June 26, 1934. E. W. LARSEN 1,964,585

SUPPORT FOR ARTICLES

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Fig. 1

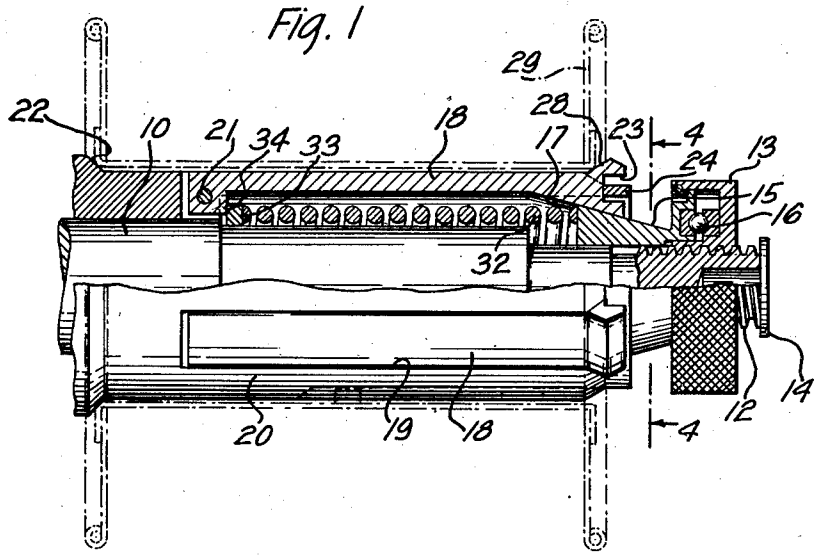


Fig. 4

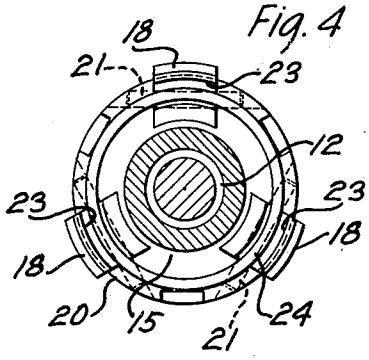


Fig. 5

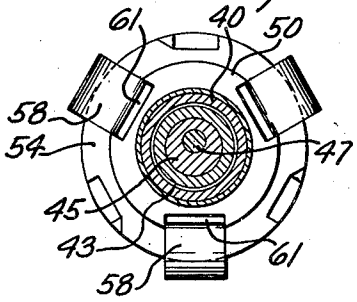
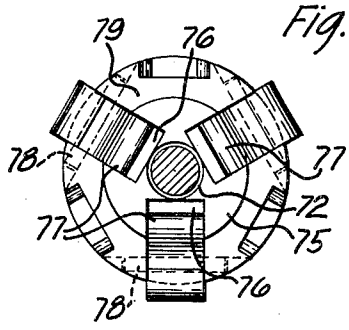


Fig. 6



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SUPPORT FOR ARTICLES

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Fig. 2

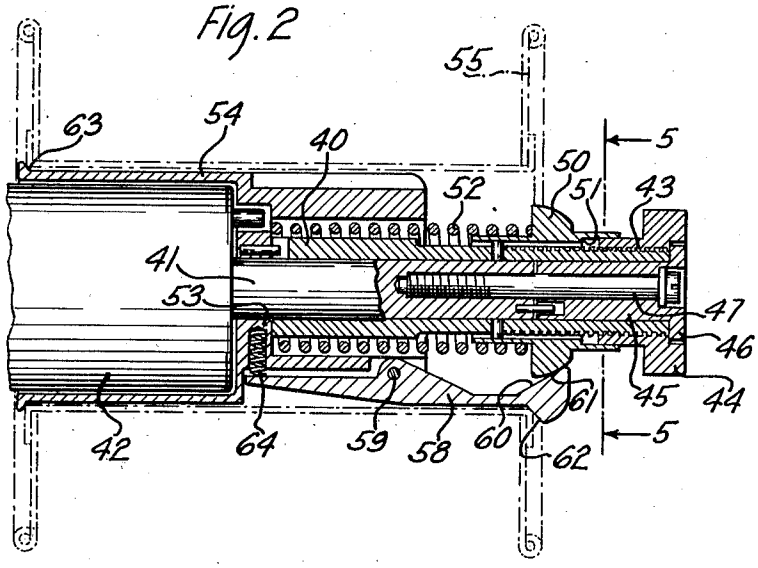
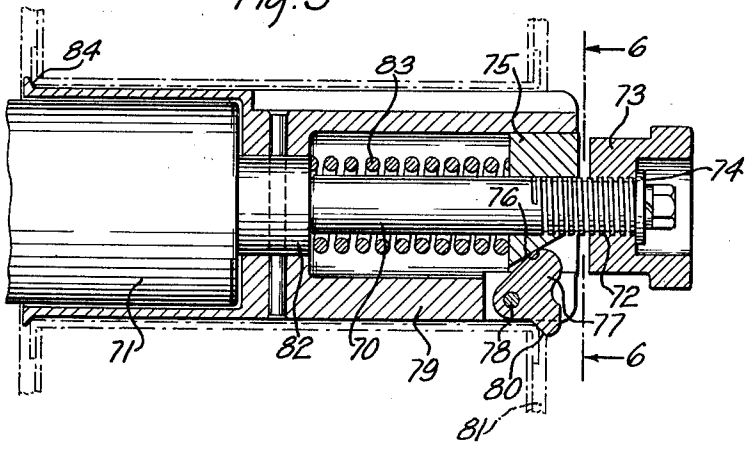


