Feb. 14, 1928.

R. A. LETT

1,659,111

ROD CLAMP

Filed Nov. 29, 1924

Fig. 1.

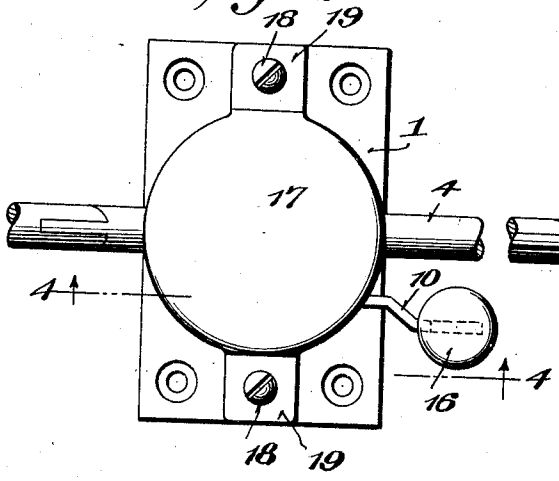


Fig. 3.

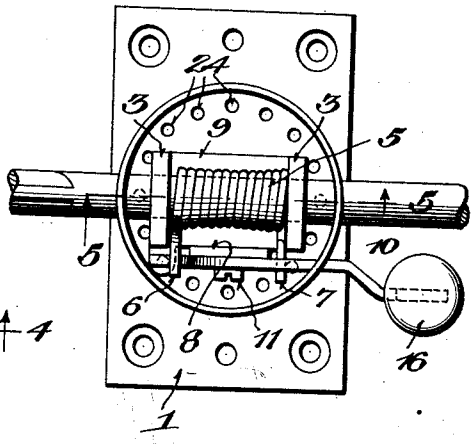


Fig. 2.

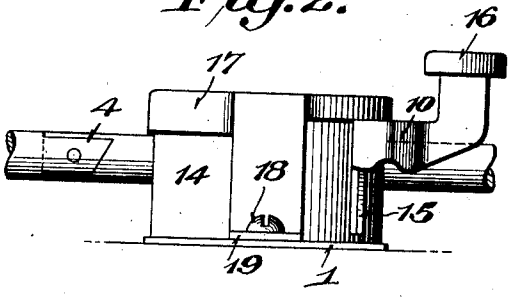


Fig. 4.

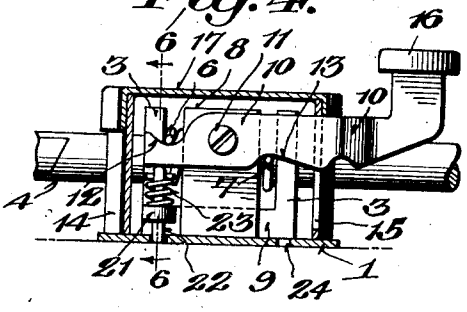


Fig. 5.

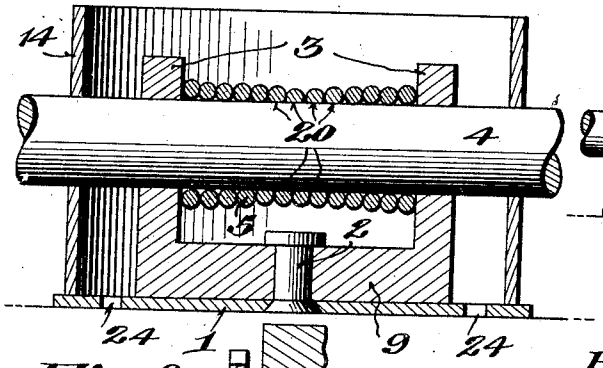


Fig. 7.

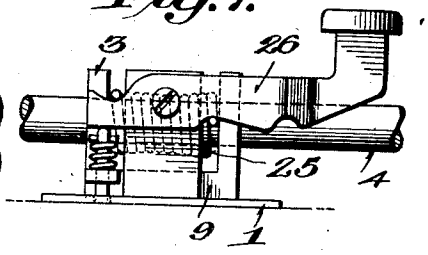
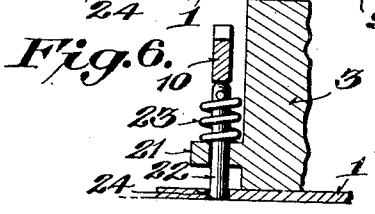


Fig. 6.



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Patented Feb. 14, 1928.

1,659,111

UNITED STATES PATENT OFFICE.

