

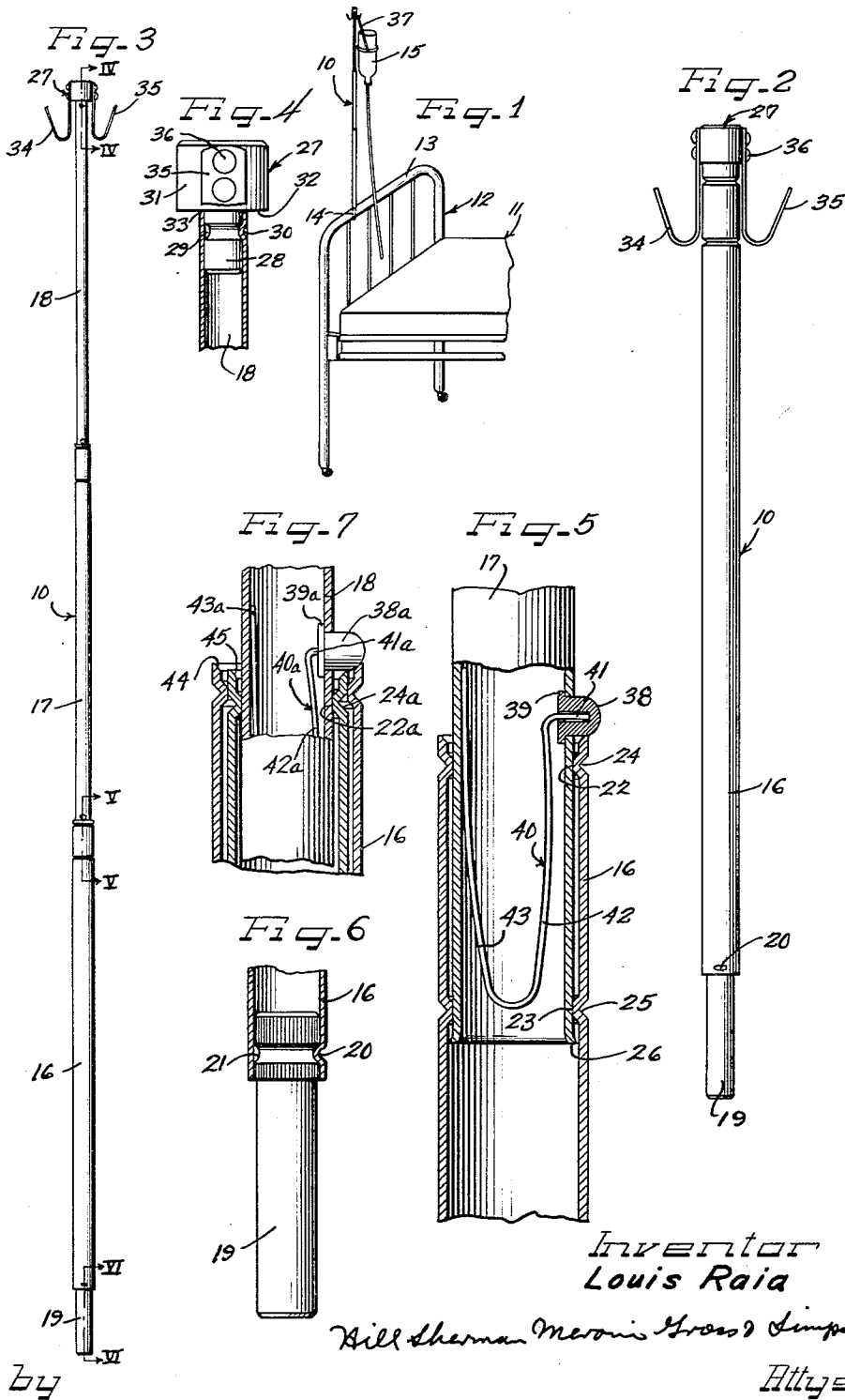
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TELESCOPIC STAND

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TELESCOPIC STAND

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1 Claim. (Cl. 5—317)

The present invention relates broadly to telescopic stand structures, and is more particularly concerned with a stand of the collapsible type particularly well adapted for use in hospitals and the like.

Stand constructions heretofore proposed for the elevated support of intravenous solution bottles are characterized by a number of objections and disadvantages. First, the floor or pedestal type is relatively weighty and cumbersome, and the movement thereof from one location to another by nurses presents fatigue problems. In addition, the floor supported stand utilizes much needed space in the hospital room, and constitutes an interference to the free movement of persons in the room. Storage problems also arise, and in the case of a known collapsible stand wherein adjustment of a solid rod within a tube is accomplished by a thumb screw, the mentioned disadvantages of substantial weight and difficulty of storage subsist.

It is therefore an important aim of the present invention to provide a telescopic stand construction particularly well adapted for medical use and which may readily be carried by a nurse on the medicine tray or stored in a bedside cabinet.

Another object of this invention is to provide a collapsible stand supportable by the bed end and formed of a plurality of tubular sections receivable one within the other upon depression of a single resiliently urged catch member.