Fig. 3



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Patented June 26, 1934

1,964,585

UNITED STATES PATENT OFFICE

1,964,585

SUPPORT FOR ARTICLES

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Application February 3, 1932, Serial No. 590,542

5 Claims. (Cl. 242—72)

This invention relates to a support for articles, and more particularly to a supporting arbor for spools, reels, or the like.

An object of the invention is to provide a safe, efficient and practical device for supporting articles.

In accordance with one embodiment, the invention contemplates a reel supporting arbor, having pivotally supported at the outer end thereof locking jaws which are normally urged into locking relation with a reel, disposed upon the arbor, by a spring actuated cam faced element. The cam faced element and the spring for actuating it are disposed concentric with the shaft upon which the arbor is mounted, one end of the shaft being threaded to receive an internally threaded member for moving the cam faced member against the force of the spring to allow the locking jaws to swing about their pivots so that the reel may be removed from the arbor.

Other features and advantages of this invention will be more clearly understood from the following detailed description taken in connection with the accompanying drawings, in which

Fig. 1 is a longitudinal sectional view of one form of the invention;

Fig. 2 is a longitudinal sectional view of another form of the invention;

Fig. 3 is a longitudinal sectional view of still another form of the invention, and

Figs. 4, 5 and 6 are sectional views taken respectively along the lines 4—4, 5—5 and 6—6 of Figs. 1, 2 and 3.

Referring now to the drawings, numeral 10 (Fig. 1) designates a shaft, one end of which is journaled in a suitable support (not shown) and the other end has a reduced threaded portion 12 upon which an internally threaded member 13 is disposed. A retaining member 14 extends into an aperture in the end of the threaded portion 12, is pinned in place and has an annular collar for limiting the movement of the member 13 to the right. A cam faced member 15 is movably mounted upon the reduced portion 12 of the shaft 10 and has one end disposed in abutting relation with a bearing 16 mounted in the threaded member 13. The peripheral surface of the cam faced member 15 is tapered and engages similarly tapered surfaces 17 of locking jaws 18 which are disposed in equally spaced longitudinally extending slots 19 of an arbor 20 and pivotally secured in place as at 21. Adjacent the inner extremity of th earbor 20 a tapered shoulder 22 is formed serving as an abutment for a reel.

The forward ends of the locking jaws 18, that is, the ends adjacent the cam faced member 15, are recessed as at 23 for receiving integral retaining portions 24 formed by the slots 19 of the arbor 20. The locking jaws 18 have tapered locking surfaces 28 arranged to be forced into locking engagement with a reel 29 when placed upon the arbor 20.

Disposed concentric with the shaft 10 is a spring 32, one end of which abuts the cam faced member 15, while the other end abuts an annular member 33 which is disposed concentric with the shaft 10 and is forced by the spring against projections 34 of the locking jaws 18 at positions away from the pivotal centers of the locking jaws for a purpose hereinafter described.

The operation of this form of the invention, to remove the reel from the arbor, consists of rotating the member 13 in a clockwise direction, looking from the right (Fig. 1), to force the cam faced member 15 inwardly against the compression of the spring 32, during which movement the force of the spring causes the locking jaw 18 to move about their pivots 21, due to the engagement of the annular member 33 with the projections 32, as the cam faced member 15 is moved inwardly to allow inward movement of the outer ends of the locking jaws. As soon as the outer ends of the locking jaws are moved inwardly toward the shaft 10, sufficiently to free the reel 29, the reel may be removed from the arbor and another reel disposed thereupon.

