Oct. 25, 1960 H. H. LOGAN 2,957,672

OVERHEAD QUICK DETACHABLE SUPPORT

Filed Oct. 28, 1957

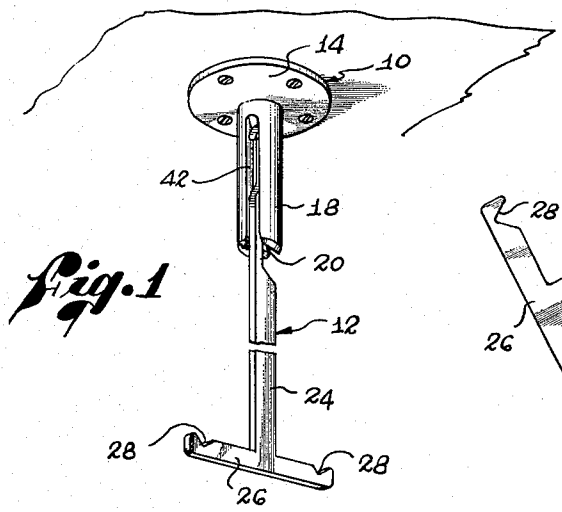


Fig. 1

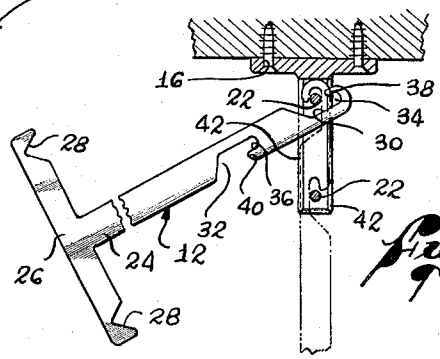


Fig. 2

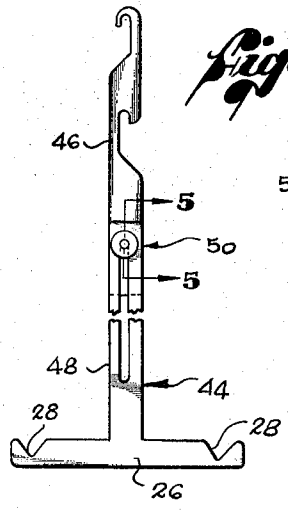


Fig. 4

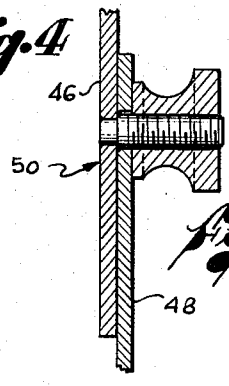


Fig. 5

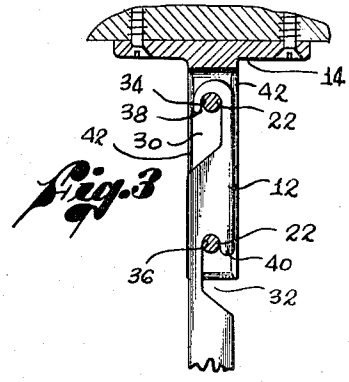


Fig. 3

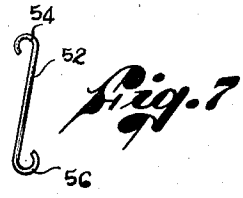


Fig. 7

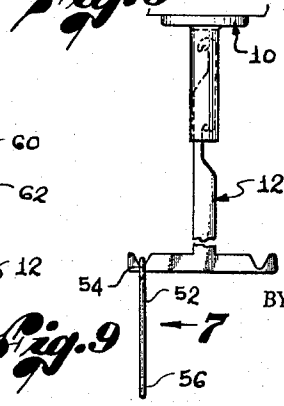


Fig. 6

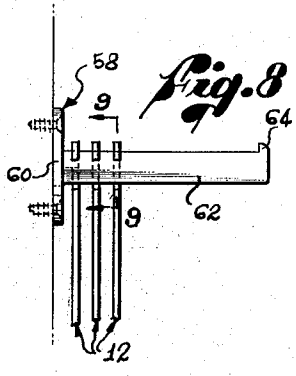


Fig. 8

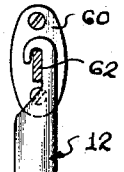


Fig. 9

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OVERHEAD QUICK DETACHABLE SUPPORT

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1 Claim. (Cl. 248—317)

This invention relates generally to supports, and more particularly to a quick detachable overhead support for suspending articles from the ceiling of a room and the like.

It will become apparent as the description proceeds that the present overhead support is susceptible of numerous applications and uses and may be employed to hold a wide variety of articles. For illustrative purposes, the invention will be described with reference to one of these many uses, namely, suspending various types of hospital equipment from the ceiling of a hospital room.

