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PATENTED FEB. 9, 1904.

H. J. CASANOVA & H. C. CALDWELL.

NUT LOCK.

APPLICATION FILED FEB. 12, 1903.

NO MODEL.

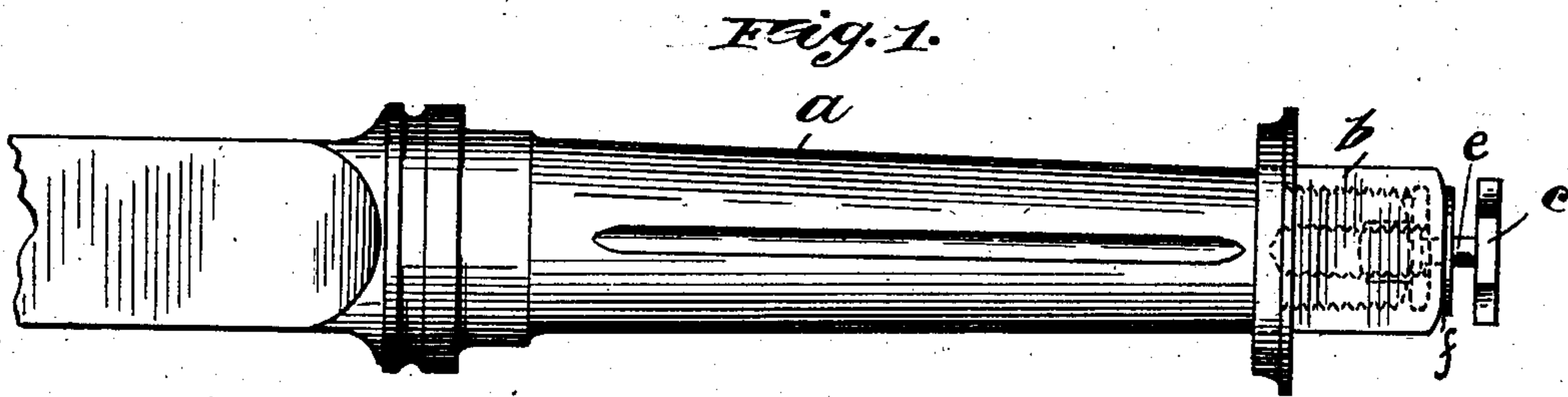


Fig. 2.



Fig. 3.

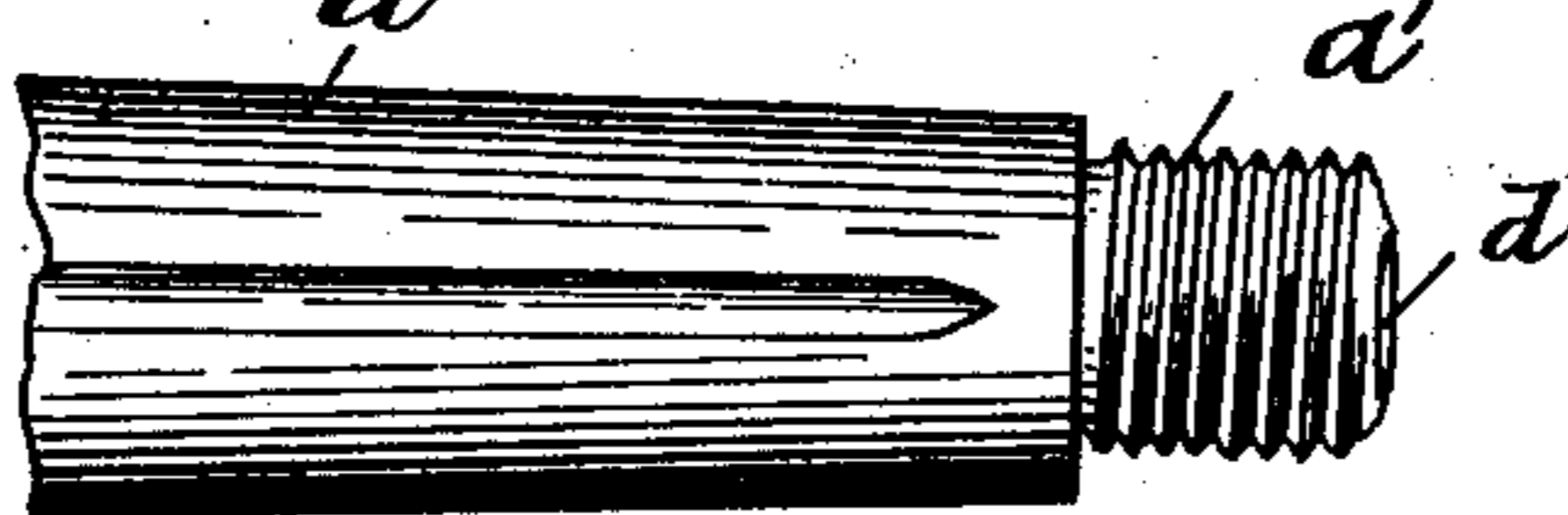


Fig. 5.

