United States Patent

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[54] QUICK RELEASE HOLDER

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[52] **U.S. Cl.** ..... **248/113,** 24/249 FP

[51] **Int. Cl.** **A46b 17/02**

[58] **Field of Search** ..... 248/113; 24/244, 264, 249 FP, 24/249 PP, 254; 211/65, 66

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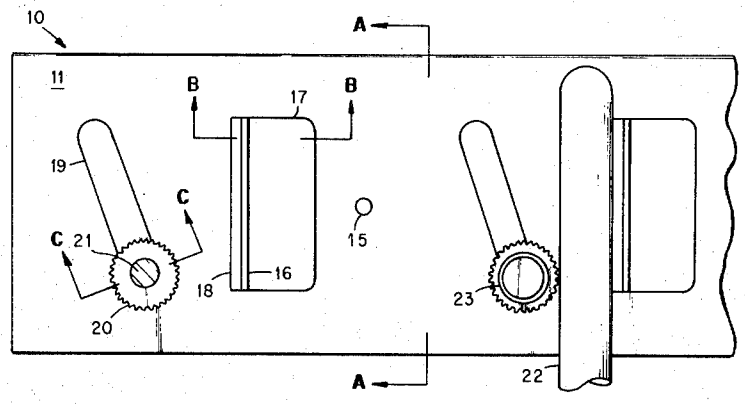
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[57] **ABSTRACT**

An easily fabricated quick release holder for handled objects such as brooms, mops, garden tools, and the like. The object is gripped between a fixed planar gripping element and a roller gripping element that moves angularly to the fixed element (through the force of gravity). The gripping surfaces of both the fixed and moveable elements are resilient elastomers, having oppositely directed serrations, for additional gripping action.

