Sept. 15, 1959 H. L. DALTON 2,904,299

ARTICLE HOLDING ATTACHMENT WITH BALL DETENT TRUNNION

Filed June 13, 1955

Fig. 1

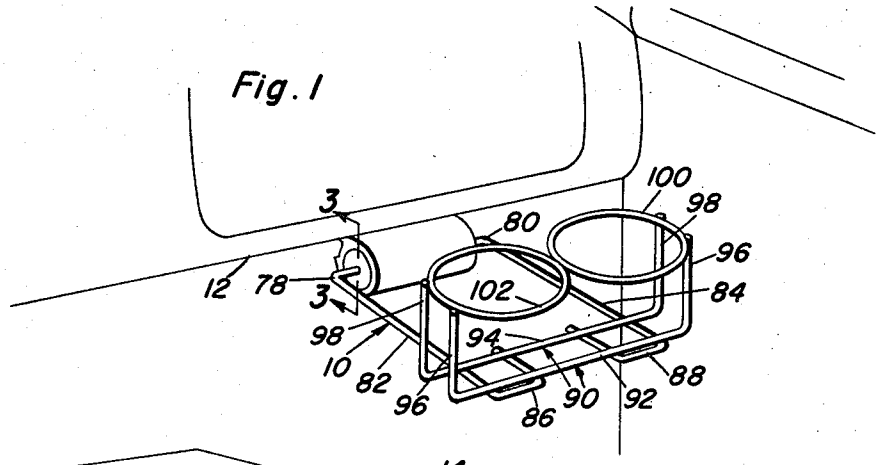


Fig. 2

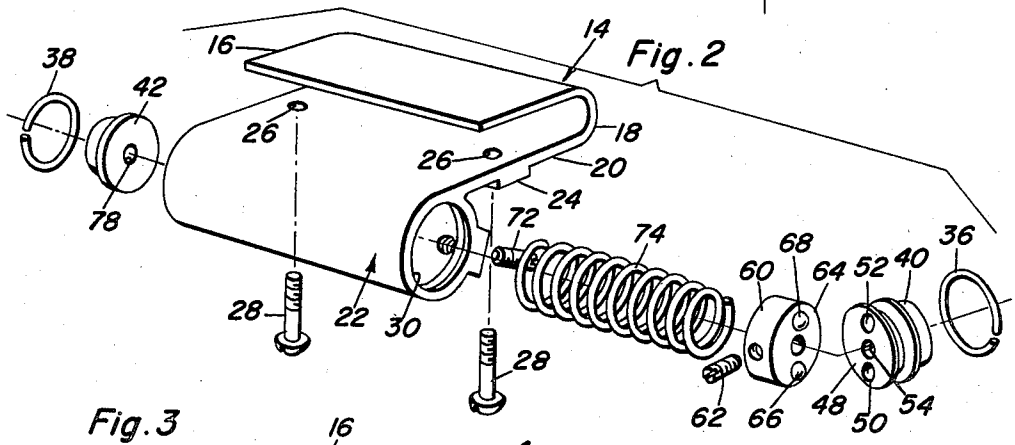


Fig. 3

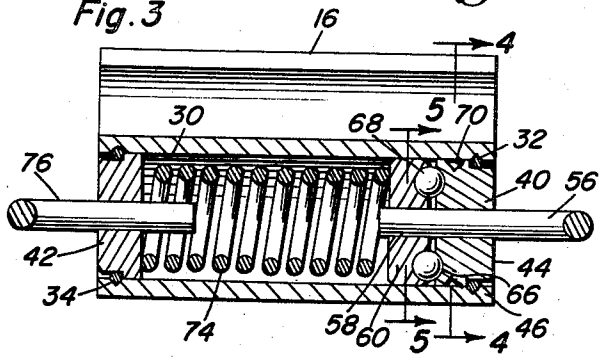


Fig. 5

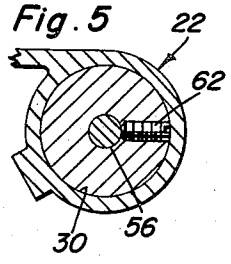
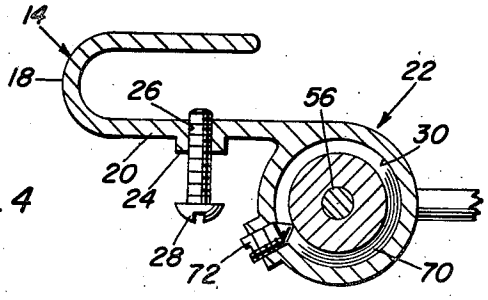


Fig. 4



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United States Patent Office 2,904,299 Patented Sept. 15, 1959

2,904,299

ARTICLE HOLDING ATTACHMENT WITH BALL DETENT TRUNNION

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Application June 13, 1955, Serial No. 514,960

6 Claims. (Cl. 248—293)

This invention relates to new and useful improvements in article holding trunnion supports and more particularly to improvements on my previous Patent No. 2,574,250 issued November 6, 1951.

