No. 887,382. PATENTED MAY 12, 1908.

B. J. DIPLOCK.

MEANS FOR LOCKING NUTS AND BOLTS.

APPLICATION FILED DEC. 3, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

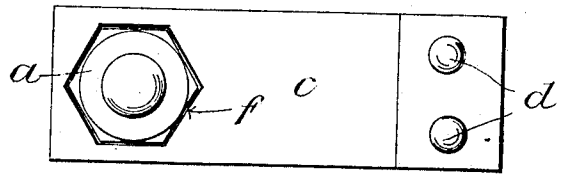


Fig. 2.

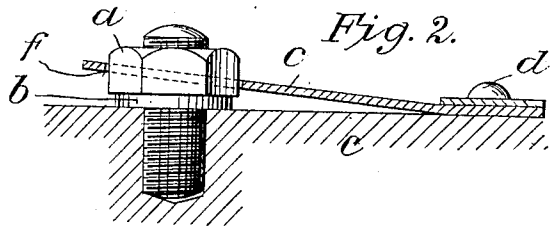


Fig. 3.

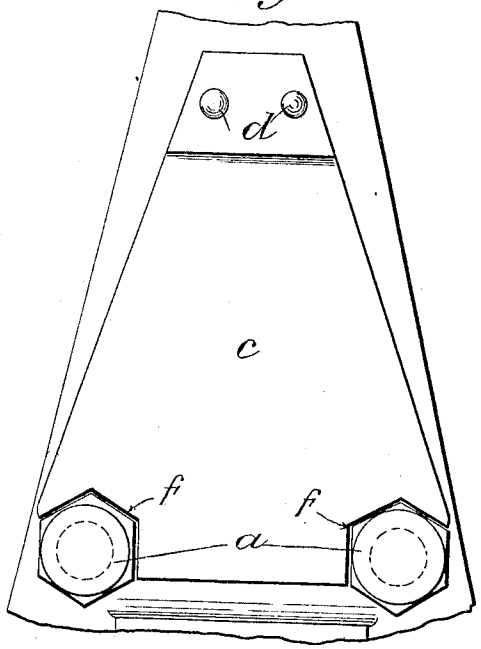


Fig. 4.

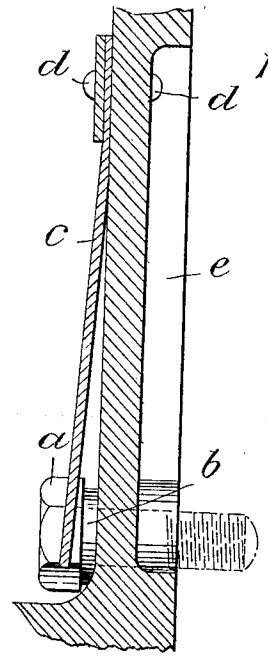
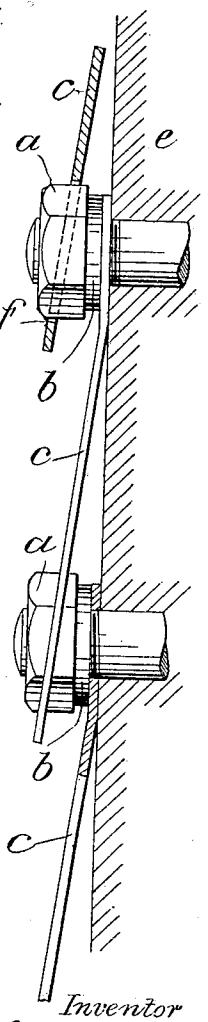


Fig. 5.



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2 SHEETS—SHEET 2.

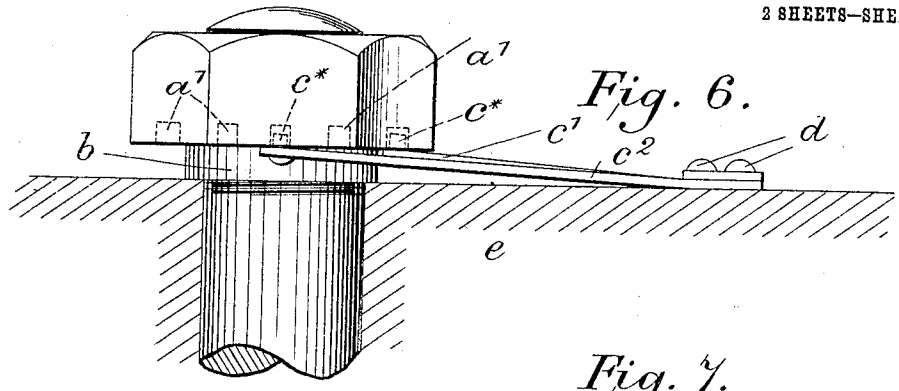
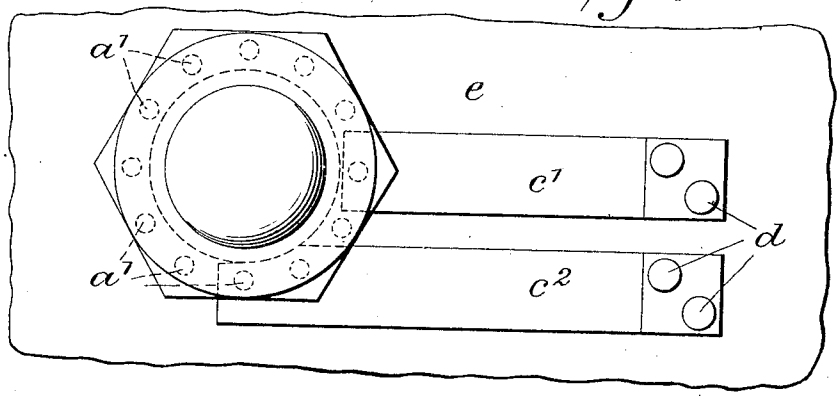