Frequently during the treatment of hospitalized persons, it is necessary that various pieces of equipment, such as intravenous equipment, be supported in close proximity to the patient's bed or, in the case of surgical equipment, in close proximity to an operating table. In the past, supports for this purpose have generally comprised floor supported hangers including a base to rest on the floor and an upstanding post, secured at its lower end to the base. This post had mounting hooks or the like at its upper end for attachment to equipment to be supported.

These hangers possessed various deficiencies which rendered them unsatisfactortory for hospital use. Thus, in order to provide the hanger with sufficient stability to avoid accidental tipping under the weight of the equipment suspended thereon, it was necessary that the hanger bases be relatively massive and heavy. Also, in most cases, it was necessary that the equipment be suspended a substantial distance above the floor, so that the vertical post of the hanger had to possess substantial length. These requirements rendered the prior stands extremely cumbersome to move about from one patient to another, as well as difficult to store when not in use. Moreover, the stands consumed considerable space which is at a premium in most hospital rooms, and also presented an obstacle to persons walking about in the room. With respect to this latter deficiency, the existing stands were prone to being upset by persons accidentally bumping thereinto. Such accidental tipping of the stands was especially critical where the stands were employed for holding equipment during surgery, since the doctors and other personnel in such cases are necessarily under extreme strain and concentration and hence were much more liable to cause accidental tipping of the stand.

In many cases, it is desirable or necessary that the equipment be suspended directly over a patient's bed. With existing stands, this was impossible without providing a substantial, lateral extension on the stand for holding the equipment over the bed. With such an extension, however, if the equipment had any substantial weight, it was necessary to counter-balance the stand in order to prevent tipping of the latter under the weight of the equipment held. Another deficiency of the prior stands, which was especially acute in hospital use, was that the stands, because of their size and weight, were difficult to sterilize. Also, the stands were located on the floor and hence subject to more rapid and severe contamination and thus required more frequent and thorough sterilization.

The overhead support of this invention avoids the above-noted and other deficiencies of existing hospital stands, so as to be uniquely adapted for hospital use. As noted earlier, however, the present support is capable of a wide variety of other uses and applications, and, therefore, should not be construed as limited to such hospital use.

In the light of the foregoing discussion, a broad object of the invention may be stated as being the provision of a new and improved quick detachable, overhead support for suspending articles from the ceiling of a room.

A more specific object of the invention is the provision of an overhead support which is uniquely suited to use in hospitals for holding various types of hospital equipment and which avoids the above-noted and other deficiencies of existing hospital equipment supports.

Another object of the invention is the provision of a detachable support which is mounted on the ceiling of a room so as to present minimum obstruction to persons moving about in the room.

Yet another object of the invention is the provision of an overhead support including a depending hanger for suspending articles from the ceiling of a room, which hanger is quickly and easily detachable, small in size, and light in weight, so as to be readilly portable from one point of use to another point of use, and capable of being easily and compactly stored when not in use.

A further object of the invention is the provision of a support of the character described which is adapted for attachment to the ceiling of a room, so as to be capable of holding articles in substantially any location in the room without regard to the position of other articles supported on the floor of the room.

Yet a further object of the invention is the provision of an overhead support including a mounting flange adapted to be secured to the ceiling of a room and a dependent hanger which is readily attachable to and detachable from the mounting flange while being relatively immune to accidental separation from the flange.

Yet a further object of the invention is the provision of an overhead, quick detachable support of the character described which is easily installed, neat in appearance, inexpensive to manufacture, and otherwise especially well suited to its intended purposes.

Briefly, the foregoing and other objects are achieved in the illustrative embodiment of the invention by the provision of a mounting flange to be secured to the ceiling of a room and a dependent hanger which is removably secured to the mounting flange. This hanger includes article support means at its lower end and may be of any desired length so as to position an article held thereon at any desired distance above the floor. In some cases, the hanger may be of extensible construction or hanger extensions may be employed on the support to permit a latitude of adjustment of the vertical height of the article held.

The connecting means for effecting detachable connection of the hanger to the mounting flange are of novel design which permits quick and easy attachment of the hanger to and detachment of the hanger from the mounting flange while being relatively immune to accidental disengagement of the hanger from the flange. The hanger itself is relatively small in size and light in weight so as to be readily portable from one point of use to another. Also, the hanger may be removed and readily stored when not in use. In this latter respect, the invention provides a wall mounted bracket on which a number of hangers may be supported when not in use. The hangers are relatively flat in shape so that a relatively large number of hangers, when stored on the bracket, consume little space. Also, in the case of hos-

pital use of the support, the hangers may be readily sterilized.