In locking the reel upon the arbor, the threaded member 13 is rotated in a counterclockwise direction, looking from the right (Fig. 1), which rotation allows the spring 32 to force the cam faced member 15 to the right, forcing the locking jaws 18 outwardly about their pivots until the tapered surfaces 28 thereof are moved into locking engagement with the outer head of the reel, forcing the inner head into close engagement with the tapered shoulder 22 of the arbor 20. It will be apparent that the spring 32 aided by the cam faced member 35 forces the locking jaws 18 into locking relation with the reel and that even though the force of the spring 32 is sufficient to move the locking jaws inwardly toward the shaft 10 when the cam faced member is moved to the left, it is not sufficient to prevent a positive locking of the reel upon the arbor. In this locked position, the nut or threaded member 13 is loose on the threaded portion 12 but is prevented from coming off by the stop 14.

If the arbor is revolved without a reel being placed thereon, the locking jaws 18 tend to fly

outward around the pivot 21 but are restrained by the retaining portion 24.

The form of the invention shown in Fig. 2 is similar to the form shown in Fig. 1 in that the locking jaws are pivotally mounted and normally urged into locking positions by a spring pressed cam faced member. In this form a hollow shaft 40 is mounted upon a solid shaft 41, the latter being journaled in a suitable support 42. The outer end of the hollow shaft 40 is threaded as at 43 and has an internally threaded member 44 disposed thereupon, which is limited in its movement to the right by a retaining member 45 extending into the outer end of the hollow shaft 40 and having an annular portion 46 receivable in an annular recess of the member 44. The retaining member 45 is secured to the shaft 41 by any suitable means, such as a screw 47.

Mounted concentric with the shaft 40 is a cam faced member 50 having integral sleeve portions annular in general contour and extending from each side thereof, one of the sleeve portions extending over a reduced portion of the internally threaded member 44 and forming an abutting surface 51 while the other sleeve portion forms a support for one end of a spring 52. The other end of the spring 52 abuts against a shoulder 53 of an arbor 54 arranged to receive a reel 55. Disposed in spaced slots in the arbor 54 are locking jaws 58 pivotally supported at 59 and having tapered surfaces 60 which engage cam surfaces 61 of the cam faced member 50. Opposite the tapered surfaces 60 are transversely extending locking surfaces 62 arranged to engage the reel 55 at spaced positions to force the reel into intimate engagement with a shoulder 63 of the arbor 54 and hold the reel against displacement. The inner ends of the locking jaws 58 are disposed in engagement with springs 64, which normally urge the locking jaws about their pivots 59 to force the outer ends thereof away from the reel 55.

During the operation of this form of the invention to remove the reel from the arbor, the internally threaded member 44 is rotated in a clockwise direction, looking from the right (Fig. 2) causing a movement thereof relative to the shaft until its inner ends strike the shoulders 51 of the cam faced member 50 and by further movement of the internally threaded member 44 the cam faced member 50 will be moved to the left against the compression of the spring 52, allowing the outer ends of the locking jaws to be moved inwardly about their pivots 59 by springs 64. When the cam faced member 50 has been moved to the left, a sufficient distance to allow the locking jaws 58 to drop out of general alignment with the inner surface of the reel drum, the reel 55 may be removed from the arbor 54 and another reel may be disposed thereupon.

The second reel may be locked in place by rotating the member 44 in a counterclockwise direction, looking from the right (Fig. 2), allowing the cam faced member 50 to be moved to the right by the force of the spring 52, the movement of the cam faced member causing the locking jaws to be swung about their pivots 59 against the tension of the springs 64 until the locking surfaces 62 of the locking jaws 48 are forced into intimate engagement with the reel. In this locked position the threaded member 44 is loose on the threads 43 but is prevented from coming off by stop 46.