Fig. 6.

Fig. 7.



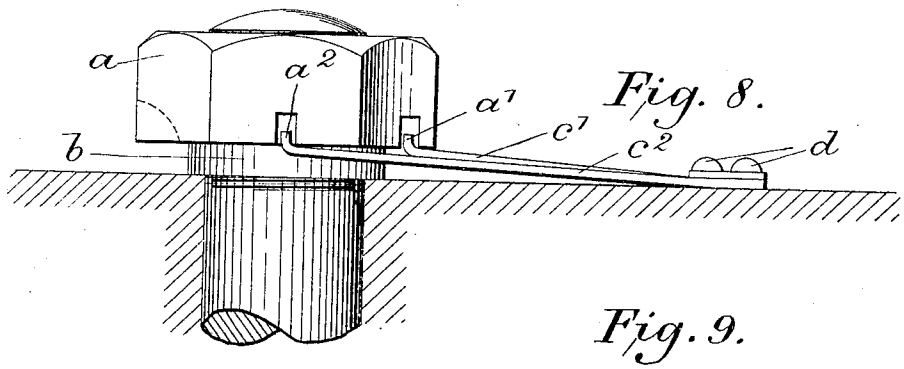
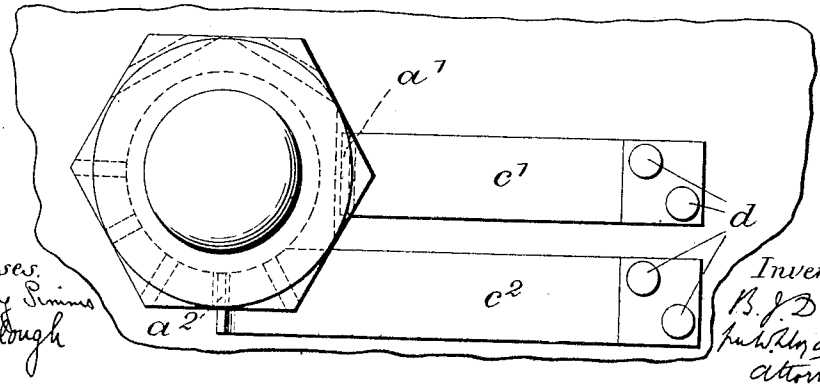


Fig. 8.

Fig. 9.



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UNITED STATES PATENT OFFICE.

BRAMAH JOSEPH DIPLOCK, OF WESTMINSTER, LONDON, ENGLAND.

MEANS FOR LOCKING NUTS AND BOLTS.

No. 887,382. Specification of Letters Patent. Patented May 12, 1908.

Application filed December 3, 1906. Serial No. 346,143.

To all whom it may concern:

Be it known that I, BRAMAH JOSEPH DIPLOCK, a subject of the King of Great Britain and Ireland, residing at Westminster, in the county of London, England, have invented Improvements in Means for Locking Nuts and Bolts, of which the following is a specification.

This invention has reference to improved means for locking nuts, bolts and the like in such manner that they can be readily released or unlocked by the application of a tool such as a spanner whereby they can be tightened or slackened. For this purpose there is combined with a nut, bolt head or the like having at its base a reduced part of considerable depth, a plate or frame of less depth that normally engages and is prevented by independent means from turning with the nut, bolt head or the like but is capable of being displaced longitudinally of the nut, bolt or the like, as by the application of a spanner, into a position level with the reduced part and well clear of that part of the nut, bolt head or the like with which it normally engages. The plate or frame is such that it returns into engagement when the spanner or the like is removed.

