No. 793,269. PATENTED JUNE 27, 1905.

F. M. BLACK.

NUT AND BOLT LOCK.

APPLICATION FILED FEB. 20, 1903.

Fig. 4.

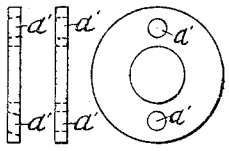


Fig. 1.

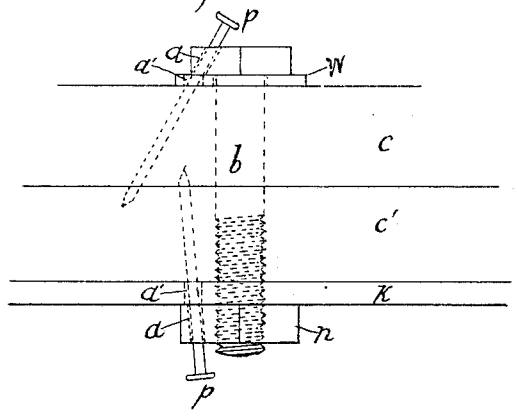


Fig. 2.

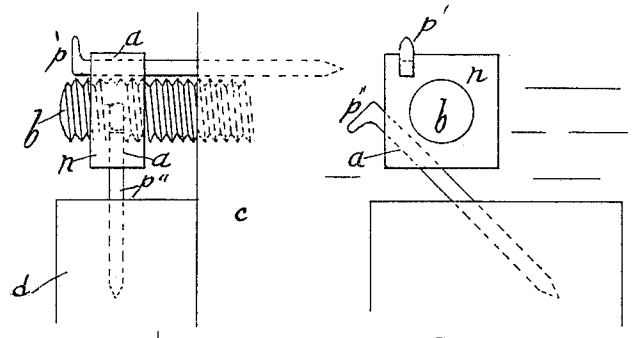
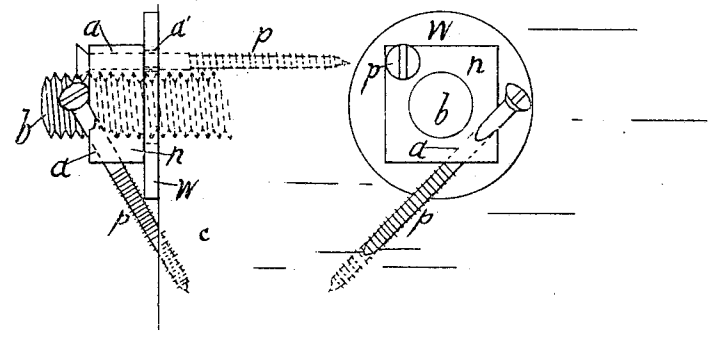


Fig. 3.



WITNESSES:

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No. 793,269. Patented June 27, 1905.

UNITED STATES PATENT OFFICE.

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NUT AND BOLT LOCK.

SPECIFICATION forming part of Letters Patent No. 793,269, dated June 27, 1905.

Application filed February 20, 1903. Serial No. 144,357.

To all whom it may concern:

Be it known that I, FRANCIS M. BLACK, a citizen of the United States, residing at Kincaid, in the county of Anderson and State of Kansas, have invented a certain new and useful Improvement in Nut and Bolt Locks; and I do hereby declare the following to be a full, clear, and exact description of my invention.

My invention relates to means for locking nuts, bolts, screws, and the like in relatively fixed position to the material or apparatus in connection with which they are used.

More particularly an object of my invention is a means whereby a nut or bolt may be locked against any movement, although the bolt-head or nut be spaced at some distance from the surface penetrated by the bolt.

Another object of my invention is a means whereby a bolt or nut may be fixedly secured to objects adjacent thereto or to the surface from which the bolt projects at points of such surface somewhat removed from the bolt-hole.

A further object of my invention is means for fixedly securing a nut or bolt in such a way as to provide for play between objects bolted or for relative expansion or contraction of such objects or of the bolt and such objects.

