W. F. STRAUB.

LOCKING DEVICE.

APPLICATION FILED DEC. 11, 1914.

1,203,071. Patented Oct. 31, 1916.

Fig. 1.

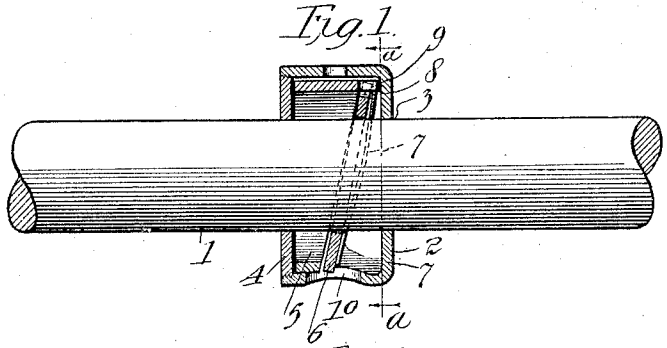



Fig. 2.

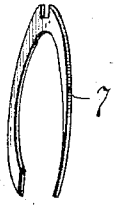



Fig. 7.

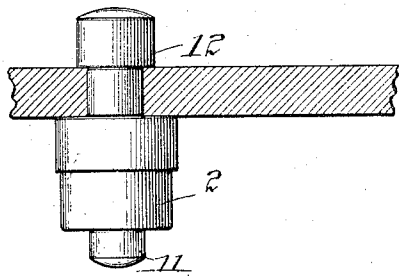



Fig. 3.

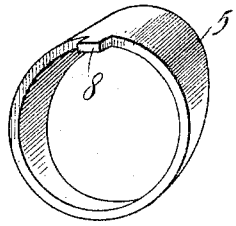



Fig. 5.

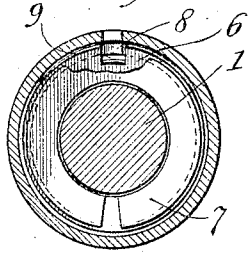



Fig. 4.

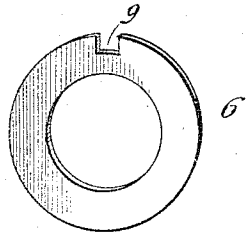



Fig. 6.

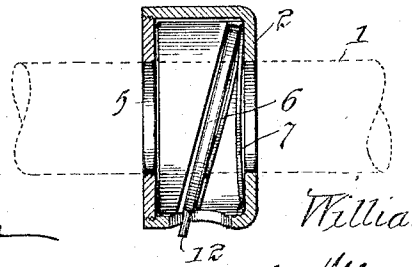
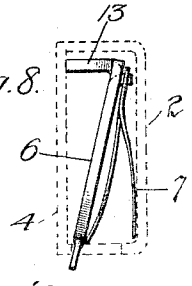



Fig. 8.




Witnesses.

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THE NORRIS PETERS CO. PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

WILLIAM F. STRAUB, OF CHICAGO, ILLINOIS.

## LOCKING DEVICE.

1,203,071. Specification of Letters Patent. Patented Oct. 31, 1916.

Application filed December 11, 1914. Serial No. 876,678.

*To all whom it may concern:*

Be it known that I, WILLIAM F. STRAUB, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Locking Devices, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to locking devices, and is designed more particularly to take the place for instance of such things as collars provided on shafts or may be used in connection with a bolt to serve the purpose under many conditions of the ordinary bolt and screw threaded nut.

My invention contemplates the provision of a device of this nature so made that it can be produced at the same or less cost than ordinary screw threaded nuts or collars provided with set screws.

The device of my construction is exceedingly simple and is of such a character that it can withstand a very great amount of stress.

My device is also of such a nature that the instrumentalities which lock in connection with the shaft or stud can be rotated independently of the casing containing them.

I will explain certain forms which my invention may take more in detail by referring to the accompanying drawing illustrating the same, in which—

Figure 1 is a sectional view of my improved device associated with a shaft; Fig. 2 is a detail view of a spring employed; Fig. 3 is a detail view of the abutment used; Fig. 4 is a detail of the locking washer; Fig. 5 is a sectional view on line *a*—*a* of Fig. 1; Fig. 6 is a view similar to Fig. 1 showing a modification; Fig. 7 is a detail view of my invention as applied in connection with a bolt, and Fig. 8 is a detail of a modification.