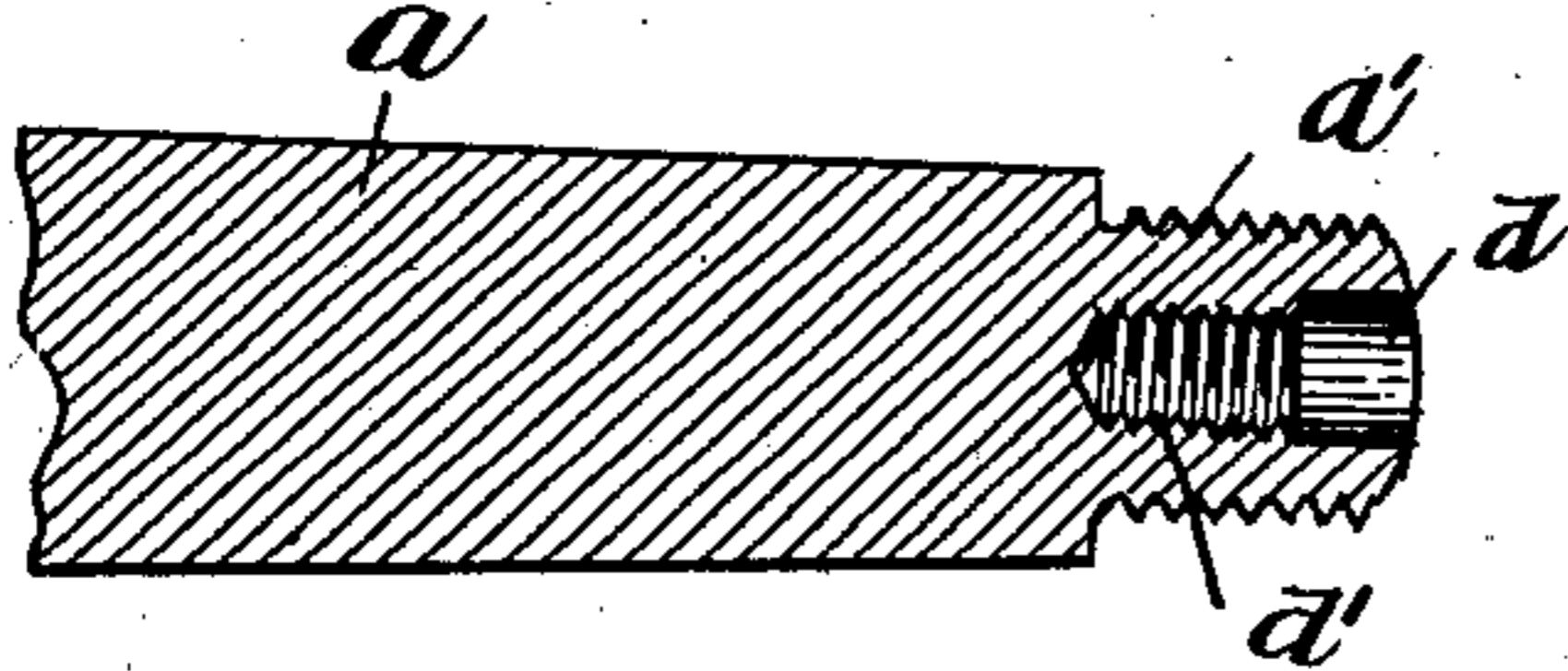
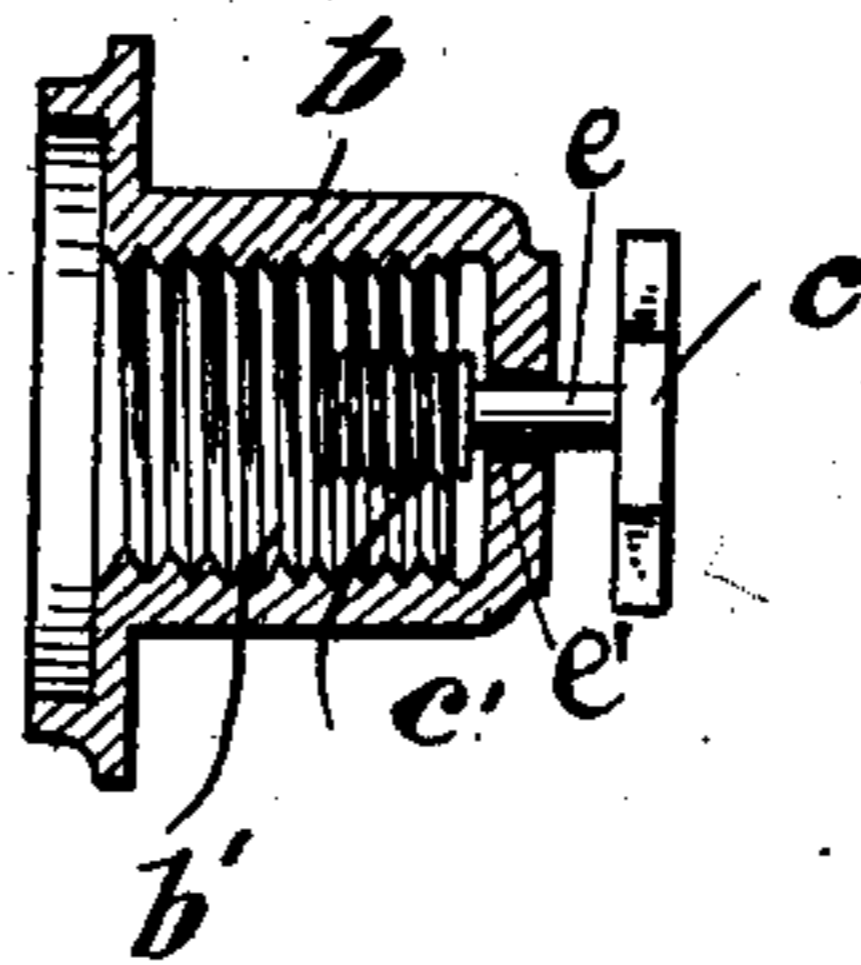