Another object of the present invention lies in the provision of a telescoping stand constructed of low cost and light weight tubular sections formable at minimum cost upon automatic screw machines.

A further object of this invention is to provide a collapsible stand construction comprised of tubular sections wherein bearing contact during slidable movement of one section within another section is obtained without resort to a close diameter fit between the collapsible sections.

Other objects and advantages of the invention will become more apparent during the course of the following description, particularly when taken in connection with the accompanying drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the same:

Figure 1 is a view illustrating the stand of this invention typically mounted upon a bed end;

Figures 2 and 3 are side elevational views of the present stand in collapsed and extended positions, respectively;

Figures 4, 5 and 6 are vertical sectional views taken substantially along the lines IV—IV, V—V and VI—VI, respectively of Figure 3; and

Figure 7 is a detail sectional view of portions of the tubular sections during the collapse thereof.

Briefly stated, the novel stand of this invention comprises a plurality of tubular sections of different outer diameters cut into predetermined lengths from standard tubular stock. One end of the larger tubular section has a stud staked therein for location of the stand in an opening in a bed end or in a clamp attached to the bed

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end, while at one end of the smallest tubular section a head portion is provided mounting hooks or the like for receiving the bails of intravenous solution bottles or other medicaments. Each of the tubular sections receiving lesser diameter sections is provided at spaced locations along its length with bearing surfaces preferably formed by indenting the walls thereof providing beads along their inner diameters subsequently reamed to a flat configuration to provide the bearing surfaces. Spring pressed button means prevent inadvertent collapse of the tubular sections, and one end of each of the inner tubular sections is flared outwardly to engage the bearing surfaces to thereby limit the extension of the sections with respect to one another. Additional structural features of the stand of this invention will become more apparent during the course of the description now to follow.

Referring now to the drawings, a stand designated generally by the numeral 10 is shown in Figure 1 in an installed position of use upon a bed 11 of the type employed in hospitals and other institutions. The bed is provided with an end section 12 having a horizontal rail portion 13 provided with openings or holes 14 therein receiving the stand 10 and maintaining the same in an essentially vertical or upright position. Clamp devices of various types may also be used to mount a stand of this invention in a position to support at an elevated level an intravenous solution bottle 15 or such other containers as are customarily maintained upwardly of a patient's bed. While a particularly successful application of the teachings of this invention has been in the support of intravenous solution bottles, it will be appreciated that a stand 10 of the character herein disclosed is not limited to medical applications and various other uses exist therefor.

In the exemplary form shown, the stand 10 comprises three tubular sections 16, 17 and 18, although a lesser or greater number of such hollow sections may be employed to meet particular requirements. The sections are cut to the desired length from standard tubular stock, the material preferably being anodized aluminum. By provision of the bearing surfaces to be later described wide tolerances are permitted in the concentricity of the tubular sections and accordingly substantial economies characterize the manufacture of the stand of this invention.

The base or largest diameter section 16 carries at one end a stud 19 for supporting the stand 10 in a bed end opening 14 in the manner of Figure 1. The stud 19 is preferably of solid construction and is staked at 20 to the base section 16. For this purpose the stud 19 is provided with a generally conical groove 21 adjacent one end and said end may be knurled as at 22 in order to more firmly maintain the stud within the tubular section 16. An important advantage of the present invention is that substantially the entire stand 10 may be fabricated upon an automatic screw machine at substantial economies. It is for this reason that staking is the preferred method of anchoring the stud 19 within the tubular section 16; however, it will readily be apparent that screws or other means may be employed.

The opposite end of the tubular section 16 mounts the section 17 when the stand is in the extended position of Figure 3. Bearing contact between the intermediate section 17 and base section 16, both when the stand is in collapsed or extended form, is obtained by provision of axially spaced bearing surfaces 22 and 23 adjacent the end of the section 16 mounting the section 17. It is to be noted that the bearing surfaces 22 and 23 are essentially flat along the inner diameter of the tubular section 16, and said surfaces are formed by indenting the other diameter of the section 16 to form generally V-shaped grooves 24 and 25 providing initially a generally rounded bead at spaced locations along the inner diameter, which are subsequently flattened by a relatively simple reaming

operation. It is therefore now apparent that variations in the concentricity of the tubular sections can well be tolerated without interference to movement of the tubular sections and the outer diameters of said sections can also vary without loss of proper functioning of the stand 10.

One end of the intermediate tubular section 17 is flared outwardly as at 26 (Figure 5) and said flared end is in engagement with the bearing surface 23 when the tubular section 17 is extended with respect to the tubular section 16. The bearing surface 23 accordingly performs a dual function, being in contact with the outer diameter of the tubular section 17 during slidable movement and extension of the stand, as well as providing an abutting surface contacting the flared end 26 of the section 17.