Referring to the accompanying drawings, Figures 1 and 2 are respectively a plan and a section illustrating a nut with locking arrangement according to this invention. Figs. 3 and 4 are similar views to Figs. 1 and 2 of a slightly modified arrangement; Fig. 5 is a similar view to Fig. 2 of an arrangement similar to that shown in Figs. 1 and 2 but wherein each locking plate is secured by an adjacent locked nut. Figs. 6 and 7 are respectively an elevation and a plan as are also Figs. 8 and 9 illustrating further modifications.

Referring to Figs. 1 and 2, *a* is the nut which is turned down at *b* to the shortest diameter of the nut, or less; *c* is a spring plate securely fixed by rivets *d* to the work *e* and normally standing as shown at an angle to a plane perpendicular to the axis of the nut. The plate is of less thickness than the depth of the reduced part of the nut as shown. A hexagonal hole *f* is formed in the spring plate *c*, which hole is made to fit quite easily the hexagonal part of the nut so as to engage facets thereof. When a spanner is applied to the nut the spring plate *c* is depressed so that it is well clear of the hexagonal portion of the nut, the reduced part *b* of which can be turned in the hole *f*. When the nut has been tightened up sufficiently, the spanner is removed, the plate *c* then springing up and again engaging the hexagonal portion of the nut.

The plate *c* may be secured so that it cannot turn in relation to the nut in any other convenient way, but if screws be employed their heads should be calked into square or other suitably shaped holes in the plate. Sometimes the plate may be bent and the bent portion secured to a face which is not at right angles to the bolt.

In the arrangement shown in Figs. 3 and 4 one spring plate *c* is formed with recesses *f* adapted to engage facets of the hexagonal portions of two stud bolt heads *a* which have reduced parts *b* of greater depth than the thickness of the locking plate.

In Fig. 5 a number of nuts are shown locked by spring plates *c*, each plate *c* being secured by the nut adjacent to the nut it locks.

In the arrangements shown in Figs. 6 and 7 spring plates c^1 and c^2 have short projections or studs $c^\times$ at their free ends which engage in recesses a^1 beneath the hexagonal portion of the nut. The depth from the top of the projections or studs $c^\times$ to the bottom of the undersides of the spring plates is less than the depth of the reduced part of the nut. Only one plate c^1 or c^2 need be employed, though two are shown for the purpose of illustrating alternative arrangements, the plate c^1 being radial to the nut, and the plate c^2 substantially tangential.

Figs. 8 and 9 show a radial plate c^1 with a short bent up end engaging one of a number of tangential slots a^1 in the underside of the nut *a* and also a tangential plate c^2 with bent up end engaging in a radial slot a^2.

In all the examples illustrated it will be noticed that there are no loose parts which can be lost and that the locking plate is prevented from turning whether the nut is tightened up or not.

What I claim is:—

1. The combination with a threaded bolt, of a nut screwed thereon and having an integral reduced inner end, and a plate fixed by means other than the said bolt and nut of a thickness less than the reduced portion of the nut and normally engaging and holding the nut from turning, and adapted to be forced inwardly in a line with the reduced portion to allow the nut to be turned.

2. The combination with a threaded bolt, of a nut screwed thereon and having an integral reduced inner end, and a plate secured at one end by means other than the said bolt and nut and having its opposite end normally engaging the nut preventing it from turning, and said plate being of a thickness less than the reduced portion of the nut, whereby the plate may be forced inwardly in a line with the reduced portion of the nut and allow the nut to be turned.

3. The combination with a threaded bolt, of a nut screwed thereon and having an integral reduced inner end, and a plate rigidly secured at one end by means other than the said bolt and nut and the other end bent upwardly for normally engaging the nut and holding the same against rotation, and said plate being of a thickness less than the reduced portion of the nut, whereby the plate may be forced inwardly in a line with the reduced portion of the nut and allow the nut to be turned.

4. A clamping member having an angular portion by which it may be turned, and having an integral reduced inner end and a plate fixed by means other than said clamping member, said plate normally engaging the angular portion and holding the member against rotation, and adapted to be forced inwardly in a line with the reduced portion to allow the member to be turned.

5. A screw-threaded member having an angular portion by which it may be turned, and having an integral reduced inner end, and a plate fixed by means other than said member, said plate normally engaging the angular portion and holding the member against rotation and adapted to be forced inwardly in a line with the reduced portion to allow the member to be turned.

6. The combination with a threaded bolt, of a nut thereon and having an integral reduced inner end and a plate secured at one end by means other than said bolt and nut and having its opposite end with an opening to conform with the nut and normally surrounding the same and holding it against rotation and said plate being of a thickness less than the reduced portion of the nut, whereby it may be forced inwardly in a line with the reduced portion of the nut to allow the same to be rotated.

Signed at 61 Marsham street, Westminster, London, S. W. this twenty-first day of November 1906.

BRAMAH JOSEPH DIPLOCK.

Witnesses:

HENRY TOWNSHEND,

JAMES LOWE.