Dec. 29, 1959 I. C. BOHLMAN ET AL 2,919,097

HOLDING DEVICE

Filed Aug. 22, 1956

Fig. 1

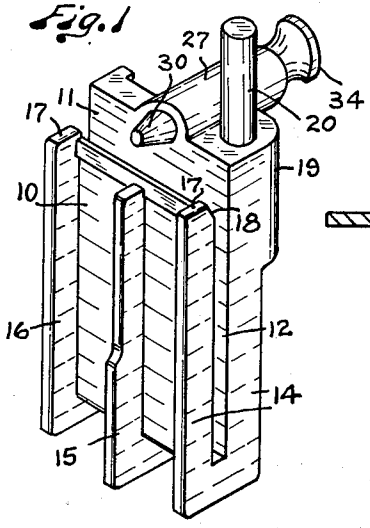


Fig. 2

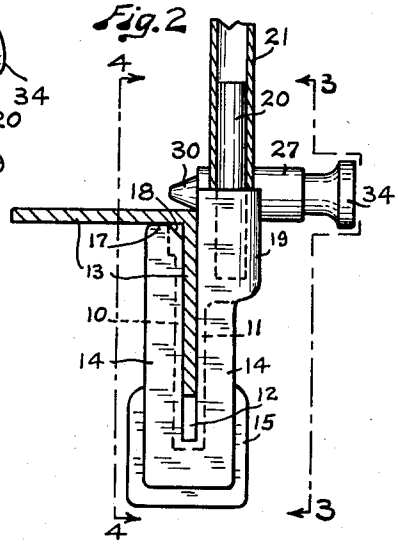


Fig. 3

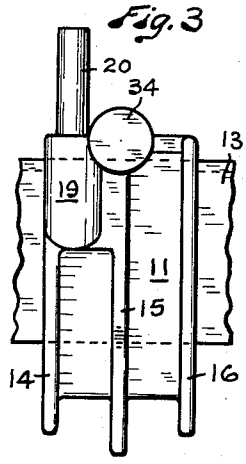
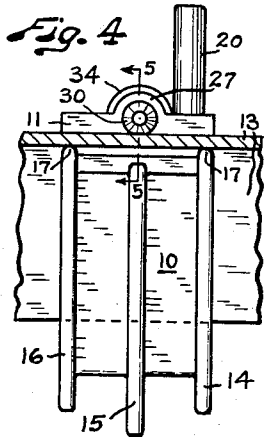


Fig. 4



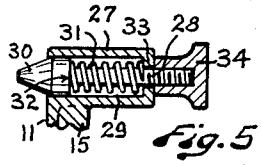


Fig. 5

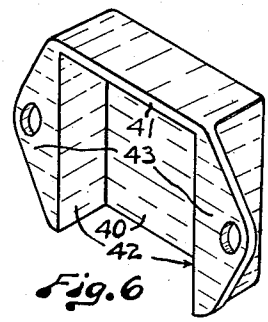


Fig. 6

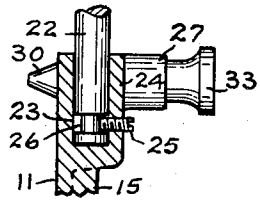


Fig. 7

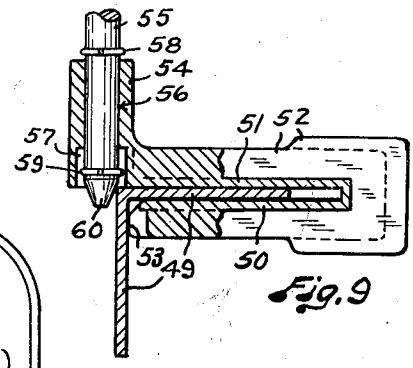


Fig. 9

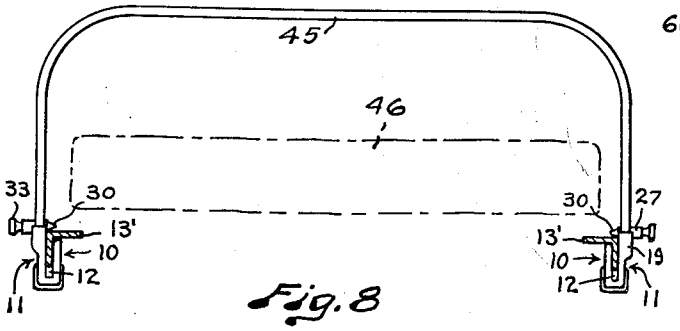


Fig. 8

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HOLDING DEVICE

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2 Claims. (Cl. 248—226)

