

C. F. BEERS.
LOCK WASHER.

APPLICATION FILED JULY 16, 1908.

1,025,958.

Patented May 14, 1912.

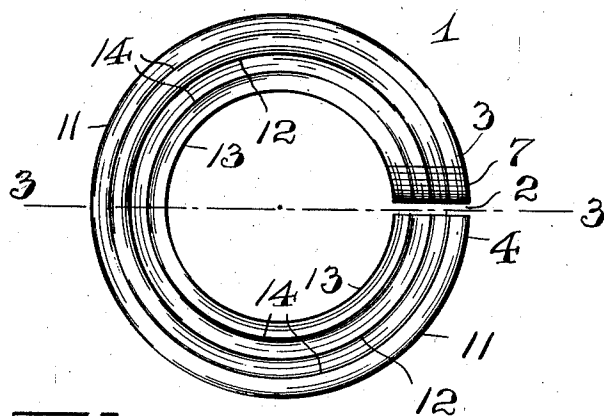


Fig. 1

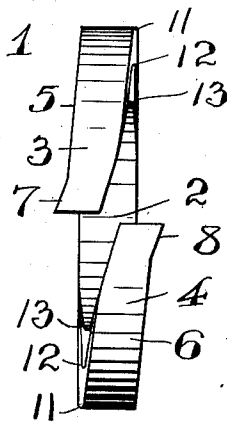


Fig. 2

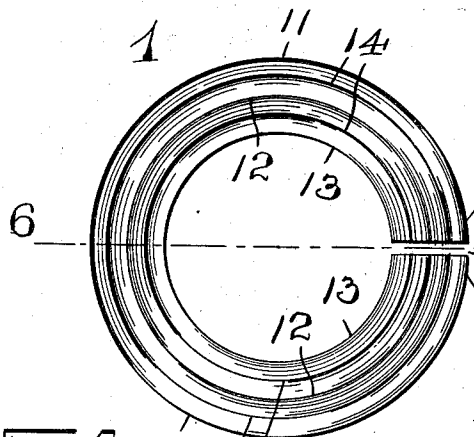


Fig. 4

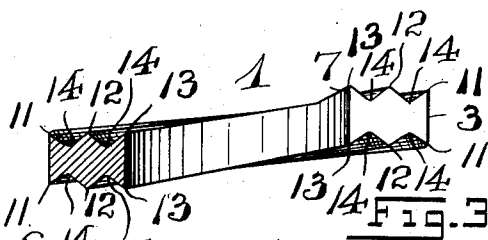


Fig. 3

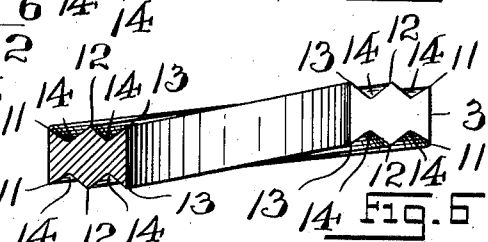


Fig. 5

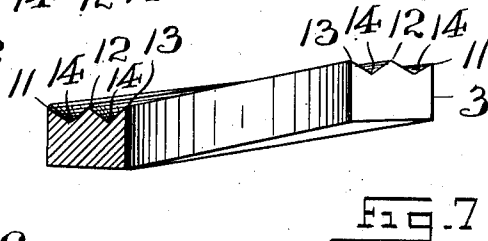


Fig. 6

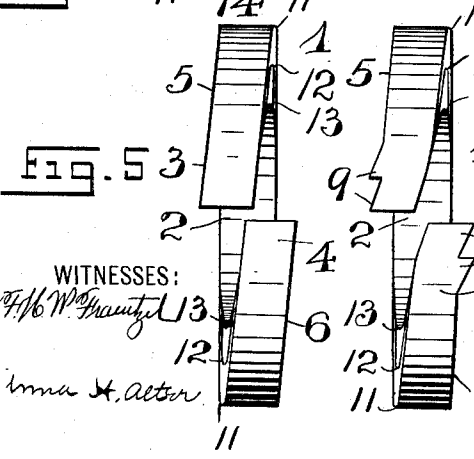


Fig. 7

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Fig. 8

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UNITED STATES PATENT OFFICE.

CHARLES F. BEERS, OF NEWARK, NEW JERSEY.

LOCK-WASHER.

1,025,958.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES F. BEERS, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Lock-Washers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention relates, generally, to improvements in nut-locks; and, the present invention has reference, more particularly, to a novel lock-washer for use with bolts and nuts of the various kinds, and to the kind of lock-washer which is split, and is formed with oppositely projecting spring-members or retaining elements usually formed with tapering end-portions, and one or both of the ends being preferably provided with a holding spur.

The present invention has for its principal object to provide a simply constructed and effectively operating lock-washer of the general character hereinafter set forth, which is split and is formed with oppositely projecting spring-members or elements, the lock-washer, and of course, said spring-members being formed in one or both of their side faces with a series of preferably concentric raised portions and depressions which are brought in contact with the face of that part against which the lock-washer is brought, so as to cause a perfect and most positive holding or biting relation of the washer with the surfaces of the nuts or other parts against which the lock-washer is arranged.