Heretofore there has been provided many types of swinging supports for temporarily holding or retaining articles while in an operative position, and then after no longer being needed, being rotated or swung into a stored position. However, the locking and unlocking features of such devices required constant adjustment of complicated locking features that were necessarily high in the cost of manufacture.

Therefore, the primary object of this invention is to provide an article holding attachment with a ball detent trunnion for carrying a support which is easily attached, easily adjusted, and is relatively inexpensive to manufacture.

A further object of this invention is to provide an article holding attachment with a ball detent trunnion that is relatively light and compact and yet of sufficient strength to hold the articles placed therein.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of the ball detent trunnion shown attached to the lower edge of an automobile dash board, and carrying an article holder in the trunnions;

Figure 2 is an enlarged, exploded, perspective view of the ball detent trunnion of the article holding attachment;

Figure 3 is an enlarged sectional view taken substantially along section line 3—3 of Figure 1;

Figure 4 is an enlarged, sectional view taken substantially along section line 4—4 of Figure 3; and

Figure 5 is an enlarged sectional view taken substantially along section line 5—5 of Figure 3.

Referring now to the drawings it will be noted that the article holding attachment is designated generally by the reference numeral 10, and is intended for attachment to the lower edge of a support, here shown as an automobile instrument panel 12.

As is best seen in Figure 2, the attachment 10 consists of a horizontally disposed generally U-shaped portion, designated by the reference numeral 14. The portion 14 consists of a flat upper horizontal flange 16, the U-bend 18, and a flat lower horizontal connecting flange 20. The flange 20 is parallel to and in spaced relation to flange 16 and terminates in a horizontal cylindrical bearing member, designated generally by the reference numeral 22. The flange 20 is suitably ribbed with a reinforcing rib 24 upon the lower surface thereof and a pair of tapped holes 26 are provided in rib 24 to receive clamping screws 28.

The bearing member 22 is suitably machined internally

to form a bore 30 which is of substantially an equal diameter throughout and has at each end thereof retaining ring grooves 32 and 34. The grooves 32 and 34 receive two retaining rings 36 and 38 respectively which in turn retain two stepped trunnions 40 and 42 within the bore 30. The trunnion 40 has an outer face portion 44 which is in coplanar relation with one end 46 of the bearing member 22 and an inner face 48 in which there are formed two suitable seats 50 and 52. The seats 50 and 52 are 180° apart and an equidistance from the center line of the trunnion 40. The trunnion 40 also has suitably formed through the center thereof an opening 54 through which a cylindrical frame member 56 extends and is rotatable therein. The frame 56 extends into the bore 30 and receives on an end 58 thereof a locking disk 60. The locking disk 60 is being shown as attached to the end 58 by means of a set screw 62, however, this could also be achieved by welding or other permanent means. The disk 60 has inserted into suitably formed apertures of a face 64, which is adjacent to the inner face 48 of the trunnion 40, a pair of hardened balls 66 and 68. The balls 66 and 68 are selectively engageable with the seats 50 and 52 upon rotation of the locking disk 60.

As is best seen in Figure 3, the trunnion 40 has formed about the circumference thereof a groove 70 which is provided to receive the inner end of a setscrew 72 provided in the bearing member 22, which locks the trunnion 40 against rotation. There is disposed within the bore 30 a spring 74 which exerts pressure axially outward against the trunnion 42 and the locking disk 60 thus tending to hold the balls 66 and 68 in engagement with the seats 50 and 52 after engagement therein. It should be noted that there is also provided a frame member 76 which is received in an opening 78 of the trunnion 42 and is rotatable therein.

As is best seen in Figure 1, the frame members 56 and 76 extend outwardly from the trunnions 40 and 42 a sufficient distance to clear the bearing member and are then bent at approximately 90° angle, as shown at 78 and 80. In an operative position the frame members 56 and 76 extend outwardly in a generally horizontal position and form elongated portions 82 and 84 respectively which are parallel and terminate in reversely bent portions 86 and 88 respectively. Carried by the reversely bent portions 86 and 88 are a pair of U-shaped, spaced yokes, referred to in general by the reference numeral 90. The yokes 90 consist of elongated straight portions 92 and 94 respectively which are suitably attached and at right angles to the reversely bent portions 86 and 88 and in parallel spaced relation. The straight portions 92 and 94 terminate in upstanding ends 96 and 98 which, in turn, are attached to and carry a pair of circular article retaining rings 100 and 102. The rings 100 and 102 are in overlying relation to the elongated straight portion 92 and 94 and the reversely bent portion 86 and 88. Although the rings 100 and 102 are illustrated as being circular, it should be understood that any suitable shape could be used.

