June 29, 1965 J. WIELAND 3,191,903

HOSPITAL INVERTED BOTTLE SUPPORT

Filed July 27, 1964

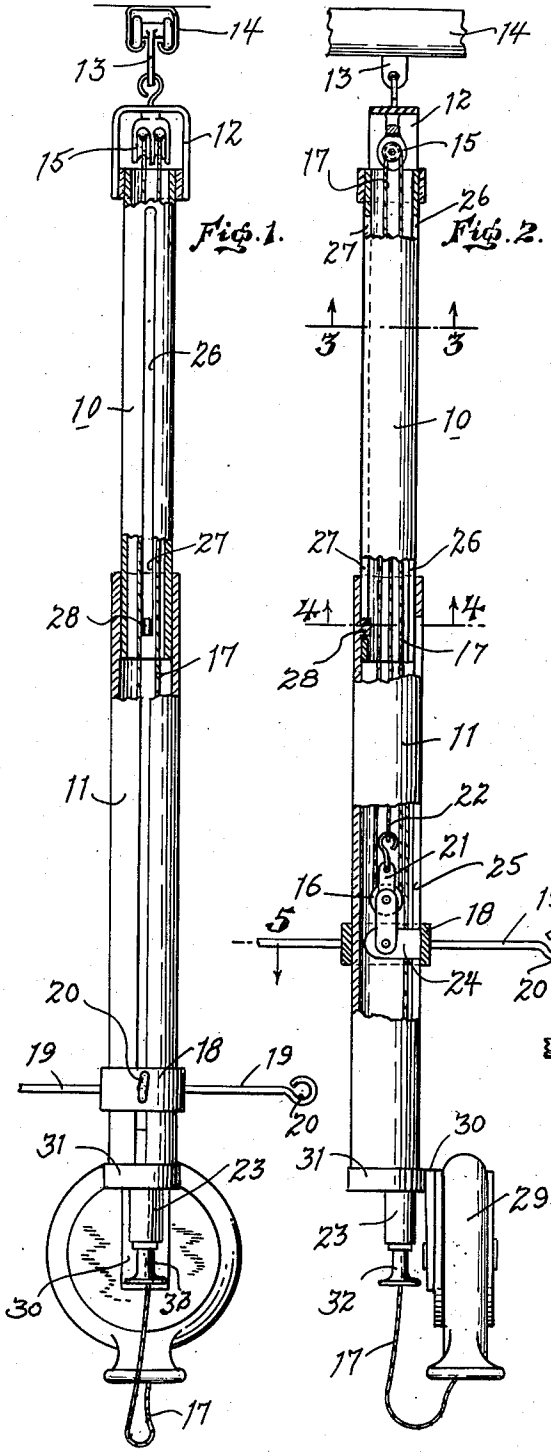


Fig. 1.

Fig. 2.

Fig. 3.

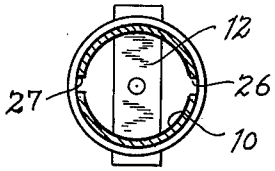


Fig. 4.

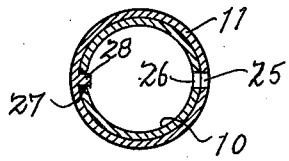
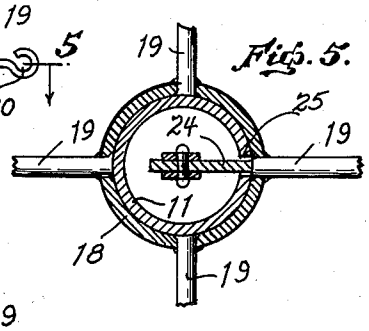


Fig. 5.



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HOSPITAL INVERTED BOTTLE SUPPORT

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3 Claims. (Cl. 248—328)

My present invention relates to an improved adjustable bottle supporting device which will be found particularly suitable for use in hospitals for the support of feeding containers, especially containers for slow feeding application, such as containers of blood plasma, intravenous feeding solution, and the like.

An object of my invention is to provide apparatus of relatively simple construction and operation for suspending intravenous solution carrying bottles and the like from the ceiling of a room and thus provide for unobstructed use of the floor area therebelow.

Another object of my invention is to provide a bottle suspending device for supporting one or more bottles from the ceiling of a room such as the recovery room in a hospital, which may be readily and easily moved from one position in the room to another position and held at varying elevations to permit rapid and proper positioning of the bottle so that the contents thereof may be conveniently used in any desired manner.