This invention relates to improvements in holding devices or clamps and an object of this invention is to provide a holding device or clamp of simple and efficient construction which can be quickly and easily attached to or detached from a supporting member and which will firmly grip the supporting member and can be used as a means for mounting other devices on the supporting member.

Another object is to provide a clamp of this type which is capable of carrying an upwardly extending post or like member and is particularly well adapted to be attached to a support which has two flanges at right angles to each other, such as a bracket shaped to receive the clamp or an angle bar which forms the side rail of a bed, the upwardly extending member being used to support various articles above the bed or device to which the clamp is attached.

Another object is to provide a clamp having two parallel spaced apart sides of unequal length, one of said sides overhanging and extending beyond the other side, the overhanging end portion of the longer side having post supporting means and having a locking pin capable of releasably engaging a member of angle shaped cross section to which the clamp is applied.

In the care and treatment of patients in bed or on wheeled stretchers and the like it is often desirable to support receptacles, such as flasks or containers for intravenous fluid, drainage bottles and similar things at higher elevations than a patient. Also in many instances it is desirable to support bed lamps, trays and like articles in predetermined positions above a bed. Also it is sometimes desirable to relieve a patient of the weight of bed covers by supporting the bed covers above parts of the body of the patient. In doing this it is desirable to attach upwardly extending supporting devices of some form to the bed and the object of this invention is to provide an efficient and reliable and readily attachable and detachable clamping device for firmly and securely attaching the upwardly extending support to the bed.

Other objects of this invention will be apparent from the following description taken in connection with the accompanying drawings:

Figure 1 is a perspective view of a clamp constructed in accordance with this invention.

Fig. 2 is an edge view of the clamp showing the same attached to an angle bar and supporting an upwardly extending tubular post, the angle bar and the tubular post being shown in cross section.

Fig. 3 is a side view of the clamp looking in the direction indicated by broken line 3—3 of Fig. 2 and showing a fragment of the angle bar.

Fig. 4 is a side view looking in the direction of broken

line 4—4 of Fig. 2 and showing a fragment of the angle bar partly in cross section.

Fig. 5 is a fragmentary sectional view taken substantially on broken line 5—5 of Fig. 4, showing a spring pressed locking pin.

Fig. 6 is a detached perspective view of a mounting bracket capable of being attached to various different types of supports and having two sides at right angles to each other to which the clamp is secured.

Fig. 7 is a fragmentary sectional view, with parts in elevation, showing a post rotatively supported by this clamp.

Fig. 8 is a view on a smaller scale then the preceding figures showing two of these clamps applied to angle bar side rails of a bed and supporting an arch shaped member above a mattress on a bed.

Fig. 9 is a view partly in section and partly in elevation of a clamp of modified form.

Like reference numerals refer to like parts throughout the several views.

This clamp comprises a U shaped member having two sides **10** and **11** spaced a short distance apart so as to provide therebetween a relatively narrow recess **12** which will fit over and receive a plate shaped support, such as the upright flange of an angle bar **13**, shown in Figs. 2, 3 and 4, or the side of a bracket of the form shown in Fig. 6 and hereinafter described. The side **11** is substantially longer than the side **10** and extends beyond and overhangs the end of the side **10** at the open end of the clamp. The two sides **10** and **11** are parallel and are of substantial width and are externally provided with preferably three spaced apart reinforcing ribs **14**, **15** and **16** which extend substantially entirely around the clamp and across the closed end of the same. Two of the reinforcing ribs **14** and **16** are positioned at the respective edges of the clamp and the rib **15** is approximately midway between them. All parts of the clamp are preferably made of non-corrosive metal.