ROYAL A. LETT, OF MIAMI, FLORIDA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO ROBERT E. HALL, OF MIAMI, FLORIDA, AND ONE-THIRD TO GEORGE N. MURDOCK, OF CHICAGO, ILLINOIS.

ROD CLAMP.

Application filed November 29, 1924. Serial No. 752,999.

This invention relates to certain new and useful improvements in a rod clamp, and more particularly to a device of this general type especially adapted for casement window adjusters, transom adjusters, and the like, the primary object being to provide an exceedingly simple construction which will firmly and positively grip the rod and which may readily be released therefrom by a simple operation.

The invention resides broadly, in a coiled, resilient or yieldable member constricted normally about the adjuster rod and having means for imparting relative spreading movement of the opposite end portions of the member in a circumferential, unwinding direction.

The invention further resides in the mounting of the clamping device for adjustment, and means for securing the same fixed on its mounting.

Further, the invention is found to reside in the salient features of construction, and the arrangements and combinations of parts hereinafter described and claimed, reference being made to the accompanying drawing, wherein

Figure 1 is a plan view of the clamp in position on a rod, the latter being shown in fragment;

Figure 2 is a side elevation of the same;

Figure 3 is a top plan view, similar to that of Figure 1, with the cap or cover plate removed;

Figure 4 is a vertical section on line 4—4 of Figure 1;

Figure 5 is a similar view on line 5—5 of Figure 3;

Figure 6 is a sectional view on line 6—6 of Figure 4;

Figure 7 is a modified showing.

Referring more in detail to the accompanying drawing, the numeral 1 designates a base or mounting plate, which may be of a desired shape, depending upon the use to which the clamp is to be applied. Secured upon this mounting 1, as by a pivoting rivet 2, is a preferably U-shaped body providing upstanding, spaced members 3 which are apertured to slidably receive and guide the adjuster rod 4. Confined between the spaced guides 3 is a coiled spring 5 which has its terminals extended laterally to one side, as at 6 and 7, on the opposite sides of a standard 8 rising from the U-body 9 substantially mid-way between the guides and to one side thereof. A lever 10 is fulcrumed on this standard between its ends, by a pivoting screw 11, and has a seat 12 formed in the upper edge on one side of the pivot 11 to constitute a bearing for the terminal 6 of the spring, and on the opposite side of said pivot 11 the lever is provided with a seat 13 in the lower edge to form a bearing for the spring terminal 7. Obviously, the depression of the lever from the position depicted in Figure 4 will effect a spreading of the terminals 6 and 7 and a partial unwinding of the spring. The latter, normally, closely embraces the rod 4 and frictionally grips the same, positively holding the rod against longitudinal movement. The operation of the lever effects a release of the rod by the slight unwinding accorded in spreading the terminals 6 and 7.

A casing 14 incloses the clamping structure, being resting freely on the plate 1 so as to rotate or oscillate with the rod and the body 9, said casing having its cylindrical wall apertured to receive the rod 4 and vertically slitted, as at 15, to receive the extended end of the lever, the latter terminating in a suitable button or handle 16. The cover 17 of the casing is secured to the base by the screws 18 passing through the ears 19, and is thereby held against rotation, the cylindrical wall rotating freely between the base plate 1 and the cover 17.

The construction of the coiled clamping member is particularly important, the convolutions or coils being wound close together so that there will be no longitudinal play between them. In practice, the spring is initially wound on a mandrel of smaller diameter than the rod to which it is to be applied so that when it is applied to the rod its coils will closely hug or grip the same under normal conditions. The length of the coiled spring is substantially equal to the space between the guides 3 to prevent longitudinal movement of the spring between the same.

The action of the lever on the spring is to effect a partial unwinding of the coils sufficient to release the grip of the same on

the rod and to this end it is desirable to have the coils at the center function as nearly simultaneously with the opening of the end coils whereby the rod will be released and gripped more uniformly and effectively. In carrying this into practice, and referring to Figure 5, I initially wind the spring with a slightly contracted center, or, in other words, the coils are gradually reduced in diameter from the opposite ends so that the central coils or convolutions are of reduced diameter as compared with the end coils. Following this winding, I pass a broaching tool through the coiled spring to produce a substantially true, cylindrical, interior surface, which operation cuts off varying arcs from the inner peripheries of the coils toward the center, producing flattened faces, as is depicted on an exaggerated scale at 20 in said Figure 5. In practice, this reduction of the inner coils will not exceed several thousandths of an inch, and yet the slight reduction is sufficient to weaken the coils gradually or progressively toward the center or from opposite ends. By thus gradually weakening the coils inwardly, the inner coils will expand more evenly and simultaneously with the stronger, outer or end coils.