Still another object of my invention is to provide apparatus for suspending one or more heavy intravenous solution containing bottles from the ceiling of a room at any desired or predetermined height to provide the desired and necessary hydrostatic pressure at the point of application of the solution to the patient's body.

Other objects and advantages will be in part evident to those skilled in the art and in part pointed out hereinafter in connection with the accompanying drawing, wherein there is shown by way of illustration and not of limitation a preferred embodiment of the invention.

In the drawing wherein like numerals refer to like parts throughout the several views:

FIGURE 1 is a vertical view of my device taken at one side with portions broken away and in section to reveal details of construction,

FIGURE 2 is a view similar to FIGURE 1 with portions broken away and in section, and taken at a right angle to the showing in FIGURE 1,

FIGURE 3 is a sectional view taken along line 3—3 of FIGURE 2, looking in direction of arrows,

FIGURE 4 is a sectional view taken along line 4—4 of FIGURE 3, looking in direction of arrows, and

FIGURE 5 is a fragmentary sectional view taken along line 5—5 of FIGURE 2, looking in direction of arrows.

My improved adjustable bottle supporting device will be found particularly suitable for use in hospitals, for instance in the bedside treatment of patients. In the case of intravenous feeding, enemas, supply of blood plasma to the human system, and other applications, it is necessary that a container be supported above the level of the patient in an accurately selected and maintained position, that such position be readily attainable and that the support apparatus be readily moved out of the way when not in use. The apparatus must be durable, readily cleaned, easy to use, relatively foolproof in operation and economical to make and maintain.

It is extremely important that the position of the supported container be adjustable and accurately maintained at the desired elevation as the exact position and elevation of the container is frequently important in helping to insure the proper flow of liquid from the container to the patient. Thus, without limitation thereto, the invention is particularly suitable in the support of dispensing containers used to supply liquid by gravity to the human system. In other words, in the case of gravity flow of such liquids, the adjusted height of the container above the

level of the patient is extremely important, and furthermore, the position of the device in a horizontal plane is sometimes important for proper alignment of the tubing leading from the container to the human system.

For a better understanding of my invention reference is now made to the accompanying drawing wherein the numerals 10 and 11 designate, respectively, upper and lower cylinders or tubular members within which a block and fall arrangement to be hereinafter described is concealed from view. The upper cylinder is adapted and arranged to be suspended from a ceiling by means of a yoke 12 carried by a trolley 13 which is supported upon an inverted channel trackway 14 in the conventional manner for lateral movement. In the arrangement illustrated the block and fall hereinbefore referred to consists of a double pulley block 15 and a single pulley block with a pulley 16 over which a fall line 17 operates. As will be pointed out later the pulley 16 is carried by a collar or supporting ring 18 that is slideably mounted upon the lower cylinder 11. This supporting ring 18 is shown as having four arms 19 with hooks 20 at their ends upon which bottles containing liquids are suspended in an inverted position as is common practice in hospitals for the intravenous delivery of fluids to a patient. The lower pulley block 16 carries a clevis 21 to which one end 22 of the fall line 17 is firmly attached, and after passing around the double pulley block 15 and the single pulley 16 the fall line 17 extends outwardly and freely at the lower end of the cylinder 11 where it is engaged by a one-way clutching device 23 by which the elevation of the ring 18 with the bottle suspended upon the arms 19 may be maintained. The one-way clutching device 23 is of a type well known in the art.

At this point it is important to note that the lower pulley 16 is carried by a tongue 24 that projects diametrically inward through a slot 25 that extends throughout substantially the entire length of the lower cylinder 11 and in register with this elongated slot 25 the upper cylinder 11 is also shown as having a slot 26 which because of its register with the slot 25 of the lower cylinder 11 will provide a continuous slot for the free movement of the tongue 24 carried by the bottle supported ring 18 throughout substantially the entire length of each of the cylinders 10 and 11. In connection with upper cylinder 10 it is also important to note that this cylinder also has an oppositely disposed slot 27 in which a projecting tongue 28 carried by the lower cylinder 11 is adapted to move to thus permit relative movement between the cylinders 10 and 11 and at the same time prevent a complete separation thereof when the device is fully extended as here shown. The lengths of the cylinders 10 and 11 and the amount of fall line 17 employed will depend on the height of the ceiling or other support upon which the trolley 13 is mounted. In the drawing the cylinders 10 and 11 are each shown as of about 24 inches in length, but it will be understood that they may be of any length required, depending upon conditions at the point of use.