The ribs **14** and **16** extend a short distance beyond the end of the shorter side **10** of the clamp and the terminal portions of these two ribs constitute two spaced apart bearing elements **17** which engage with and press against the inner side of any supporting flange which overhangs them and thus help to prevent tilting of the clamp on a support as hereinafter explained. Preferably the end of the shorter side member **10** has its inside corner **18** beveled or chamfered off to facilitate application of the clamp to a support, such as the angle bar **13**.

The longer side **11** of the U shaped member is provided with a post supporting means, which may be varied in form. The post supporting means shown in Figs. 1 to 4 comprises an enlarged portion or boss **19** on the exterior of the longer side **11**. A short stub post **20** is pressed or cast into the boss **19** and can be rigid relative to the boss. When the stub post **20** is rigid then a tubular post **21**, Fig. 2, of any desired length and shape can have its bottom end fitted telescopically over the stub post **20**. This tubular post **21** can be free to turn on the stub post **20** or the two relatively telescopic parts **20** and **21** can be of non-circular cross section so that the part **21** will be held against rotation. Also the stub post **20** can be omitted and the end of an upright post **22**, see Fig. 7, can fit directly into a socket **23** in a boss **24** which corresponds to the boss **19**. When this is done the post **22** can be held against withdrawal from the socket **23** and either be left free to rotate or locked against rotation

in said socket by a screw 25 which is threaded through the wall of the boss 24 and seats in an annular groove 26 in the lower end portion of the post 22.

The upper end of the longer side 11 of the clamp has a medially positioned integral tubular boss 27 extending crosswise thereof. A locking pin 28, Fig. 5, is slidably disposed in a bore 29 of the boss 27. The end of the locking pin 28 shown at the left in Figs. 2 and 5 is of enlarged diameter and terminates in a tapered or conically shaped locking portion 30. A compression spring 31 is disposed in the bore 29 between a shoulder 32 formed by the enlarged end of pin 28 and a shoulder formed by an end wall 33 of the boss 27. The end portion of the pin 28 shown at the right in Figs. 1, 2 and 5 extends through the end wall 33 and is threaded into a knob 34 by which said pin may be retracted against the force of spring 31. The slot 12 in the clamp is deep enough so that, in practice, the support over which it fits will be clear of the bottom of said slot. This lets the top flange of the support, such as angle bar 13, rest on the bearing elements 17 and the taper of the pin tip 30 makes it self adjusting to variations in flange thickness and insures firm holding engagement at all times.

Fig. 6 shows a bracket which can be used to facilitate attachment of this clamp to articles or surfaces to which the clamp could not otherwise be applied and one of these brackets can be supplied with each clamp. This bracket comprises a flat side portion 40 over which the recess 12 of the clamp will fit and an end wall or flange 41 at right angles to the side 40 and against which the contact elements 17 can rest. Also this bracket has side walls 42 provided with perforated flanges 43 through which screws or bolts may be inserted to secure the bracket to any supporting means from which the clamp is to be supported. For instance, the bracket may be secured to a rail or flat side of a bed which the recess 12 will not fit over or to the side of a wheeled stretcher or to a piece of furniture or to a wall. The clamp is applied to the bracket of Fig. 6 in the same manner in which it is applied to the angle bar 13.

In applying this clamp to a support the locking pin can be retracted by exerting a pull on the knob 34 or it can be retracted by pressing the end of the same against the support to which it is being applied. The locking pin will snap into a locked position as soon as it is clear of the part against which it is pressed. The tapered end 30 of the locking pin wedges against the overhanging part of the support midway between the two points engaged by the two spaced apart contact elements 17. The support is thus engaged at three spaced apart points and the clamp is very firmly secured to the support and will not tilt or rock on the support.

Fig. 8 shows two of these clamps attached to the two spaced apart angle bar side rails 13' of a bed and shows an arch shaped bed cover supporting member 45 carried by these clamps and extending across the bed above the mattress 46, indicated by dot and dash lines, so that the arch member 45 will support bed covers above the mattress far enough so the bed covers will not rest on the body of a person in the bed. The arch 45 can be tubular with its ends fitted over stub posts on the clamp or said arch can have end portions of the type shown in Fig. 7 fitting within suitable sockets in the clamps.