Referring to the drawing and more particularly to Fig. 1, I show a shaft 1 on which my improved device 2 is mounted. This device is so arranged for instance, that it can be readily moved toward the left upon this shaft 1, but absolutely locks itself against movement to the right. In order to accomplish this result I use a casing 3 to which a cover plate 4 is fastened either by being screwed thereon or else by being driven into place after the other parts of the device, as will presently appear, have been mounted therein. This inclosing casing is provided with an abutment ring 5, which abutment ring 5 is loose within the casing 2, and which has an inclined face at the right hand side thereof as shown most clearly in Fig. 1. A locking washer 6 having a central opening abuts the right hand extremity of the ring 5 and is held against said ring by a spring 7. The ring 5 has a projection 8 which is adapted to enter a groove 9 provided in the locking ring 6 and spring 7. The parts 5, 6 and 7 are thereby held against relative rotation so that should the device be locked in position the shaft 1 may rotate and carry with it the elements 5, 6 and 7, yet permitting the casing 3 with its cover 4 to remain stationary. This rotation can take place without displacing the parts from the position necessary to fulfil their correct functions. The casing 3 has an opening 10 so that should it be desired to move the locking device in the opposite direction, that is, to move it toward the right, that then the ring 6 may be shifted to release its engagement with the shaft 1 to thus permit such movement.

As will be clear from Fig. 1, which shows the device in locking condition, the upper portion of the washer 6 rests against the ring 5, whereas the lower portion of the washer 6 is slightly away from the said ring 5.

It will be seen that this device presents a structure in which the thrust is transferred from the locking ring 6 to the ring 5 and from there to the casing 3, 4, so that the load is properly distributed and the large surface of the casing assists in connection with the ring 5 to take the thrust. Moreover it will be seen that all of the parts as mentioned herein are made so that they can be punched and readily assembled, thus making the device very cheap in construction.

Referring more particularly to Fig. 7, it will be seen that the device 2 may be applied for instance to the bolt 11 having the head 12. The device in this condition readily adapts itself to those places where it is difficult to properly operate a screw threaded nut, and also adapts itself to those places where a screw threaded nut would not be applicable because my device is capable of withstanding a strain similar to that which

would be necessary to strip the smaller screw threads.

In Fig. 6, I show the ring 6 as having a finger 12 by means of which the ring can be moved to release the device if such be found desirable.

It will of course also be understood that the structure shown in Fig. 7 could be used with two of my devices on a pin so that one of the devices would form the ordinary head, thus being similar to the head of a bolt. In this way the adjustment can be made on both sides of the pin as will be readily apparent.

One great advantage of my improved structure is this that it can be forced tightly against its objective part. Assume for instance that the device of Fig. 1 is moved toward the left to abut its objective and assume then that the device is retracted slightly to permit the washer 6 to lock upon the shaft, it will be seen then that there is a slight space between the casing and the washer 6 so that the abutment ring 5 may drop downwardly and wedge against the cover 4, this ring 5 serving as a wedge between the washer 6 and the cover 4 thus forming a very tight connection. It will of course be readily understood that should it be desired a hole could be readily provided in the casing to force the ring 5 into wedging position should such be found desirable.

In Fig. 8, I show a structure in which the washer 6 is provided with an extension 13 which can take the place of the abutment ring 5 in those cases where a great strain is not anticipated.

From what has been thus described the nature of my invention will be readily apparent as will also its various modifications within the scope of the appended claims.

Having, however, thus described one form which my invention may take, what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described adapted for mounting upon a rod so as to move in one direction on said rod but to be prevented from the reverse movement thereon, comprising a casing, an abutment within said casing adapted to surround said rod, said abutment having an inclined surface, and an inclined locking ring coöperating with said abutment.

2. A device of the character described adapted for mounting upon a rod so as to move in one direction on said rod but to be prevented from the reverse movement thereon, comprising a casing, an abutment within said casing adapted to surround said rod, said abutment having an inclined surface, an inclined locking ring coöperating with said abutment, and a spring for pushing said ring against said abutment.

3. A device of the character described adapted for mounting upon a rod so as to move in one direction on said rod but to be prevented from the reverse movement thereon, comprising a casing, an abutment within said casing adapted to surround said rod, said abutment having an inclined surface, and an inclined locking ring coöperating with said abutment, said abutment and locking ring having means to prevent relative rotation between them.

4. A device of the character described adapted for mounting upon a rod so as to move in one direction on said rod but to be prevented from the reverse movement thereon, comprising a casing, an abutment within said casing adapted to surround said rod, said abutment having an inclined surface, an inclined locking ring coöperating with said abutment, and a spring for pushing said ring against said abutment, said ring and spring having means to prevent relative rotation between them.

5. A device of the character described adapted for mounting upon a rod so as to move in one direction on said rod but to be prevented from the reverse movement thereon, comprising a casing, an abutment within said casing adapted to surround said rod, said abutment having an inclined surface, and an inclined locking ring coöperating with said abutment, said abutment and locking ring having means to prevent relative rotation between them, said abutment and ring being rotatable relatively to said casing.

