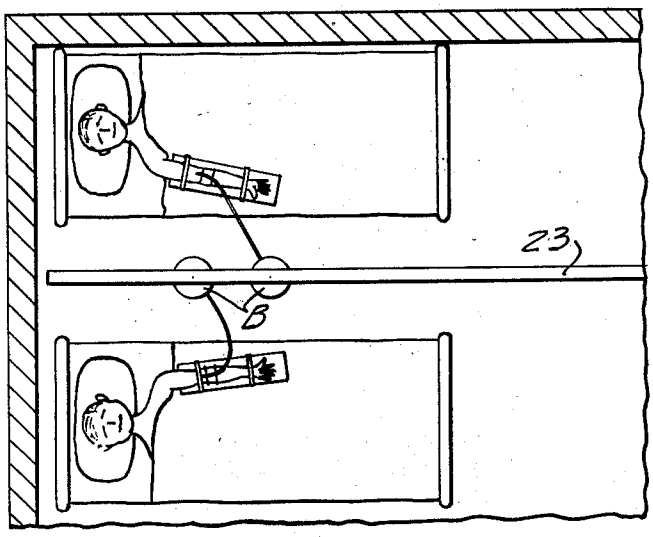
Nov. 26, 1957 J. A. PHELAN 2,814,457

ADJUSTABLE BOTTLE SUSPENDING DEVICE

Filed Jan. 19, 1955

FIG. 4



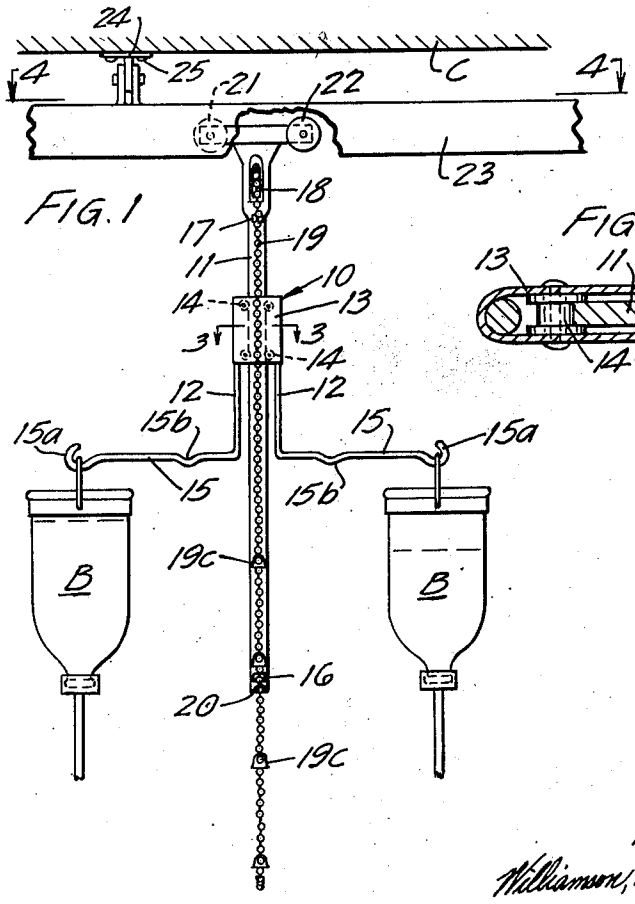
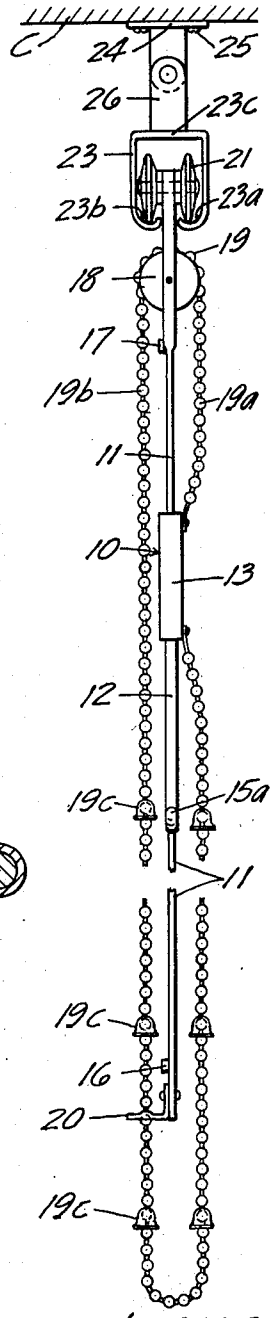


FIG. 1

FIG. 3

FIG. 2



INVENTOR
JOHN A. PHELAN
BY
Williamson, Williamson, Schroeder & Adams
ATTORNEYS

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ADJUSTABLE BOTTLE SUSPENDING DEVICE

John A. Phelan, Minneapolis, Minn., assignor to Phelan Manufacturing Corporation, Minneapolis, Minn., a corporation of Minnesota

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1 Claim. (Cl. 248—328)

This invention relates to apparatus for suspending a bottle from the ceiling of a room, and more specifically relates to apparatus for suspending a bottle from such a ceiling and for positioning the bottle for convenient use thereof.