The form of the invention shown in Fig. 3 is similar to the forms shown in Figs. 1 and 2 in that the locking jaws are pivotally mounted and are normally urged outwardly into locking engagement with a reel by a spring actuated cam faced member. In this form of the invention a shaft 70 has one end journaled in a suitable support 71 and the other end provided with threads 72 upon which is disposed an internally threaded member 73, held against movement in one direction by a retaining member 74. A cam faced member 75 is disposed concentric with the shaft 70 and has tapered cam surfaces 76 disposed at spaced positions around its periphery in engagement with which locking jaws 77 are disposed. The locking jaws 77 are pivotally mounted at 78 in recesses in the outer end of an arbor 79 and have transversely extending locking surfaces 80 arranged to engage the outer end of a reel 81 disposed upon the arbor 79. The arbor 79 is pinned to an enlarged portion 82 of the shaft 70, which forms a collar upon the shaft against which one end of a spring 83 abuts the other end abutting the cam faced member 75. The arbor 79 has tapered abutting shoulder 84 at the inner end thereof in engagement with which the reel 81 is forced when the locking jaws 77 are moved into their locking positions.

In order to remove the reel 81 from the arbor, the threaded member 73 is rotated in a clockwise direction looking from the right (Fig. 3), until it engages the cam faced member 75 and by further rotation of the threaded member 73 the cam faced member will be moved to the left against the compression of the spring 83 until the locking jaws 77 are permitted to be moved inwardly about their pivots 78 sufficiently to free the reel and allow it to be moved from the arbor.

Another reel may be disposed upon the arbor and by rotating the threaded member 73 in a counterclockwise direction, the cam faced member 75 will be moved to the right by the force of the spring 83, moving the locking jaws 77 about their pivots and forcing the locking surfaces 80 into intimate engagement with the reel, which will force the inner end of the reel against the abutting shoulder 84 and lock the reel in place. In this locked position, the threaded member 73 is loose on the thread 72 but is prevented from coming off by the stop 74.

In each form of the invention, the locking jaws are normally urged outwardly about their pivotal supports to lock an article upon the arbor and the ends of the locking jaws are tapered or rounded to aid in the placing of an article such as a reel upon the arbor. Furthermore, the internally threaded members 13, 44 and 73, the purposes of which are to move the cam faced members against the tension of the springs so that the locking jaws may be moved out of their locking positions, rotate freely upon their respective shafts when the articles are locked upon the arbors and are being rotated, and are held against displacement by retaining members so that these members or any other parts will not be thrown from the apparatus while in motion. The forcing of the locking jaws into locking engagement with the article by the springs obviates the necessity of a threaded or other mechanism being used to hold the locking jaws in engagement with the article which would tend to become loosened during the rotation of the arbor.

It should be understood that these features may be employed for locking various articles upon supporting members without departing from the spirit and scope of the present invention.

What is claimed is:

1. In a reel locking device, an arbor for supporting a reel, locking jaws pivotally carried by said arbor, a movable cam member arranged to engage said jaws, resilient means normally forcing said cam member in one direction for forcing the locking jaws in engagement with the reel to lock the reel upon said arbor, means for forcing said cam member against said resilient means for freeing said jaws from engagement with the reel and thereby rendering said resilient means effective for moving said locking jaws out of locking engagement with said reel.

2. In a reel locking device, means for supporting a reel, locking jaws, a cam member disposed in engagement with said jaws, resilient means for moving said cam member in one direction for moving said jaws in engagement with said reel for locking the reel upon said supporting means, and means for moving said cam member against the force of said resilient means, whereby said resilient means is rendered effective for moving said jaws out of locking engagement with the reel.

3. In a reel locking device, an arbor for supporting a reel, a locking jaw carried by said arbor, a shaft within said arbor, a spring pressed cam slidable on said shaft for locking said jaw in engagement with a reel, and a member threaded on the outer end of said shaft and having a diameter not greater than that of said arbor for releasing said cam from locking engagement with said jaw.

4. In a reel locking device, an arbor for supporting a reel, a locking jaw carried by said arbor, a rotatable shaft having one end threaded disposed axially of said arbor, a cam slidably mounted upon said shaft and having a camming surface positioned in engagement with said locking jaw, a spring for normally urging said cam in a direction to move the locking jaw into locking engagement with said reel, and an internally threaded hand-wheel disposed upon the threaded end of said shaft for moving said cam against the force of said spring to release said locking jaws from said reel and movable free of said cam when said locking jaws are in locked position.

5. In a reel locking device, an arbor for supporting a reel, locking jaws carried by said arbor, a rotatable shaft having one end threaded disposed axially of said arbor, a cam slidable upon said shaft, a spring for normally urging said cam in one direction to move said locking jaws into locking engagement with said reel, an internally threaded member disposed upon the threaded end of said shaft for moving said cam in the other direction against the force of said spring to free the locking jaws from said reel and positioned free of said cam when in locking position, and means for limiting the movement of said threaded member in one direction relative to said shaft.

EINER W. LARSEN.