thereof in firm engagement with the casing 4. A second pair of apertures 6*d* may be formed in the tubular member 6, as shown, with a second spring member 10 associated therewith in the manner described above. The frictional engagement of the elements 10*a*, carried by the tubular member 6, with the casing 4 functions to assist in holding the tubular member 6 in any desired adjusted position relative to the casing 4 but the friction thus applied is readily overcome when force is applied to readjust the position of the tubular member 6.

To provide for limiting the projection or upward extension of the tubular member 6 relative to the casing 4 so that the tubular member 6 cannot be inadvertently pulled out of the casing 4, the upper end of the casing 4 is internally rabbeted to form an annular recess or groove 11 in its internal peripheral surface. The groove 11 is so shaped that the surface defining its upper side slopes radially outwardly and slightly upwardly and the surface defining its lower side slopes downwardly and slightly inwardly from the deepest portion of the groove 11 to the inner periphery of the casing 4.

As the tubular member is moved upwardly relative to the casing 4 the outwardly urged elemeants 10*a* of the springs 10 will encounter and spread into the groove 11 as the highest desired position of the tubular member 6 is reached. The points or ends of the elments 10*a* will abut the surface defining the upper side of the groove 11 and such abutment will prevent further upward movement of the tubular member 6. When downward force is applied to the tubular member 6 and the same starts to move downwardly in response to that force, the gently sloping surface defining the lower side of the groove 11 will cam the elements 10*a* inwardly and thus eliminate interference with such downward movement.

It is to be noted that the springs 10 and the projecting elements thereof function as frictional means bearing against the casing 4 to assist in holding the tubular member 6 in an adjusted position in addition to functioning as stop means cooperating with the surface defining the upper side of the groove 11 to limit upward movement of the tubular member 6. It is also to be noted that the construction of the stop means described above is such that the tubular member 6 may be rotated about its longitudinal axis relative to the casing A.

My device is readily adaptable for supporting various devices utilizing fluids delivered thereto but may also be used to support devices not using fluids or may be used where delivery of fluids to various levels and in various directions is desired.

It is apparent that I have invented a novel, simple, rugged, inexpensive and efficient form of extensible, telescopic, fluid-conducting standard.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of the present invention.

What is claimed is:—

1. In an extensible fluid conduit, an outer tube, an inner tube having a portion telescopically and slidably retained within said outer tube and means for sealing said inner tube to one end of said outer tube, said sealing means comprising a first annulus formed of packing material encircling the periphery of said inner tube, a second annulus formed of elastic compressible material encircling said first annulus and a third annulus formed of rigid material encircling said second annulus, said respective annuli being of such dimensions that said second annulus will be sufficiently compressed to exert a radially inwardly directed pressure upon said first annulus and one of said second and third annuli being connected to an end of said outer tube in sealed relation thereto.

2. In an extensible fluid conduit, an outer tube, an inner tube telescopically and slidably retained within said outer tube and means for sealing said inner tube to one end of said outer tube, said sealing means comprising an enclosure carried by said end of the outer tube in sealed relation thereto, said inner tube extending through the interior of said enclosure, the peripheral wall of said enclosure being radially spaced from said inner tube to provide an annular space therebetween, an annular packing member disposed in said space to partially fill the same and tightly encircle said inner tube and an annulus formed of elastic compressible material placed in compressed condition in the portion of said annular space lying between said enclosure and said packing member.

3. In an extensible fluid conduit, an outer tube, an inner tube having a portion telescopically and slidably retained within said outer tube and means for sealing said inner tube to one end of said outer tube, an annulus formed of packing material closely encircling said inner tube closely adjacent said end of the outer tube, a sleeve formed of elastic compressible material having one portion telescoped over said end of the outer tube and a second portion tightly encircling said annulus and a rigid tubular member telescoped over the external periphery of said sleeve, the diameter of said tubular member being sufficiently small to place said sleeve under compression.

4. The structure defined in claim 3, and said rigid tubular member having an annular flange at its outer end projecting radially inwardly to encircle the periphery of said inner tube with but slight clearance.

5. In an extensible fluid conduit, an outer tube, an inner tube having a portion thereof disposed telescopically within said outer tube for longitudinal movement with respect thereto, and means for sealing the periphery of said inner tube to an end of said outer tube, said sealing means comprising a cylindrical cap disposed at an end of said outer tube and having an aperture in the top thereof through which said inner tube extends, a sleeve formed of compressible relatively highly elastic material disposed within said cap immediately adjacent the inner periphery thereof, said cap and said sleeve being so placed on the end of said outer tube in snugly encircling relation thereto as to provide an annular space defined by the

top of said cap, the inner periphery of a portion of said sleeve, the end of said outer tube and the outer periphery of a portion of said inner tube, and an annulus of compressible, relatively inelastic packing material of relatively slight friction producing ability filling said space and being of such dimensions as to maintain the portion of said sleeve encircling said annulus in relatively highly compressed condition.

6. In an adjustable telescopic joint, a casing member having an elongated cylindrical passage therein, a tubular member having a portion located within said passage and longitudinally slidable with respect thereto, and resilient means mounted on one of said members and having a projecting portion normally engaging the other of said members, said other of the members having an annular groove therein positioned to receive said projecting portion of the resilient means when said tubular member is in a projected position relative to said casing member, and portions defining said groove being shaped to provide said groove with one steep side for engaging said projecting portion of the resilient member to limit projection of said tubular member and one sloping side to permit withdrawal of said projecting portion of the resilient member from said groove as said tubular member is retracted from its projected position.

7. In an adjustable telescopic joint, a tubular casing, a tubular member having a portion including one end thereof disposed within said casing for longitudinal sliding movement with respect thereto, said one end of the tubular member having a pair of diametrically oppositely located apertures in the wall thereof, and a generally U-shaped resilient member having outwardly projecting portions at the free ends of the U, said projecting portions extending through the respective ones of said apertures to normally engage the internal peripheral surface of said tubular casing, said tubular casing having an annular groove therein positioned to receive said projecting portions when said tubular member has been projected to a predetermined position relative to said casing.

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