Patients in the recovery room of a hospital, having just come from the operating room, must often be fed by injections of intravenous solutions and must frequently be irrigated, both of which processes are accomplished by the use of a bottle containing a solution to be discharged from the bottle by gravity through a suitable tube to the patient. Such intravenous solution or irrigation bottles have been held in the past by means of stands which have several distinct disadvantages. One of the most important of these disadvangtages is that such stands occupy floor space which can be, and frequently is, very valuable. Attendants in the recovery room must often times work very rapidly, and if they are required to continuously go around a stand carrying the intravenous stand bottles, valuable time is lost. A second disadvantage, substantially as important as the first mentioned, is that such stands acquire a top-heavy nature when one or more heavy intravenous bottles is placed on the stand. Because the attendants must work rapidly in the recovery room, there is a definite likelihood that these heavy bottles or the stand will be bumped at or near the time the injection of the solution must be given to the patient, which will cause the stand to tip over, smashing the bottles on the floor. Valuable time is lost by this means, often times at a crucial moment with respect to the attention which must be given to the patient.

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

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

Still another object of my invention is to provide apparatus for suspending one or more heavy intravenous solution bottles from the ceiling of a room and for readily and easily adjusting the vertical position of such a bottle to a predetermined height so as to provide the desired and necessary hydrostatic pressure at the point of application of the solution to the patient's body.

A further object of my invention is to provide a bottle suspending device for supporting a bottle from the ceiling of a room, which device may be laterally swung from a position normal to the ceiling to permit lateral shifting of a bottle carried thereby if the same is accidentally struck and thereby decrease the chance of breakage of the bottle.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings wherein like reference characters refer to the same parts throughout the several views and in which:

Fig. 1 is a front elevation view partially broken away showing my invention secured to the ceiling of a room;

Fig. 2 is a side elevation view, partly in vertical section showing my invention as in Fig. 1;

Fig. 3 is a detail section view of a portion of my invention taken on a horizontal plane substantially at 3—3 of Fig. 1; and

Fig. 4 is a diagrammatic plan view taken just below the ceiling of the room in which my invention is mounted, as at 4—4 of Fig. 1, showing the physical relation preferred in the use of my invention with respect to the beds in the room.

The invention includes a depending support or support member designated in general by numeral **10** which is made up of a frame element **11** and extension elements **12** which are shiftably mounted on the frame element **11** for vertical movement. Extension elements **12** are capable of being shifted downwardly beyond the lower end portion of frame element **11** and therefore cooperate therewith to make support member **10** actually extendible and retractable. As best shown in Fig. 3, extension members **12** are affixed together in spaced relation by an encompassing rigid metal band **13** to which they are secured as by welding. Frame element **11** extends through the open interior of the band interconnection **13** and frame element **11** is guided for shifting movement therein by a number of flanged rotary guide elements **14** which are journalled in band **13**.

Means are provided for supporting a bottle on the extendible and retractable supporting member **10** and in the form shown such bottle supporting means comprise a pair of outstanding arms **15**, which are formed integrally of the respective support elements **12** and extend transversely outwardly in opposite directions therefrom. Support arms **15** are provided with hook means **15***a* at the respective outer termini thereof and are provided with crimps **15***b* adjacent the inner end thereof for suspending a bottle B therefrom.

Frame element **11** has a pair of abutments **16** and **17** respectively secured to the lower and upper portions thereof for engaging band **13** when the same is shifted vertically for limiting the vertical shifting movement thereof. Guide means comprising a sheave **18** is journalled in frame element **11** adjacent the upper end portion thereof.

Retaining means are interposed between frame element **11** and extension element **12** for releasably restricting relative vertical shifting movement thereof. In the form shown, such means include an elongated flexible control element **19** or chain which is trained over guide sheave **18** and has segments **19***a* and **19***b* thereof extending downwardly along and on opposite sides of support member **10**. Segment **19***a* hangs on the right side of support member **10**, as seen in Fig. 2, and is secured to band **13** and is thereby connected with extension elements **12** and bottle-supporting arms **15**. The other depending segment **19***b* of chain **19** is provided with a number of spaced enlargements or bells **19***c* which constitute gripping elements to preclude the chain from slipping in the hands of the operator when operating the same. Segment **19***b* of chain **19**, as seen in Fig. 2, extends down the left side of support member **10** around the bottom thereof and up the right side thereof to band **13** and is secured thereto. An anchoring element **20** is secured to the lower end portion of frame element **11** and is provided with a restricted recess or groove therein opening to the exterior thereof for releasably receiving chain **19** therein and thereby restricting longitudinal shifting thereof.