Fig. 4.



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UNITED STATES PATENT OFFICE.

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NUT-LOCK.

SPECIFICATION forming part of Letters Patent No. 751,457, dated February 9, 1904.

Application filed February 12, 1903. Serial No. 143,046. (No model.)

To all whom it may concern:

Be it known that we, HENRY J. CASANOVA and HARRY CRANMER CALDWELL, of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Nut-Locks, of which the following is a specification.

This invention relates to improvements in nut-locks, and refers more specifically to an improved nut-lock mechanism especially adapted for use in conjunction with vehicle bearing-spindles and the like for locking the confining-nuts upon the ends of the axles.

The salient objects of the invention are to provide a simple practical construction in the use of which the main or confining nut may be adjusted to position or removed without interference by the lock-bolt and the lock-bolt thereafter adjusted, the lock-bolt and confining-nut being nevertheless permanently united to each other; to provide a construction in which the number of parts is reduced to a minimum and the several parts are of extremely simple and practical construction; to provide a construction in which the confining-nut forms an end cap upon the spindle the only opening into which is closed by the lock-bolt, and in general to provide a simple and improved construction of the character referred to.

To the above ends the invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims.

The invention will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a view in side elevation of the spindle portion of an axle with the confining-nut and lock-bolt in position thereto. Fig. 2 is an outer end elevation of the lock-bolt head. Fig. 3 is a side elevation of the end of the spindle with the confining-nut removed. Fig. 4 is a longitudinal section of the confining-nut and lock-bolt assembled. Fig. 5 is a longitudinal sectional view of the end of the axle-spindle.

Referring to the drawings, *a* designates the

axle-spindle, *b* the confining-nut, and *c* the lock-bolt. The spindle is, as usual, provided at its end with a reduced externally-threaded portion *a'*, and the confining-nut is provided with a corresponding internal thread *b'*, adapted to fit upon the threaded spindle. The spindle is also provided with an axial bore *d'* and a counterbore *d*, the portion *d'* being internally threaded, while the counterbored portion *d* thereof is unthreaded and made of sufficiently larger diameter to avoid interference with the threads of the engaging part of the lock-bolt.