A further object of this invention is to provide a novel lock-washer comprising with the means for producing the holding qualities of lock-washers as now ordinarily made, other means which, when the nut is forced against the lock-washer, will practically embed itself in the face of the nut, so as to provide a greater resistance to the turning of the washer upon the shank of the bolt and to the unscrewing of the nut from the bolt, whereby the loosening and final loss of the nut is obviated.

Other objects of this invention not at this

time more particularly mentioned will be clearly evident from the following detailed description of the same.

My invention consists, therefore, in the novel lock-washer hereinafter more particularly described, and then finally embodied in the clauses of the claims which are appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a plan view of one form of lock-washer embodying the principles of this invention; Fig. 2 is a side elevation of the same; and Fig. 3 is a transverse section of the lock-washer, said section being taken on line 3—3 in said Fig. 1. Fig. 4 is a plan view of a slightly modified form of lock-washer, but still embodying the principal features of this invention; Fig. 5 is a side elevation of the same; and Fig. 6 is a transverse section of said form of lock-washer, said section being taken on line 6—6 in said Fig. 4. Fig. 7 is a transverse section of another modified construction of lock-washer; and Fig. 8 is a side elevation of still another modified form of lock-washer.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

Referring now to the several figures of the drawings, the reference-character 1 indicates the lock-washer proper, the same being preferably made from spring-steel and being properly tempered. The washer is split across one of its portions, as at 2, so as to provide a helically formed ring-like body having the free end-portions 3 and 4. These end-portions may be made tapering, as shown more particularly in Figs. 2 and 8; or, said end-portions may be of the same width as that of the main body of the washer, as clearly illustrated in Fig. 5 of the drawings.

If desired, the side-faces 5 and 6 of the lock-washer may be left perfectly plain, except of course the concentric and alternating raised portions and depressions to be presently more fully set forth, as clearly shown in said Fig. 5; or, the said free end-portions 3 and 4 of the washer may be respectively provided with integral barbs or spurs 7 and 8, as indicated in Fig. 2. In some instances, if found desirable, the end-portions 3 and 4 may be respectively provided with a pair

of laterally projecting spurs or bars 9 and 10, in the manner clearly illustrated in Fig. 8 of the drawings.

As will be clearly seen from an inspection 5 of all of the figures of the drawings, all of the various styles and forms of lock-washers may be provided, in one or both of their side faces, with concentric raised portions 11, 12 and 13 and intermediately disposed 10 concentric depressions 14, two of said raised portions, as 11 and 13, preferably forming marginal ridges of the complete washer. These raised portions or ridges and depres- 15 sions are usually of the general arrangement and conformation here shown; but, it will be clearly evident, that the number of ridges and depressions, as well as the general shapes of the same, may be departed from, if de- 20 sired. The results and purposes of these alternating ridges and depressions will be clearly understood from an inspection of the several figures of the drawings, the said raised portions or ridges practically embed- 25 ding themselves in the face of the nut and the face of the body against which the washer is placed, when the nut is tightly screwed down against the lock-washer, in the usual manner; and, furthermore, the inner ridge 13 placed against the face of the 30 nut will practically follow the screw-thread of the nut, whereby all of said parts in their finally assembled and tightened relations will be rigidly held against any accidental displacement by jarring or successive shocks, 35 so that a more perfect and more positively holding lock-washer is the result.

Where the barbs or spurs are used, the ridges and depressions may extend directly into the same, so as not only to provide a 40 serrated main body-portion, but also providing serrated barbs or spurs, as will be clearly evident from an inspection of Fig. 1 of the drawings. As has been stated, the free end-portions of the washers may be slightly 45 tapered for the purposes of producing elasticity, when compressed, and that the spring-like action is constant in opposite directions.

When the raised portions or ridges and de- pressions are located upon both side-faces of the lock-washer, it provides for a washer 50 which is reversible, and can be used over and over many times.

From the foregoing description of my present invention it will be clearly seen, that I have provided a simply constructed and 55 efficiently operating lock-washer which is admirably adapted for use on railway rails, automobiles, presses, and machinery, and vehicles of the various kinds which are sub- 60 ject to vibration. The lock-washer can also be made in various sizes so as to be adapted for use with bolts and nuts of the various kinds and sizes.

I claim:—

1. A lock-washer comprising a spirally 65 shaped body, a plurality of concentric raised portions arranged thereon providing inter- mediate depressions, said concentric raised portions being triangular in cross section, substantially as and for the purposes set 70 forth.

2. A lock-washer comprising a spirally shaped body, a plurality of concentric raised portions upon the lateral faces of said body, said concentric raised portions providing 75 intermediate depressions, and said concentric raised portions being triangular in cross-section with outwardly presented apex, substantially as and for the purposes set forth.

3. A lock-washer comprising a spirally 80 shaped body, said body being provided with marginal ridges of substantially triangular cross-section, an intermediate ridge also triangular in cross-section, said ridges pre- 85 senting their apexes outwardly and provid- ing intermediate depressions, substantially as and for the purposes set forth.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 13th day of July, 1908.

CHARLES F. BEERS.

Witnesses:

FREDK. C. FRAENTZEL,
GEORGE D. RICHARDS.