Roller means are provided on the upper end portion of element **11**, and in the form shown, said roller means include two pairs of rollers **21** and **22** respectively, which pairs are spaced one from the other and are journalled to revolve on parallel axes which extend transversely of frame element **11**. Rollers **21** and **22** are spaced inwardly from the outer termini of body-supporting arms **15**.

Track means, which in the form shown, comprise an elongated enclosed track **23**, are provided for supporting rollers **21** and **22** thereon and for suspending the depending support **10** and bottles B therefrom. Individual roller supporting surfaces **23***a* and **23***b* are provided for supporting the separate rollers of each of the pairs **21** and **22**. The enclosed upper portion **23***c* of track **23** comprises a wheel retainer or wheel stop for restricting vertical shifting movement of the rollers. Mounting means, which in the form shown, comprise a plate **24**, are provided for securing the track **23** adjacent to the ceiling C of the room. Plate **24** is securable to the ceiling C by any suitable means such as bolts **25**. The interconnection **26** which is secured to mounting plate **24** and track **23** is provided with pivot means for swingably connecting track **23** to the ceiling C for movement transversely of track **23**.

In operation, the track **23** will be mounted adjacent the ceiling of a room in such a position as shown in Fig. 4 to permit at least one bed to be moved into the room on each side thereof. The lower end portion of frame element **11** will only extend downwardly to a position where persons may walk under the bottle suspending device. Depending support **10** will be shifted along track **23** on rollers **21** and **22** adjacent to a bed in the room. The chain **19** will be removed from the slot in anchoring element **20** to permit the extension elements **12** and bottle-supporting arms **15** to be shifted downwardly whereupon intravenous or irrigation bottles will be hung on arms **15** as shown in Fig. 1. Chain **19** will thereupon be pulled to elevate bottle supporting arms **15** and bottles B to a predetermined position so as to adjust the hydrostatic pressure at the point of delivery of the fluid to the patient. Chain **19** will thereupon be inserted into the anchoring element **20** and be retained thereby. When only one bottle is suspended on the device, there will tend to be some unbalancing and one of the pairs of rollers, such as **21**, will tend to raise from the track, because the bottle will be pulling downwardly on bottle-supporting arm **15**. The wheel retainer **23***c* which comprises a portion of track **23** will restrict the upward shifting of the rollers **21** and the shifting of the bottle-suspending device will be restricted thereby. The flanged guide elements **14** in band **13** will preclude binding of the frame element **11** when the loads carried by the arms **15** are unbalanced and will permit smooth and easy shifting of the extension elements **12** with respect to frame element **11**.

If, by accident, a bottle is struck, the bottle suspending device, including the track, is free to shift transversely thereof so as to absorb some of the shock from the bottle when struck. When a weight is carried on the depending support **10**, each of the rollers of each pair of rollers will be maintained in engagement with the respective supporting surfaces **23***a* and **23***b*, and there will be no transverse swinging movement of the depending support **10** relative to track **23**. If it is desired to change the vertical position of bottle B while the same is being used, chain **19** need only be removed from the releasable anchoring element **20** to permit either upward or downward adjustment of the bottle-supporting arms. If the operator of the device should accidentally lose his grip on chain **19** when adjusting the position of the bottles, the resultant falling of the bottles and extension members **12** will be limited when the band **13** engages the abutment **16** which is disposed at the lower end portion of frame element **11**. It will therefore be seen that the operation of the bottle suspending device is substantially completely safe so that bottles carried thereby will not be broken at crucial times.

It will be seen that I have provided a bottle suspending device which is freely shiftable along the ceiling of a room to permit the bottles to be suspended in substantially any desired position and which may be operated to controllably shift the bottles to any desired vertical position within the normal ranges of desired use so as to adjust the hydrostatic pressure of the fluid being delivered to the patient.

It will also be noted that even though the device is loaded with unbalanced loads, it may be easily shifted along the track and the bottles may be easily and readily shifted to various desired vertical positions.

Another advantage of my invention lies in the construction permitting the track and bottle suspending device to shift laterally of the track if, by chance, the bottles should be struck so as to absorb at least some of the shock from the striking of the bottle.

It will, of course, be understood that various changes may be made in the form, detail, arrangement and proportion of the parts without departing from the scope of my invention which consists of the matter described herein and set forth in the appended claim.

What is claimed is:

A bottle suspending device for use in hospital recovery rooms and the like, comprising an elongated track adapted to be mounted on the ceiling of such a room, a depending frame element having an upper end portion with a roller journalled thereon, said roller being mounted on said track to roll longitudinally thereof and permit corresponding shifting of said depending frame element, a bottle-supporting arm shiftably mounted on said frame element for vertical movement, a sheave journalled on said frame element adjacent the upper end portion thereof, an elongated chain trained over said sheave and having segments thereof hanging downwardly adjacent said frame element, one of said segments being connected with said vertically shiftable arm and the other of said segments being adapted to be manually gripped and pulled downwardly to draw said chain over said sheave and thereby elevate said bottle-supporting arm, and an anchoring element affixed to said frame element releasably retaining said chain for restricting longitudinal movement thereof.

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