If it is desired to secure the clamp body 9 against rotation on the base plate 1, the same may be accomplished by providing an apertured ear 21 on said body and mounting a vertical pin 22 in the aperture thereof with an encircling spring 23 arranged to urge the pin upwardly into contact with the lower edge of the lever. Therefore, upon depressing the lever end, by releasing on the handle or button 16, the pin 22 is projected downwardly into engagement with the selected one of an arcuate series or catches or seats 24 formed on the plate 1. When the lever is depressed to release the clamp, the locking pin will be automatically withdrawn by its spring 23.

In Figure 7, the reverse idea is expressed, the clamping spring 25 being normally free of the rod and the action of the lever 26 is to spread the spring terminals circumferentially in a winding direction whereby the spring coils will be tightened into gripping relation with the rod.

The improved form of clamp is particularly useful where a rod or link is to be extended and secured in adjusted positions, such as casement adjustment, transom lifters, brake rods, and similar uses. The spring clamp is very effective in holding the rod against lengthwise movement and yet permits rotation of the rod. Obviously, various changes in the construction and arrangement of the improvements may be resorted to, as fall within the scope of the appended claims and without departing from the spirit of the invention.

What is claimed is:

1. In a device of the class described, a rod, a clamp therefor embodying a coiled spring designed to snugly embrace the rod under normal conditions, and means for simultaneously spreading the opposite ends of the spring to effect a partial unwinding of the latter.

2. In combination with a rod, of a coiled spring frictionally embracing the same, means for holding the spring against movement with the rod, and means for loosening the grip of the spring upon the rod by an unwinding action of its coils.

3. In combination, a rod, a coiled spring clampingly enbracing the rod and having its terminals extended laterally in substantially parallelism, and a lever pivoted between the terminals for engaging, the same to spread the same circumferentially in an unwinding direction.

4. In combination with a rod, a body through which the rod is guided, and a spring within the body encircling the rod in normal frictional contact with the latter and adapted to have its ends relatively spread apart to release the coils of the spring from the rod.

5. In combination with a rod, a body having spaced guides therefor, a spring confined between the guides and coiled about the rod in normal frictional contact therewith, and means for releasing the rod from the normal gripping contact with the spring.

6. A body having a stop, a rod-encircling spring engaged with the stop against axial movement, and means for exerting a circumferential movement to one terminal of the spring relative to the opposite terminal to effect a variation in the size of the coils of said spring.

7. A body having spaced rod guides apertured to receive and guide a rod, a closely wound coiled spring interposed between the guides, and means carried by the body for relatively spreading the ends of the spring circumferentially to enlarge the size of the coils thereof.

8. In combination with a rod to be clamped, a coiled spring encircling the same, and means for imparting relative circumferential movement to the terminals of the spring, the intermediate coils of the spring being weaker than the end coils.

9. In combination with a rod to be clamped, a coiled spring encircling the same, and means for imparting relative circumferential movement to the terminals of the spring, said spring having its inner coils contracted relative to the outer coils and their inner peripheries enlarged to substantially the diameter of the outer coils.

10. In a rod clamping device, a base, a body pivoted thereon, means for holding the body against pivotal movement, means for

clamping a rod to the body, and a common operating device for rendering the two means inoperative.

11. In a rod clamping device, a pivotally mounted body having rod guides, means between the guides for clamping a rod, means for holding the body against pivotal movement, and a common control for the first and second means.

12. In a rod clamping device, a body having spaced rod guides, a coiled spring fitting between the guides and held thereby against longitudinal movement, and means for imparting relative circumferential movement to the terminals of the spring.

13. A spring for a rod clamping device, comprising a coiled body formed of a plurality of connected coils, one portion of said body being formed to receive a torsional force and the adjacent portion of said coiled body having its individual coils progressively weaker away from that portion to which the torsional force is to be applied.

14. A rod clamp comprising a coiled spring body designed for having a normal frictional embrace with a rod, a member engaged by the spring body for being connected by the latter to an embraced rod, and means for exerting an unwinding force on one terminal of the spring body to enlarge the normal diameter of the spring body and thereby exert a release of the normal gripping relation which said spring body will have with an embraced rod.

15. A rod clamp comprising a coiled spring body for normally and frictionally embracing an enclosed rod, a member engaged by said spring body and adapted to be connected by the latter to an embraced rod, and a device on the member for exerting an unwinding force on the coils of the spring body for enlarging the normal diameter of the body and thereby loosening the grip of the body on the embraced rod.

In testimony whereof I affix my signature.

ROYAL A. LETT.