The length of the fall line will be determined by the lengths of the cylinders 10 and 11 and the number of pulleys used in the block and fall arrangement employed. This will present the problem of disposing of this line 17 as it is drawn through the one-way holding or line clutching device 23 and to solve this problem I have shown a spring operated fall line recoiling device 29 at the lower end of the cylinder 11 which will retrieve the line and avoid a tangling or annoyance to an operator which might occur should this line be allowed to accumulated on the floor. The fall line recoiling device 29 is of a type well known in the art. When the bottles carried by the device are raised to their highest point of elevation the fall line 17 will be as a consequence largely withdrawn from the cylinders 10 and 11 and collected by the recoiling device 29. This recoil device 29 is here shown as mounted upon a

bracket 30 carried by a closure cap 31 that is secured to the lower end of cylinder 11. The line clutching or holding device 23 is also here shown as having a release 32 which when pulled downwardly will permit the fall line 17 to be paid out and thus lower the bottle supporting collar 18 to any point where required. In this operation the operator will naturally pull the fall line 17 from the recoil device 29 in only such lengths as will be required and therefore the fall line 17 will be held out of the way while the device is in use.

While I have, for the sake of clearness and in order to disclose the invention so that the same can be readily understood, described and illustrated a specific device and arrangement, I desire to have it understood that this invention is not limited to the specific means disclosed, but may be embodied in other ways that will suggest themselves to persons skilled in the art. It is believed that this invention is new and all such changes as come within the scope of the appended claims are to be considered as part of this invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In an inverted bottle support for hospital use, the combination of two vertically extending telescoping cylindrical members adapted and arranged to form an extendable closure for a block and fall lift, a support upon which the upper one of said cylindrical members is supported, a pulley block carried by said support, a fall line extending over said pulley block and downwardly within said telescoping cylindrical member, a fall line accommodating pulley normally disposed within the lower cylindrical member, a bottle supporting spider having a ring portion surrounding and movable along the outside of said lower cylindrical member, a tongue carried by said spider extending diametrically into said lower cylindrical member to which said fall line accommodating pulley is connected, a fall line connected at one end to said pulley supporting tongue passing over said pulley block and around said second pulley and extending at the lower end of said cylindrical members, characterized by the fact that said upper and lower cylindrical members have co-extending and aligned slots in which the diametrically projecting tongue carried by said bottle supporting spider operates, whereby said bottle supporting spider may be moved by said block and fall from a position at the extending end of said lower cylindrical member to a position at the upper end of said upper cylindrical member.

2. In an inverted bottle support for hospital use, the combination of two vertically extending telescoping cylindrical members adapted and arranged to form an extendable closure for a block and fall lift, a support upon which the upper one of said cylindrical members is supported, a pulley block carried by said support, a fall line extending over said pulley bock and downwardly within said telescoping cylindrical member, a fall line accommodating pulley normally disposed within the lower cylindrical

member, a bottle supporting spider having a ring portion surrounding and movable along the outside of said lower cylindrical member, a tongue carried by said spider extending diametrically into said lower cylindrical member to which said fall line accommodating pulley is connected, a fall line connected at one end to said pulley supporting tongue passing over said pulley block and around said second pulley and extending at the lower end of said cylindrical members, characterized by the fact that said upper and lower cylindrical members have co-extending and aligned slots to accommodate movement of the diametrically projecting tongue carried by said bottle supporting spider, whereby said bottle supporting spider may be raised and lowered by said block and fall from a position at the lower end of said lower cylindrical member to a position at the upper end of said upper cylindrical member, and means for maintaining the aligned tongue accommodating slots of said cylindrical members in alignment during relative movement.

3. In an inverted bottle support for hospital use, the combination of two vertically extending telescoping cylindrical members adapted and arranged to form an extendable closure for a block and fall lift means, a supporting trolley upon which the upper one of said cylindrical members is supported, a two pulley block carried by said supporting trolley, a fall line extending over the pulleys of said pulley block and downwardly within said telescoping cylindrical member, a single fall line accommodating pulley normally disposed within the lower cylindrical member, a bottle supporting spider having a cylinder encircling portion movable along the outside of said lower cylindrical member, a tongue carried by said spider extending diametrically into said lower cylindrical member to which said single fall line accommodating pulley is connected, a fall line connected at one end to said pulley supporting tongue passing over the pulleys of said pulley block and around said single pulley and extending at the lower end of said cylindrical members, characterized by the fact that said upper and lower cylindrical members have co-extending and aligned slots to accommodate movement of the diametrically projecting tongue carried by said bottle supporting spider, whereby said bottle supporting spider may be moved by said block and fall from a position at the extending end of said lower cylindrical member to a position at the upper end of said upper cylindrical member, and means for preventing a complete separation of said cylindrical members when extended.

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