The opposite end of the tubular section 17 mounts the smallest diameter or top tubular section 18, and the formation of bearing surfaces or ribs on the section 17 is substantially identical to that earlier described in connection with tubular section 16. The suffix "a" has accordingly been appended to the numerals 22-25 designating the bearing surfaces or ribs and grooves upon the tubular section 17.

Carried at the opposite end of the smallest diameter section 18 is a cap portion designated generally by the numeral 27. As appears in Figure 4, the cap portion comprises a stem 28 receivable within the tubular section 18 and provided with a generally conical groove 29 for staking the tubular section 18 to the cap portion 27 as at 30. The cap portion further includes a generally cylindrical head 31 of substantially greater diameter than the tube 18 and stem 28 of the cap portion 27, and against a face 32 of the head 31 the tubular section 18 abuts as at 33. At diametrically opposed locations upon the head 31 there is provided hooks 34 and 35 attached to the head 31 by rivets, screws or the like 36. The hooks 34 and 35 provide support for a bail or similar means 37 mounting the bottle 15 in the manner of Figure 1.

To prevent inadvertent telescoping or collapse of the stand 10 when in the extended position of Figures 1 and 3, there is provided the spring pressed means shown in Figures 5 and 7. Said means form a part of each of the sections 17 and 18, and like numerals have been employed to designate the parts thereof, the subscript "a" designating corresponding parts of the spring means on the tubular section 18. The spring pressed means comprise in a preferred form a generally dome-shaped button 38 having a radially outwardly extending flange 39 resiliently urged against the inner diameter of the section 17 by a hairpin spring 40. Said spring includes a transverse leg 41 receivable within the button 38 and generally axially extending connected legs 42 and 43, the latter being in springable contact with the inner diameter of either of the sections 17 or 18. Other spring constructions may, of course, be employed to fulfill a more specific need.

A feature of this invention lies in the ease with which the tubular sections 16, 17 and 18 may be collapsed to form the relatively small length structure of Figure 2. To collapse the sections, the button 38 on the tubular section 17 is pressed radially inwardly to permit the section 17 to slide axially within the section 16. The tubular section 18 is then also moved axially, and referring now particularly to Figure 7, it may be seen that the button 38a bears against a tapered end wall 44 on the base section 16 and thereupon against a tapered end wall 45 on the intermediate tubular section 17. Accordingly, the button 38a is automatically depressed or moved radially inwardly to permit slidable movement of the smallest diameter section 18 within the tubular section 17. Thus, to collapse the stand 10, only the button 38 on the intermediate section 17 need be depressed in order to entirely collapse the stand into the form of Figure 2.

It may be seen from the foregoing that applicant has

provided a new and improved collapsible stand construction featuring a minimum number of readily fabricated and assembled parts. Each of the tubular sections may be formed on an automatic screw machine at substantial economies, and by provision of the bearing surfaces disclosed, standard stock tube of varying outer diameters may be utilized at additional economies. The stand may be quickly collapsed, and it is now possible to transport a hospital-type stand upon the nurse's medicine tray and to store the same in a bedside cabinet.

It is to be understood that the form of the invention herein shown and described is to be taken as the preferred embodiment of the same, and that various changes in the size, shape and arrangement of parts may be effected without departing from the spirit of the invention or the scope of the subjoined claim.

I claim as my invention:

A telescopic intravenous solution bottle supporting stand adapted to be carried in collapsed condition on a nurse's tray and mounted for use on the top rail of a hospital bed end section in the conventional vertical hole in said rail which comprises a base tube having first and second ends, a stud secured to said base tube of smaller diameter than said base tube and projecting from said first end of the base tube, said stud being sized to fit in the vertical hole of the top rail of a hospital bed and being of sufficient length to hold the base tube in an upright position on said rail, said first end of the base tube being of larger diameter than said hole in the top rail of a hospital bed for resting on the rail, an intermediate tube of substantially smaller diameter than said base tube telescoped in the second end of the base tube, a tip end tube of substantially smaller diameter than said intermediate tube telescoped in the intermediate tube, said base tube and said intermediate tube having first inturned beads adjacent the second end of the base tube and the end of the intermediate tube receiving the tip end tube respectively, together with second inturned beads spaced from said ends, said beads slidably supporting the intermediate and tip tubes in non-tilting relation, abutment means on the ends of the intermediate and tip tubes for engaging the second beads to maintain an appreciable length of the intermediate and tip tubes in the base tube and intermediate tube respectively when the stand is in extended position, a cap secured to the free end of the tip tube, bottle supporting hooks depending from said cap to straddle opposite sides of the tip tube in sufficiently spaced relation therefrom for receiving the base tube therebetween when the stand is in collapsed position, spring pressed buttons carried by the intermediate and tip tubes and projecting therefrom to rest on the second end of the base tube and on the end of the intermediate tube receiving the tip tube respectively for holding the tubes in extended relation, said button on the intermediate tube adapted to be manually depressed into the base tube for accommodating collapsing of the intermediate tube into the base tube, and said second end of the base tube having a beveled mouth receiving the button on the tip tube to automatically depress the button and accommodate collapsing of the tip tube into the intermediate tube.

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