3 Claims, 6 Drawing Figures



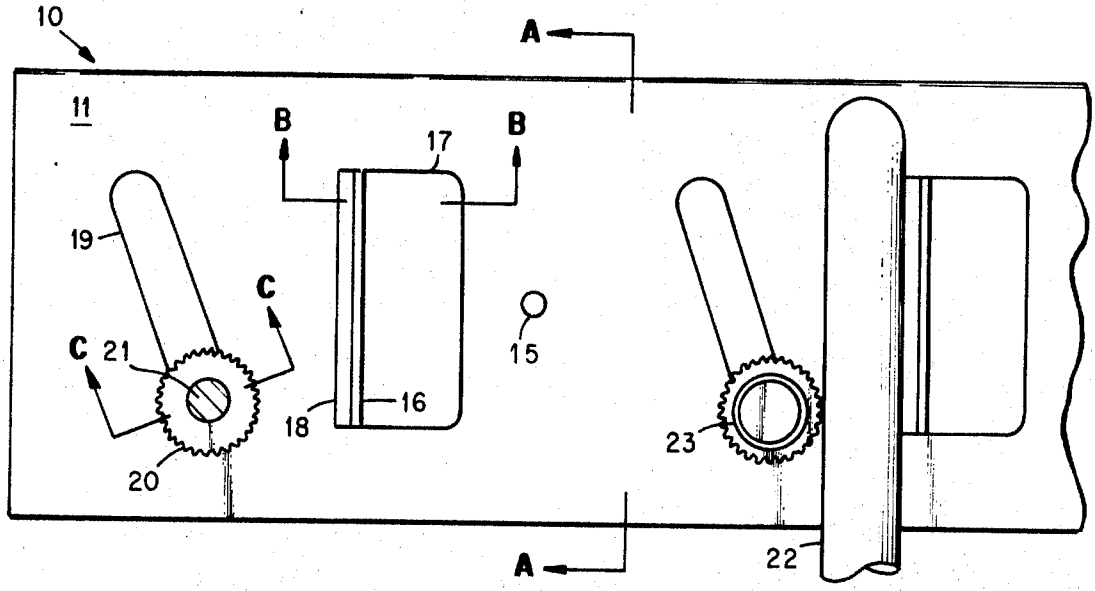


Fig. 1

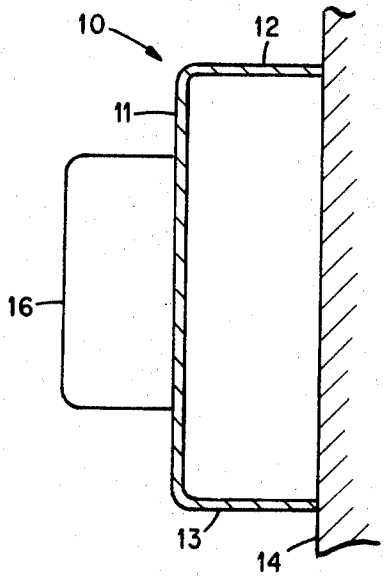


Fig. 2

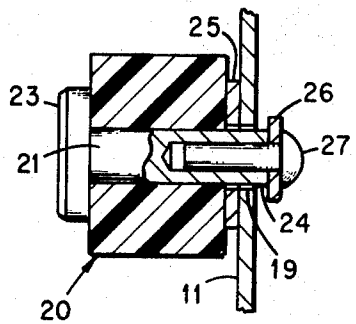


Fig. 4

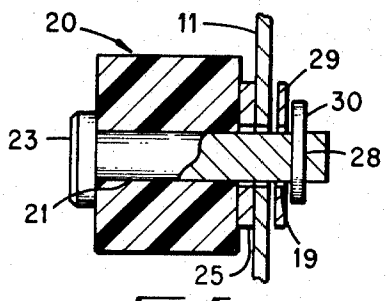


Fig. 5

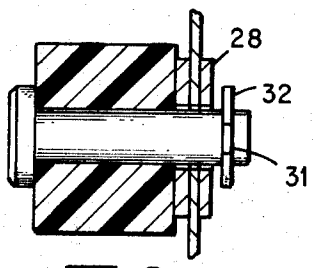


Fig. 6

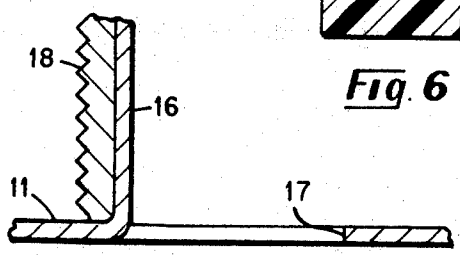


Fig. 3

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QUICK RELEASE HOLDER

The present invention relates generally to gravity operated quick release holders for elongate objects and more particularly to a holder of this type for the support of brooms, mops, garden tools, fishing rods, and the like objects. Elongate objects of other than circular cross section may similarly be supported thereby.

Heretofore the holders of the prior art have several deficiencies. Principally, they necessitate the fabrication of either a large number of components or parts requiring several forming operations. As a result, satisfactory holders have been generally expensive to manufacture. Furthermore, the prior art devices have generally been constructed with a limited application in mind. Structures that will satisfactorily support a broom or other relatively light object but will not satisfactorily support relatively heavy objects, such as some garden tools or even a large mop when saturated with water.

Therefore it is the principal object of the present invention to provide a universal holder adaptable to the supporting of many types of objects, and whereby the holder may be fabricated easily on a large scale with a small number of fabrication steps. The solution to this and other objects of the present invention will become apparent upon a consideration of the following detailed description.

Briefly the present invention may be described as a shallow U-shaped channel member, adapted for horizontal attachment to a wall or the like, to provide a face surface spaced apart from the wall by the legs thereof and upon which is positioned one or more support stations for elongate objects. Each support station consists of a vertically oriented planar abutment and a coacting roller element supported on captive shaft which, in turn, projects vertically from the face of the channel and moves in a slot in the face of the channel so as to move the roller closer to the abutment as the shaft moves downwardly in the slot. The surface of roller and the confronting surface of the abutment are resilient so as to better grasp an elongate object therebetween aided by the weight of the elongate object.

The present invention is illustrated in the attached drawings, wherein:

FIG. **1** is a partial front view of a holder for a variety of articles according to the present invention;

FIG. **2** is a transverse cross sectional view of the holder taken at A—A of FIG. **1**;

FIG. **3** is a cross sectional view of a portion of the holder taken at B—B of FIG. **1**;

FIG. **4** is a cross sectional view of a portion of the holder taken at C—C of FIG. **1**, illustrating one embodiment of the roller element;

FIG. **5** is a cross sectional view, similar to FIG. **4** illustrating a second embodiment of the roller element of the holder; and

FIG. **6** is a cross sectional view of still another embodiment of this portion of the holder.

Referring now more specifically to FIGS. **1** and **2**, a U-shaped channel member **10** is oriented so as to provide a forward face **11** with rearwardly extending sides **12, 13**, the edges of which contact a supporting wall **14** or like surface. The channel member **10** is adapted for horizontal attachment on the wall **14** as with screws (not shown) mounted through holes **15** in face **11**. Illustrated in FIG. **1** are two object support stations; however, more or less stations may be provided on the channel member **10**. Each station is formed by identical members. A planar vertically oriented abutment **16** projects perpendicularly from face **11**. This abutment **16** may be a separate element attached to the face **11**, but preferably is formed by cutting through the face **11** as at **17** and bending a portion of face **11** to thereby produce the abutment. One planar surface of the abutment **16** is covered with a pad **18** of resilient elastomer of a type described hereinafter. This may be more clearly seen in FIG. **3**.

The face **11** is provided with an elongated slot **19** therethrough which is oriented at, for example, 20° with respect to the padded surface of abutment **16**. This angle may range between about 10° and 45°. The lower portion of slot **19** is closer to the abutment **16** than is the top. The length of slot **19** is approximately the same as the vertical height of abutment **16**.

A roller element **20** which may be formed entirely from the same material as pad **18**, as shown, or may be coated therewith, is mounted on a shaft **21** projecting perpendicularly from face **11**. This shaft is supported and slidable in slot **19** in a manner described below. The diameter of the roller **20**, and the spacing between the bottom of the slot **19** and the abutment **16** are mutually selected so as to grasp an elongate object of smallest desired cross section when the roller **20** and shaft **21** are at their lowest position with respect to slot **19**.