Such means as are now known to the art for the locking of bolts are unsatisfactory, in that they are either not thoroughly reliable and efficient or are so expensive as to prohibit their general use. A lock-nut, for instance, to be efficient must be jammed against the bolt-nut while the latter is in close contact with the material through which the bolt passes. Immediately, however, upon a relative expansion of the bolt such contact is lost and the nuts work loose. It is often desirable to provide for just such expansion in instances wherein great changes of temperature are involved. Obviously nut-locks and similar devices are comparatively useless. Other and more elaborate locking means known to the art are defective, in that the bolt-nut, being held against the surface of the locked material, is liable to be stripped off the bolt by an expansion of the locked material or the bolt itself broken thereby. Again, it is at times necessary or desirable that a certain amount of free movement or play be allowed between two or more objects united by a bolt. If, however, the lock is unreliable unless the bolt be permanently in contact with one of said objects, then provision for such play cannot be had. More particularly, however, it is at times desirable that a nut or bolt be securely locked, although the bolt-head or nut is not in actual contact with the surface penetrated or even with washers, &c., mounted thereon. Where, however, the efficiency of the lock depends upon a surface contact for the nut or bolt-head, the nut must of course be turned as far as possible upon the bolt. Often lack of space prohibits the efficient use of a wrench for this purpose, and the lock is consequently imperfect.

Since I provide means for locking the bolt or nut to adjacent objects, my invention has peculiar utility in connection with bolts to be located at corners or angles. Moreover, by locking the bolt to the material through which it passes at points thereof removed from the bolt-hole the locking means may be made to avoid contact with washers or other hard wearing-surfaces immediately adjacent the bolt-hole. This last feature is more particularly of value in the bolting of lumber and other comparatively soft material requiring the liberal use of washers, &c.

The general objects of my invention are accomplished by providing the bolt-head or nut with one or more passages for the reception of locking pins or screws to be driven through said passages and into an adjacent surface after the position of the nut or bolt has been adjusted. I have shown these passages at various angles to the line of the bolt-axis. It is evident that a locking-pin in such a sloping passage will effectually prevent any movement of the nut in the line of the bolt-axis upon rotation of the bolt or similarly will prevent any displacement of the bolt in such line of its axis. This same angularity of the passages permits the locking-pins to be driven into adjacent surfaces and clear of washers and the like, all of which will presently appear upon reference to the drawings, in which—

Figure 1 illustrates an embodiment of my invention in elevation. Figs. 2 and 3 illustrate modifications of the same in elevation and plan. Fig. 4 illustrates in elevation and plan a washer such as is shown in Fig. 1.

In Fig. 1 I have shown the wooden bars C C′ and metal plate K as closely bolted together by the bolt *b* and nut *n*. Between the head of the bolt and the bar C is shown a washer *w* to prevent the bolt-head from cutting the bar and the lock thereby subsequently loosening. The nut *n*, however, is shown as in direct contact with the plate K, no washer being necessary, as the plate is metal. Both the bolt-head and nut are provided with locking means. In each is shown a passage *a*. Registering with the passage *a* in the bolt-head is an opening *a′* in the washer *w*. Registering with the passage *a* in the nut *n* is an opening *a′* in the plate *k*. Within the passages and extending through the openings and into the bars are the pins P. It is apparent that because of the pins neither bolt nor nut can be rotated.

In Fig. 2 is shown a bolt *b* locked by a nut *n*. In this instance, however, the nut instead of being forced down into contact with the bars *c* is located at some distance therefrom. Two pins P′ P″ secure the nut in this position. Although only one pin is necessary, the nut may be provided with two or more passages, the passage to be used being that which in each case is most convenient or available. The pin P″ is shown as driven into an adjacent block *d* instead of into the bar *c*. Fig. 2 clearly illustrates one advantage of my invention in that the nut is not required to be moved down into contact with the bar, which operation might be difficult were the position a cramped one. It is to be noted that the nut *n* if held by the pin P′ alone would move up and down upon turning the bolt, whereas no such movement is possible when the nut is held by the pin P″. Such immobility of the nut is a feature wherever the passage is not parallel to the axis of the bolt.

In Fig. 3 a washer *w* is shown in contact with the block and the nut *a* in contact with the washer. The nut is in one instance locked by a pin in a passage *a* in the nut and extending through the hole *a′* in the washer into the block. In another instance, however, the pin is shown passing angularly through the bolt and into the block beyond the washer, whereby the nut is locked without necessitating any perforation of the washer.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A nut or bolt-head, and a nail fixedly engaging said nut or bolt-head and the surface penetrated by the bolt, said nail adapted to hold said nut or bolt-head out of contact with said surface and to hold said nut or bolt-head stationary regardless of any movement of the opposing bolt-head or nut.

2. A nut or bolt-head having a downwardly-slanting passage therein for containing a locking device, and a removable locking device in said passage, out of contact with the bolt and adapted to engage an external anchorage when in operative locking position, substantially as set forth.

3. A nut or bolt-head having a passage therethrough to intersect the surface at both a vertical and a horizontal angle thereto, and a removable locking device in said passage out of contact with the bolt and adapted to engage an external anchorage when in operative locking position, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANCIS M. BLACK.

Witnesses:
E. G. MAGRATH,
J. S. GEIGER.