The lock-bolt *c* comprises a threaded portion *c'*, adapted to fit and engage the internally-threaded bore *d'* of the spindle, a reduced extension *e*, which extends through a corresponding axially-disposed aperture *e'* in the confining-nut, and a rigid head upon the outer end of the reduced extension. The pitch of the threads *a'* on the exterior of the spindle are the reverse of those, *d'*, which receive the lock-bolt in order to secure the usual locking effect, and in order that the confining-nut may be adjusted fully to its holding position before the lock-bolt is brought into operation the unthreaded counterbore *d* is of sufficient length to accommodate practically the full length of the threaded portion *c'* of the locking-bolt. Accordingly the extension *e* of the lock-bolt is of sufficient length to permit the endwise movement of the lock-bolt into threaded engagement with the socket *d'* after the confining-nut has been adjusted to position, the lock-bolt being brought to its seat and in locking position when the inner surface of its head is brought into bearing with the end of the confining-nut. Preferably in order to afford a more reliable frictional engagement between the head of the lock-bolt and the opposed surface of the confining-nut a washer *f* is interposed between said parts.

It will be understood from the foregoing that the adjustment of the confining-nut and lock-bolt to their respective positions is independent of each other—that is to say, the confining-nut is first turned down until it is properly seated against the wheel-hub, after which the lock-bolt is turned up until it seats

against the end of the nut. Vice versa, in removing the confining-nut the lock-bolt is first entirely withdrawn from its threaded engagement with the spindle and the confining-nut thereafter removed by turning it in the opposite direction. The difficult and awkward operation of turning the confining-nut and lock-bolt in opposite directions at the same time is in this construction entirely obviated. By reason of the fact that the lock-bolt and confining-nut are permanently though movably united, said lock-bolt being swiveled or revolvably secured in the end of the confining-nut, these parts cannot become accidentally separated nor displaced relatively to each other, so that the operation of removing and replacing the confining-nut is but little more than as though it were unprovided with a locking device.

While we have herein shown what we deem to be the preferred embodiment of our invention, yet it will be understood that the details of construction may be modified without departing from the spirit of the invention. For example, by making the reduced extension *e* of the lock-bolt longer the unthreaded counterbore *d* may be shortened or entirely dispensed with if the confining-nut be correspondingly lengthened, so as to provide space between the end wall of the latter and the end of the spindle when the confining-nut is seated. We do not, therefore, limit ourselves to the exact details of construction shown.

We claim as our invention—

1. In combination, a spindle or analogous device provided with an externally-threaded portion, a threaded axial bore and an unthreaded counterbore, a confining-nut fitting upon the threaded portion of the spindle, a lock-bolt arranged axially within the confining-nut and threaded to engage said axial bore of the spindle, an unthreaded reduced extension connected with the threaded portion of said bolt and extending through the end of the confining-nut, a head upon the outer end of said extension, the unthreaded portion of said lock-bolt and the portion of the confin-

ing-nut through which it extends being constructed to afford lost motion between them, for the purpose set forth.

2. In combination, a spindle provided with an externally-threaded portion and an internally-threaded bore, a confining-nut fitting the externally-threaded portion of the spindle, and a lock-bolt permanently connected to and having swiveling and endwise-sliding connection with the confining-nut and provided with a threaded portion adapted to the bore of the spindle.

3. In combination, a spindle or the like provided with an externally-threaded portion, and an axial bore threaded throughout a part of its length and unthreaded and enlarged throughout a further part of its length, a confining-nut fitting the threaded portion of the spindle, and a lock-bolt having swiveling and endwise-sliding engagement with the confining-nut, the inner end of said lock-bolt adapted to the threaded portion of the bore and the outer end adapted to a rotating tool.

4. In combination, a spindle or the like provided with an externally-threaded portion and an axial bore the inner end of which is threaded reversely to that of the external threads, and the outer portion of which bore is unthreaded and enlarged, a confining-nut fitting the threaded portion of the spindle and provided with an axial aperture in its end wall, a lock-bolt having a threaded portion within the confining-nut adapted to engage the threaded bore of the spindle, a reduced extension extending through the aperture of the confining-nut and an external head, the length of the reduced extension being greater than the thickness of the wall of the cap-nut through which it extends, whereby the lock-bolt has swiveling and endwise-sliding engagement with the confining-nut, as and for the purposes set forth.

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