One embodiment for supporting shaft **21**, with the encircling roller **20**, within slot **19** is illustrated in FIG. **4**. Shaft **21** is provided with an integral head **23** at one end to retain the roller **20**, and at the other end with a central recess **24**. The shaft **21** passes through slot **19** in face **11** with a first annular spacer, such as washer **25**, placed between roller **20** and the outer surface of face **11**. A second annular washer **26**, disposed against the recessed end of the shaft **21** is held in place by a rivet **27** fitted into recess **24**. Sufficient spacing between surfaces of roller **20**, washer **25**, face **11** and washer **26** is provided to permit easy movement of shaft **21** along slot **19** without permitting shaft **21** to deviate substantially from a perpendicular orientation to face **11**. In this manner, no other support is required for roller **20**.

A second embodiment of roller support is illustrated in FIG. **5** wherein the shaft **21** is provided with a transverse hole **28** near the unheaded end. As in FIG. **4**, a washer **25** is placed between roller **20** and the outer surface of face **11**. A second shaft encircling washer **29** is held in proximity of the back of face **11** by a pin **30**, such as a roll pin, inserted in hole **28**. As above, some looseness is provided to permit free movement of shaft **21** along slot **19**.

Still another embodiment of the roller mounting means is illustrated in FIG. **6**. This is generally similar to that of FIG. **5** except an annular groove **31** is provided about shaft **21** near the unheaded end behind face **11** and a split ring **32** inserted in this groove **31** holds washer **29** in close proximity to the rear of face **11** with the same spacing as hereinabove described. In this and the embodiment illustrated in FIGS. **4** and **5**, the washer **29** and washer **27** have sufficient outer diameters to prevent escape through the slot **19**.

As aforementioned, abutment **16** has a pad **18** attached thereto of a resilient elastomer and the roller **20** is either formed from the elastomer or coated therewith. These surfaces are important for the holding of an object **22** therebetween. Of particular value in this application is a 40–45 durameter rubber, either natural or synthetic, with a serrated surface, for example, butyl rubber. The serrations are preferably oriented in opposite directions with those on pad **18** in a vertical direction and those on the roller **20** being parallel to the axis of shaft **21**, as illustrated. This orientation assists in the gripping of an object **22** by these surfaces.

The operation of the present invention, while evident from the foregoing detailed description, is as follows. Normally, the weight of the roller **20** and its shaft and attachments causes the roller to assume a position with the shaft **21** at the bottom of slot **19**. When an object **22**, such as a broom handle, is to be held in a support station, the object **22** is inserted between the roller **20** and padded abutment **16** and this insertion moves the shaft **21** upward in slot **19** so as to accommodate the object between the gripping surfaces. Thereafter, the weight of the object causes a wedging action to securely grip the object. As mentioned above, the substance of the gripping surfaces and the serrated surfaces assists in the gripping action. This permits use of the holder for a variety of objects that vary substantially in weight and cross section.

In addition to the improved gripping surfaces, the present invention provides several advantages. In particular, the unit may be easily fabricated. The channel member **10**, the slots **19**, and abutments **16** of any desired number, are easily stamped from sheet metal, for example, 16 gauge steel, aluminum or like materials. The roller **20** is easily mass-produced

and the pad **18** is easily stamped or otherwise cut from bulk sheet material. The shafts are commercial items which are easily formed to attach the selected securing means, particularly of the types shown in FIGS. **5** and **6**. Furthermore, these components of the roller mounting are easily disassembled for replacement of any part thereof.

I claim:

1. In a quick release holder comprising a base member, a fixed vertical gripping means projecting perpendicularly from said base member, a moveable gripping means supported from said base member for movement toward and away from said fixed gripping means in a direction inclined to the fixed means so as to produce a gripping force upon an object placed between said fixed and moveable gripping means, said moveable gripping means comprising a projecting shaft passing through a slot in said base member, said shaft having one end headed and the other end unheaded, a cylindrical resilient elastomer roller encircling a portion of said shaft with one side of said roller in contact with the head of said shaft; a first annular spacer encircling said shaft and spaced between the opposite side of said roller and said base member, and locking means on the unheaded end of said shaft behind said base member to prevent the escape of said shaft from said slot but permit movement of said shaft along said slot; the improvement comprising said shaft locking means having an annular spacer having a diameter greater than the width of said slot and a rivet inserted through said washer into the unheaded end of said shaft.

2. The shaft locking means of claim **1** which comprises a second annular spacer encircling said shaft near the unheaded end thereof, said second annular spacer having an outer diameter greater than the width of said slot, and a spacer retaining pin passing transversely through said unheaded end of said shaft.

3. The shaft locking means of claim **1** comprising a second annular spacer encircling said shaft near the unheaded end thereof, said second annular spacer having an outer diameter greater than the width of said slot, and a spacer retaining ring engaging an annular groove near the unheaded end of said shaft.

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