

(No Model.)

G. C. THOMAS.
NUT LOCKING WASHER.

No. 331,169.

Patented Nov. 24, 1885.

Fig. 1.

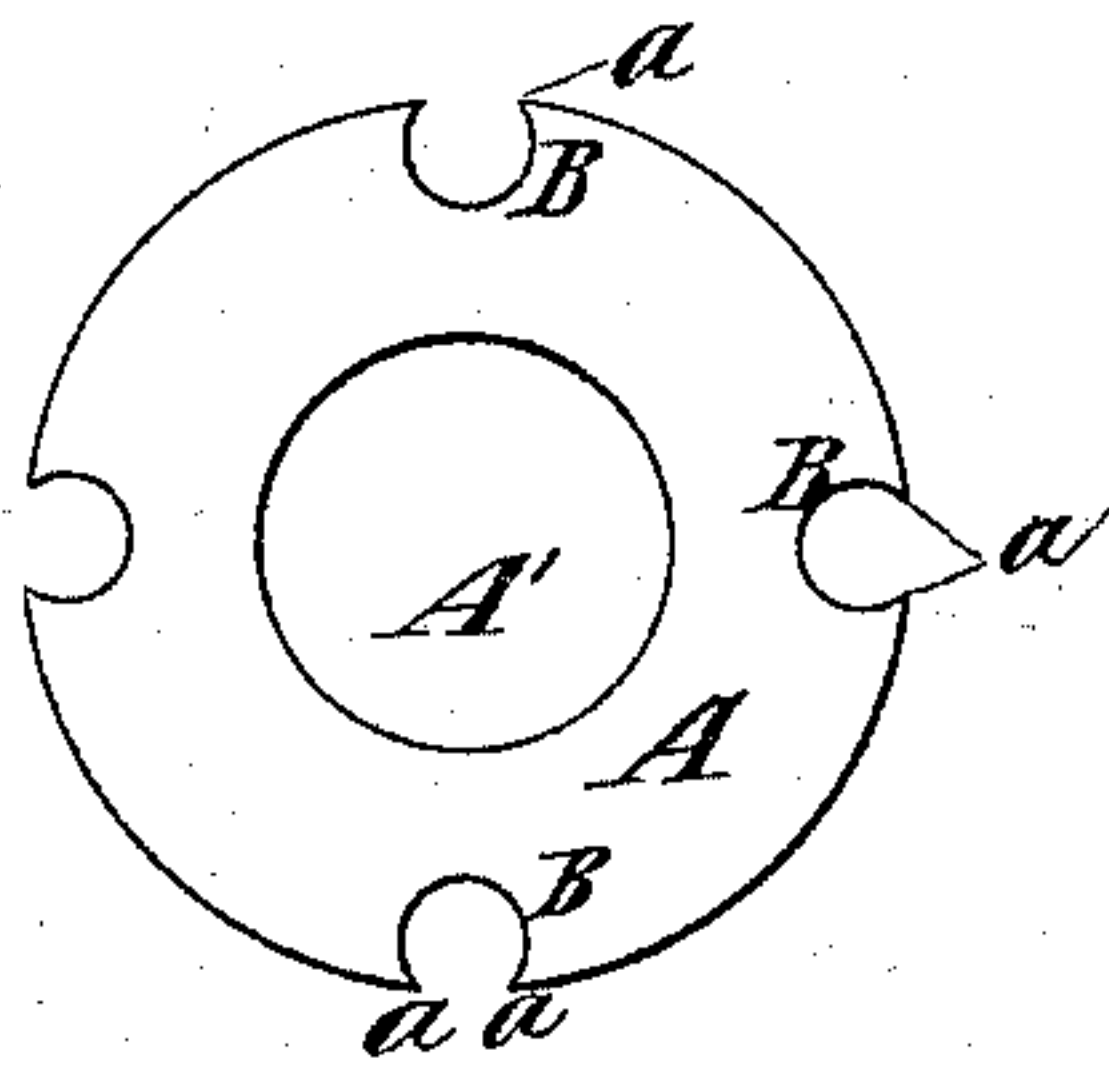
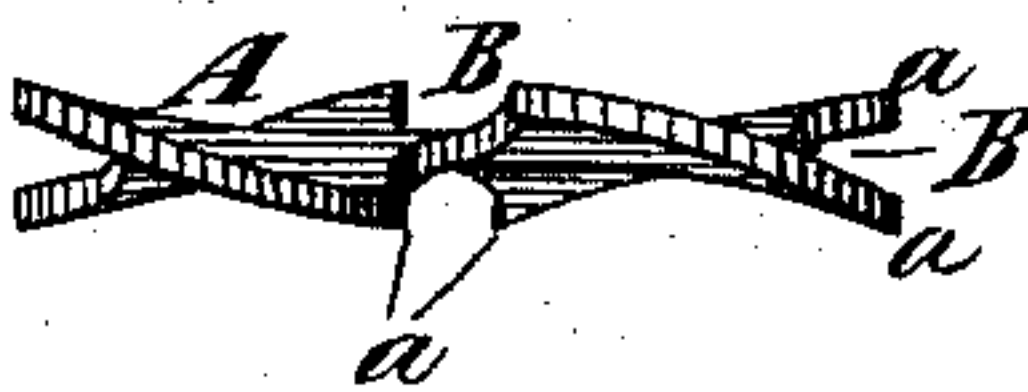


Fig. 2.