The clamps shown in Figs. 1 to 7 are ordinarily used in an upright position, as shown, but they can be applied horizontal or inverted or at any desired angle.

Fig. 9 shows a clamp of modified form which will fit over and attach to the horizontal flange of an angle bar 49, which may be one side rail of a bed. This Fig. 9 clamp is similar to the one shown in Figs. 1 to 8 in that it comprises a U shaped member having a shorter side 50, a longer side 51 and preferably three external flanges 52, two of which are shown, with the two outside flanges 52 terminating in contact elements 53 like the flanges 17 previously described. In the clamp shown in Fig. 9 the post supporting boss is omitted and the boss 54 which extends crosswise of the end of the longer side 51 is modified in shape so that it will receive and support a post 55 or like member. The post 55 may be of any desired length and shape or it may be one end portion of an arch member similar to the arch member 45 of Fig. 8. The boss 54 has a tubular bore 56 into which the post 55 fits loosely enough so that it will not bind and will move freely in longitudinal directions. The lowermost end of the bore 56 is enlarged by a counterbore 57 and the post 55 has two spaced apart annular grooves within which are two snap rings 58 and 59. One snap ring 59 operates within the counterbore 57. The other snap ring 58 is positioned outwardly from but adjacent to the end of the boss 54 remote from the counterbore. The snap rings are far enough apart so they allow a substantial amount of longitudinal movement of the post 55. The lower end 60 of the post 55 is preferably of conical shape and this lower end 60 functions as a latch bolt which engages with the angle bar 49 and firmly locks the clamp thereto. The weight of the post 55 holds the lower end 60 of said post in engagement with the angle bar 49 and said end 60 is retracted clear of the angle bar 49 by exerting a lift on the post 55. Thus the use of a spring is dispensed with in the construction shown in Fig. 9.

Obviously posts of telescopic form affording adjustment in height can be supported from any of the clamps herein disclosed.

The foregoing description and accompanying drawings clearly disclose preferred embodiments of this invention but it will be understood that changes may be made within the scope of the following claims.

We claim:

1. In a holding device, a U shaped member having two relatively wide flat parallel sides of unequal length spaced a short distance from each other providing therebetween a relatively deep narrow recess capable of receiving a flat support of slightly less width than said recess, the longer side overhanging and extending beyond the shorter side at the open end of said U shaped member; two outwardly extending flanges perpendicular to the respective edge portions of said sides and extending entirely around the two sides and the closed end of said U shaped member and protruding a short distance beyond the end of the shorter side of said U shaped member in forming spaced apart bearing elements on the shorter side of the U shaped member adjacent the open end of the same; a post carried by the longer side of said U shaped member and protruding beyond the end of said longer side with the axis of the post substantially parallel to said longer side; and a locking pin reciprocably supported by the overhanging end portion of said longer side outwardly from the adjacent end of said shorter side and substantially midway between said two bearing elements, said locking pin being movable into a locking position in which it extends at least partly across the opening between the two sides of said U shaped member outwardly from the end of the shorter side of the U shaped member.

2. A holding device for attachment to an angle shaped support having two flanges at right angles to each other, comprising a U shaped member of substantial width having two parallel sides of unequal length spaced a short distance apart and receiving therebetween one flange of the support with both sides of the U shaped member in close relation to the flange when the U shaped member is on the support, the shorter side of said U shaped member having two widely spaced apart protruding flange contacting elements providing two point contact with a flange of the support when the U shaped member is on the support, the longer side of said U shaped member overhanging and extending beyond the shorter side and having thereon a tubular pin guide positioned substantially midway between said two flange contacting ele-

ments and beyond the end of said shorter side and extending crosswise of said two sides; post supporting means on the longer side of said U shaped member; and a spring pressed locking pin movable in said pin guide, said locking pin having a tapered end portion extending over and locking tightly in engagement with the angle shaped support when the U shaped member is on the support, the locking pin and flange contacting elements providing three spaced apart points of contact with the support resisting tilting and securely anchoring the U shaped member to the support.

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