6. A device of the character described adapted for mounting upon a rod so as to move in one direction on said rod but to be prevented from the reverse movement thereon, comprising a casing, an abutment within said casing adapted to surround said rod, said abutment having an inclined surface, an inclined locking ring coöperating with said abutment, and a spring for pushing said ring against said abutment, said abutment, ring, and spring having means to prevent relative rotation between them, said abutment, ring and spring being rotatable relatively to said casing.

7. A device of the character described adapted for mounting upon a rod so as to move in one direction on said rod but to be prevented from the reverse movement thereon, comprising a casing, an abutment within said casing adapted to surround said rod, said abutment having an inclined surface, an inclined locking ring coöperating with said abutment, and a spring for pushing said ring against said abutment, said abutment, ring and spring having means to prevent relative rotation between them, said ring having a projection protruding from said casing to permit unlocking of said ring.

8. A device of the character described adapted for mounting upon a rod so as to move in one direction on said rod but to be

prevented from the reverse movement thereon, comprising a casing, an abutment within said casing adapted to surround said rod, said abutment having an inclined surface, an inclined locking ring coöperating with said abutment, said abutment and locking ring having means to prevent relative rotation between them, said abutment and ring being rotatable relatively to said casing, said ring having a projection protruding from said casing to permit unlocking of said ring.

9. A device of the character described adapted for mounting upon a rod so as to move in one direction on said rod but to be prevented from the reverse movement thereon, comprising a casing, an abutment within said casing adapted to surround said rod, said abutment having an inclined surface, an inclined locking ring coöperating with said abutment, a spring for pushing said ring against said abutment, said abutment, ring, and spring having means to prevent relative rotation between them, said abutment, ring and spring being rotatable relatively to said casing, said ring having a projection protruding from said casing to permit unlocking of said ring.

10. A lock nut for shafts adapted for mounting upon a shaft so as to be capable normally of movement in one direction only on said shaft and to be restrained from reverse movement thereon, comprising a casing, having a plane abutting surface on one side thereof, a shiftable gripping device adapted to grip said shaft, when it is attempted to move said lock nut in the direction of said reverse movement aforesaid, and an abutment against which said gripping device acts when in its gripping position.

11. A lock nut for shafts adapted for mounting upon a shaft so as to be capable normally of movement in one direction only on said shaft and to be restrained from reverse movement thereon, comprising a casing having a plane abutting surface on one side thereof, a tilting gripping device adapted to grip said shaft when it is attempted to move said lock nut in the direction of said reverse movement aforesaid, and an abutment against which said gripping device acts when in its gripping position.

12. A lock nut for shafts adapted for mounting upon a shaft so as to be capable normally of movement in one direction only on said shaft and to be restrained from reverse movement thereon, comprising a casing having a plane abutting surface on one side thereof, a shiftable tilting gripping device adapted to grip said shaft when it is attempted to move said lock nut in the direction of said reverse movement aforesaid, and an abutment against which said gripping device acts when in its gripping position.

13. A lock nut for shafts adapted for mounting upon a shaft so as to be capable normally of movement in one direction only on said shaft and to be restrained from reverse movement thereon, comprising a casing having a plane abutting surface on one side thereof, a shiftable gripping device adapted to grip said shaft when it is attempted to move said lock nut in the direction of said reverse movement aforesaid, resilient means tending to force said gripping device into its gripping position, and an abutment against which said gripping device acts when in its gripping position.

14. A lock nut for shafts adapted for mounting upon a shaft so as to be capable normally of movement in one direction only on said shaft and to be restrained from reverse movement thereon, comprising a casing having a plane abutting surface on one side thereof, a tilting gripping device adapted to grip said shaft when it is attempted to move said lock nut in the direction of said reverse movement aforesaid, resilient means tending to force said gripping device into its gripping position, and an abutment against which said gripping device acts when in its gripping position.

15. A lock nut for shafts adapted for mounting upon a shaft so as to be capable normally of movement in one direction only on said shaft and to be restrained from reverse movement thereon, comprising a casing having a plane abutting surface on one side thereof, a shiftable tilting gripping device adapted to grip said shaft when it is attempted to move said lock nut in the direction of said reverse movement aforesaid, resilient means tending to force said gripping device into its gripping position and an abutment against which said gripping device acts when in its gripping position.

In witness whereof, I hereunto subscribe my name this fifth day of December, A. D., 1914.

WILLIAM F. STRAUB.

Witnesses:
MAX W. ZABEL,
HAZEL A. JONES.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**