The present overhead support is of very pleasing design which refrains from lending a cluttered appearance to a room even through several of the hangers are used in the room. Since the supports are fixed to the ceiling of the room, the floor of the latter is left relatively clear and unobstructed. Also, the position of the support is not limited by objects supported on the floor of the room. This is highly advantageous since it permits the supporting of articles directly over a floor supported object. As previously noted, the present support is uniquely suited to hospital use because of the fact that it consumes little space, is located off the floor, and out of the way of persons in the room so as to be immune to accidental upsetting of equipment supported on the support, and may be readily stored when not in use.

Additional objects, advantages and features of the invention will become apparent as the description proceeds.

A better understanding of the invention may be had from the following detailed description taken in connection with the annexed drawings, wherein:

Figure 1 is a perspective view of the present support installed on the ceiling of a room;

Figure 2 illustrates the manner of attachment and separation of the hanger of the present support to and from its mounting flange;

Figure 3 is a partial, longitudinal section through the support showing the manner of connection of the hanger to its mounting flange;

Figure 4 illustrates an extensible hanger for use in the present support;

Figure 5 is an enlarged section taken along line 5—5 of Figure 4;

Figure 6 illustrates the manner of employing a hanger extension to increase the effective length of the hanger of the support;

Figure 7 is a side view of the hanger extension of Figure 6;

Figure 8 illustrates a bracket for supporting a plurality of hangers when not in use; and

Figure 9 is a section taken along line 9—9 of Figure 8.

Referring now to these drawings, the present overhead support will be seen to comprise two main components, namely, a mounting flange 10 and a detachable hanger 12. Mounting flange 10 comprises a circular base plate 14 having a series of holes 16 for receiving mounting screws.

Depending from the normally underside of the mounting plate 14, concentric with the latter, is a cylindrical post 18. This post has a longitudinal slot 20 opening through its lower end. Extending transversely through the post 18 and across the slot 20 are a pair of vertically spaced pins 22.

Hanger 12 comprises an elongate, flat shank 24 fixed to the normally lower end of which is a flat cross bar 26. This cross bar has notches 28 adjacent its opposite ends for receiving hooks on the articles to be supported.

Adjacent the upper end of the hanger shank 24 are a pair of notches 30 and 32 which open through opposite side edges of the shank. These notches define, at their normally upper ends, a pair of longitudinally aligned slots 34 and 36 which extend longitudinally of and open toward the lower end of the hanger shank 24.

The width of the slots 34 and 36, measured transversely of the hanger shank, is substantially equal to the diameter of the mounting flange pins 22 so that the latter are receivable in the slots 34 and 36 with a relatively close sliding fit. Also, the upper, circularly curved end walls of the slots 34 and 36 have their centers spaced a distance substantially equal to the center distance between the pins 22. The upper end of the hanger shank 24 is rounded, as shown.

It will be observed that the notches 30 and 32 define, in effect, a pair of hooks on the shank 24. These hooks have lips 38 and 40 located at opposite sides of the shank.

When attaching the hanger 12 to the mounting flange 10, the hanger shank 24 is held at an angle to the mounting flange post 18, in the manner illustrated in Figure 2. The normally upper end of the shank is then inserted through the slot 20 in the post, between the pins 22, with the upper notch 30 in the shank opening toward the upper pin 22 in the post.

The hanger shank is thus inserted through the slot 20 until the lip 38 of the upper hook on the hanger shank just clears the upper pin 22 on the post 18. The upper end of the shank is then moved to the left, as viewed in Figure 2, until the upper pin 22 in the post 18 abuts the wall of the upper notch 30 in the hanger shank. The upper pin 22 is now located directly below the open lower end of the upper slot 34 in the hanger shank. The hanger shank is now pivoted, about the upper pin 22 as a center, in a counterclockwise direction, as viewed in Figure 2, until further swinging of the shank in this direction is prevented by engagement of the lower pin 22 in the post 18 with the wall of the lower notch 32 in the hanger shank. The lower pin 22 is now located directly below the lower open end of the lower slot 36 in the hanger shank, as shown in phantom lines in Figure 2. Finally, the hanger shank 24 is moved longitudinally in a downward direction to engage the pins 22 in the hanger shank slots 34 and 36. In the final assembled condition (Figure 3) of the mounting flange 10 and hanger 12, accordingly, the pins 22 in the mounting flange post 18 bear against the upper cylindrically curved walls of the hanger shank slots 34 and 36 to support the hanger in a vertical direction on the mounting flange.

It will be observed that in this final assembled condition of the mounting flange and hanger, the latter is retained against movement in every direction except longitudinal upward movement. The width of the slot 20 in the post 18 is made just slightly greater than the thickness of the hanger shank 24, so as to substantially eliminate any lateral play between the hanger and mounting flange, and thereby assure a rigid attachment of the hanger to the mounting flange. In order to facilitate insertion of the upper end of the hanger into the slot 20, the walls of the latter, at diametrically opposite sides of the post 18, may be bevelled as illustrated at 42 in Figure 1.