Witnesses:

James R. Bowen.
Ed. L. Moran

Inventor:

George C. Thomas,
by his attorney,
Edwin H. Brown

UNITED STATES PATENT OFFICE.

GEORGE C. THOMAS, OF WATERBURY, CONNECTICUT.

NUT-LOCKING WASHER.

SPECIFICATION forming part of Letters Patent No. 331,169, dated November 24, 1885.

Application filed June 15, 1883. Serial No. 98,179. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. THOMAS, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Nut-Lock Washers, of which the following is a specification.

My invention relates to that class of nut-locks which consists of a washer having apertures in its outer or inner edge, and having the corners, points, or angles on opposite sides of each aperture deflected or bent aside in opposite directions, so as to form sharp retaining-points.

The invention consists in a washer having in its edge apertures of circular form, the edges of the apertures being curved throughout their entire extent, and having the points or corners on opposite sides of the several apertures bent or deflected in opposite directions, so as to form retaining-points. This form for the apertures is advantageous, because tools or punches of considerable size and thickness may be employed, and hence they will be strong and durable, and because the tools for forming apertures of circular form may be made at less cost than for forming apertures of any other form.

The invention also consists in a washer of the kind above described, having apertures of circular form and the centers of which are within the line of the edge of the washer, each of the apertures being greater than a semicircle. This is advantageous, because the corners or angles formed at the edge of the washer by the apertures will be acute and sharp, and will form more secure retaining-points.

In the accompanying drawings, Figure 1 is a face view, and Fig. 2 an edge view, of a washer embodying my invention.

Similar letters of reference designate corresponding parts in both figures.

A designates the washer, which may be of circular, square, or other form. It is here shown as circular, and A' is the center hole or opening through it. It will preferably be made of steel. In the outer edge there are formed a number of apertures, B, four being here shown, which are formed by punching out portions of the metal at the edge of the washer. These apertures, it will be observed, are of circular form, their edges being

curved throughout their entire extent. The apertures may be semicircular or even somewhat less than a semicircle; but I prefer to make them greater than a semicircle, so that the centers of the circles of which they form parts will fall within the outer edge or perimeter of the washer. By so doing the corners or points *a* at opposite sides of the apertures, and which are produced by the apertures, will form acute angles, and will therefore be sharp and better adapted to serve as retaining-points. Obviously, if the apertures were only equal to or were less than a semicircle, the corners or points *a* would not be so acute and sharp as they now are. The points or corners *a* on opposite sides of each aperture are bent or deflected in opposite directions, so as to impart elasticity to the washer, and when the washer is placed under a nut and the latter screwed up the points *a* will engage with the nut and the article or piece on which the washer rests, and prevent the unscrewing of the nut accidentally.

Instead of forming the apertures in the outer edge of the washer, I may form them in its inner edge.

I do not claim, broadly, a nut-lock washer having apertures in its edge and the points or corners on opposite sides of the several apertures bent or deflected in opposite directions; but I only desire to cover such a washer when the apertures are of circular form. When of such form, the tools for making the apertures may be made at less cost, and will wear longer and be less liable to breakage. Apertures of such form are also advantages, because they contain no angles or corners from which a fracture might extend.

All the aforesaid advantages result from making the apertures of circular form, whether the centers of the apertures fall within the line of the edge of the washer or not; but by bringing the centers of the apertures within the line of the edge, and by thus making the apertures greater than a semicircle, I also secure sharper and more acute retaining-points.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A nut-lock washer having in its edge apertures of circular form, the edges of the apertures being curved throughout their entire

extent, and having the points or corners on opposite sides of the apertures bent or deflected in opposite directions, substantially as and for the purpose described.

- 5 2. A nut-lock washer having in its edge apertures of circular form the centers of which are within the line of the edge of the washer, or which are greater than a semicircle, and

having the points or corners on opposite sides of the apertures bent or deflected in opposite directions, substantially as and for the purpose described.

GEO. C. THOMAS.

Witnesses:

F. M. BRONSON,
GEO. H. BENHAM.