In assembly, preparation for use, and operation the procedure would be as follows: The trunnion 40 is placed on the frame 56 with the seats 50 and 52 facing toward the end 58, the locking disk 60 is then placed on the end 58 with the locking balls 66 and 68 engageable in the seats 50 and 52 and the setscrew 62 is then tightened on the end 58. The entire assembly is then inserted into the bore 30. The snap retaining ring should then be snapped into place in the groove 32. The trunnion 42 is then placed on the frame member 76, the spring 74 inserted in the bore 30, the trunnion 42 forced into the bore 30 against the pressure of the spring 74 and retaining ring 38 snapped into place within the groove 34. The

ball detent trunnion, with the article carrier attached is then ready for attachment to a suitable support.

A portion of the support is inserted between the flange **16** and the flange **20** and the clamping screws **28** are tightened, thereby holding the entire assembly in a relatively immovable position. The frame members **82** and **84** are then rotated to a horizontal or operative position, after which the setscrew **72** is tightened in the groove **70** thus preventing further rotation of the trunnion **40**. The article carrier is now adjusted for use and no further adjusting is necessary. When it is desired to place the article carrier in a stored position it may be rotated downward 180° and the balls **66** and **68** will retain it in a stored position.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. An article holding attachment adapted to be attached to a support, said attachment comprising a substantially tubular bearing member, a pair of trunnions mounted in the end portions of said member, carrier means received in said trunnions, means securing one of said trunnions against rotation and axial movement in said member, said one trunnion having locking recesses, a locking disk secured to said carrier, said disk carrying locking balls for reception in said recesses, and resilient means in said member for urging said balls into frictional engagement with said recesses for holding said disk and said carrier means secured thereto in a predetermined position.

2. An article holding attachment adapted to be attached to a support, said attachment comprising a substantially tubular bearing member, a pair of trunnions mounted in the end portions of said member, carrier means received in said trunnions, means securing one of said trunnions against rotation in said member, said one trunnion having locking recesses, a locking disk secured to said carrier, said disk carrying locking balls for reception in said recesses, and resilient means in said member for urging said disk and said balls carried thereby into frictional engagement with said recesses for holding said carrier means in a predetermined position, a pair of retainer rings for retaining said trunnions against axial movement within said member.

3. In an article holding device adapted for attachment to an automobile instrument panel including a horizontally disposed, generally U-shaped mounting bracket, a tubular bearing member carried by said U-shaped bracket, a pair of trunnions mounted in the end portions of said bearing member, a pair of retainer rings for retaining said trunnions in said member, carrier means received in said trunnions and passing axially therethrough, means adjustably securing one of said trunnions against rotation in said member and having locking recesses on the inner face thereof, a locking disk secured to said carrier, said locking disk carrying locking balls in alignment with the recesses for reception in said recesses, resilient means within said member for urging said disk toward the adjacent trunnion thereby urging the balls into frictional engagement with said recesses whereby said disk and said carrier means secured thereto will be locked in a preselected position.

4. In an article carrier having a supporting bracket and a rack with a laterally extending end, that improvement of a bearing assembly comprising a hollow housing rigidly carried by the bracket, a trunnion rigidly mounted in one end of said housing, said trunnion including a central opening rotatably receiving the laterally extending end of the rack, a locking disk rotatably disposed in said housing interiorly of the trunnion with the laterally extending end of the rack secured rigidly thereto for swinging movement of the rack about an axis defined by the longitudinal axis of the aperture in the trunnion, a coil spring disposed within the housing interiorly of the disk, said spring having one end anchored in relation to the housing and the other end engaged with the disk for resiliently urging the disk towards the trunnion, and friction detent means disposed between the disk and trunnion for releasably retaining the disk in adjusted angular relation to the trunnion.

5. The bearing assembly as set forth in claim 4 wherein said detent means includes a flat face on the disk and a flat face on the trunnion, said faces being disposed in facing relation with each face having at least one recess therein located equally from the center of the trunnion for alignment with each other when the disk is disposed in predetermined angular relation to the trunnion, and a ball detent carried by one of said recesses for frictional locking engagement with the other of said recesses thereby releasably retaining the disk and trunnion in predetermined angular relation, the resiliency of the coil spring providing for axial movement of the disk away from the trunnion thereby enabling the ball detent to ride out of the said other recess and along the flat face adjacent thereto.

6. A support for a rack having a laterally extending end comprising a bracket for engagement with a supporting member, a hollow housing rigidly carried by the bracket, a trunnion rigidly mounted in one end of said housing, said trunnion including a central opening rotatably receiving the laterally extending end of the rack, a locking disk rotatably disposed in said housing interiorly of the trunnion with the laterally extending end of the rack secured rigidly thereto for swinging movement of the rack about an axis defined by the longitudinal axis of the aperture in the trunnion, a coil spring disposed within the housing interiorly of the disk, said spring having one end anchored in relation to the housing and the other end engaged with the disk for resiliently urging the disk towards the trunnion, and friction detent means disposed between the disk and trunnion for releasably retaining the disk in adjusted angular relation to the trunnion.

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