Removal of the hanger from the mounting flange 10 is accomplished by a reversal of the steps just recited. It will be seen, therefore, that disconnection of the hanger from the mounting flange entails first a longitudinal upward movement of the hanger shank 24, a subsequent clockwise swinging of the shank and a right-hand movement of the upper end of the latter to clear the upper pin 22 in the post 18, and finally a longitudinal withdrawal of the hanger shank from the slot 20 in the post 18. These relatively complex movements of the hanger shank 24 necessary to effect detachment of the hanger from the mounting flange 10, effectively precludes accidental disconnection of the hanger from the flange. The weight of the equipment or other articles supported on the hanger, of course, retains the hooks of the hanger shank in firm engagement with the pins 22 of the mounting flange and thus aids in the prevention of such accidental disconnection.

The hanger shank may comprise one integral piece of suitable length, depending upon the height of a ceiling, which will enable an article to be supported at a desired distance above the floor, as in the case of the hanger 12 of Figures 1–3. If desired, the hanger may have an extensible construction, as illustrated in Figures 4 and 5. Thus, the modified hanger 44 of these latter figures comprises a pair of hanger shank sections 46 and 48 which are telescopically connected by the bolt and slot means 50. The overall length of the shank of the hanger 44 may thus be adjusted to accommodate ceilings of different height or to vary the height of the article held on the support.

Such adjustment of the effective hanger length may also

be accomplished by means of simple, removable hanger extensions **52**, illustrated in Figures 6 and 7. These hanger extensions may comprise, for example, sufficiently rigid wire or a thin rod which is bent to provide hooks **54** and **56** at opposite ends. In use, one of these hooks is engaged over the hanger arm **26** and the other hook is engaged with the article to be held. Several hanger extensions of different length may be provided to permit further latitude in the overall hanger length.

Illustrated in Figures 8 and 9 is a bracket **58** on which the hangers **12** and **44**, as well as the hanger extensions **52** may be stored when not in use. This bracket comprises a base plate **60** to be attached to the wall of the room, for example, and a projecting arm **62** terminating in an upstanding lip **64**. The thickness of the arm **62** is such as to permit the upper hook on the hanger shank to be engaged thereover, as shown. Because of the flat construction of the hangers, several hangers may be compactly stored when not in use on the bracket **58**.

It will be immediately appreciated that because of the relatively small and light weight construction of the hanger of the present support and the facility with which it may be attached to and removed from the mounting flange **10** and its ability to be compactly stored when not in use, several supports may be installed at convenient positions about a room, even a room such as a hospital room, wherein space is at a premium, without presenting problems of free passage about the room. Also, the present support is capable of simple and inexpensive manufacture, may be readily cleaned or sterilized, as is desirable or necessary in some cases, especially hospital use, and leaves the floor clear for movement of objects about or any desired positioning of objects in the room without regard to the location of the supports, except in those cases wherein it is desirable to locate an object in a certain relationship to a support.

From what has been said, therefore, it will be clear that there has been described and illustrated an overhead support which is fully capable of attaining the objects and advantages preliminarily set forth. While certain preferred embodiments of the invention have been disclosed, it will be appreciated that various modifications in design and arrangement of parts are possible within the scope of the following claim.

I claim:

An overhead support for suspending an article from the ceiling of a room, comprising: a mounting base to be attached to the ceiling and a post depending from the normally underside of said base, said post having a slot in a plane of the longitudinal axis of the post which opens through the normally lower end and diametrically opposite sides of the post, a flat hanger having a normally upper end portion received in said slot and a thickness just slightly less than the width of the slot whereby the hanger is restrained against rocking in a transverse direction of said plane, a pair of pins fixed at opposite ends in said post and extending across said slot, said pins being spaced along the slot lengthwise of the post, said upper end portion of the hanger having a pair of longitudinally spaced and extending slots which open at their normally lower ends through opposite side edges, respectively, of the hanger to define a pair of oppositley facing hooks engaging over said pins, respectively, said hanger being releasable from said base by initial longitudinal upward movement of the hanger toward said base to disengage said hooks and pins, subsequent swinging of said hanger relative to said base to disengage said pins from said slots in the hanger, and final longitudinal movement of the hanger from the slot in the post, and means on said hanger for holding an article to be suspended.

References Cited in the file of this patent

UNITED STATES PATENTS

495,409	Fry	Apr. 11, 1893
966,244	Ruck	Aug. 2, 1910
995,798	McCullough	June 20, 1911
1,242,125	Bean	Oct. 9, 1917
1,637,688	Emel	Aug. 2, 1927
1,963,721	Smith	June 19, 1934
2,700,563	Krucker	Jan. 25, 1955