(Model.)

S. H. SHIVELY.

WASHER.

No. 271,373. Patented Jan. 30, 1883.

Fig. 1.

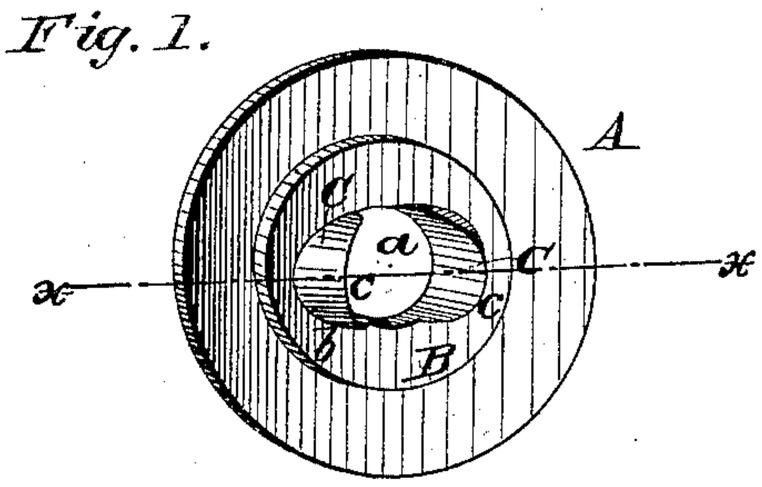


Fig. 2.

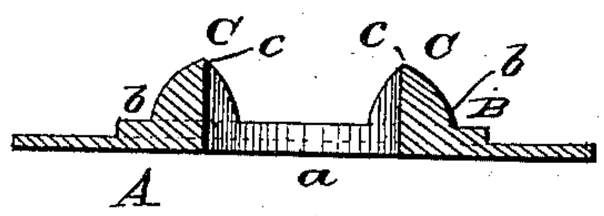


Fig. 3.

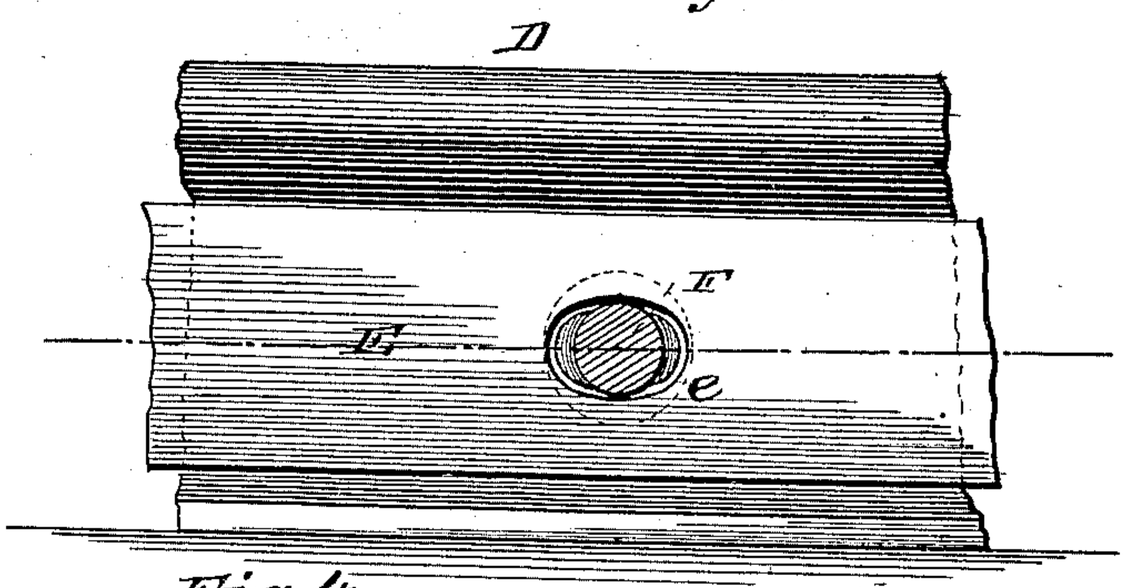


Fig. 4.

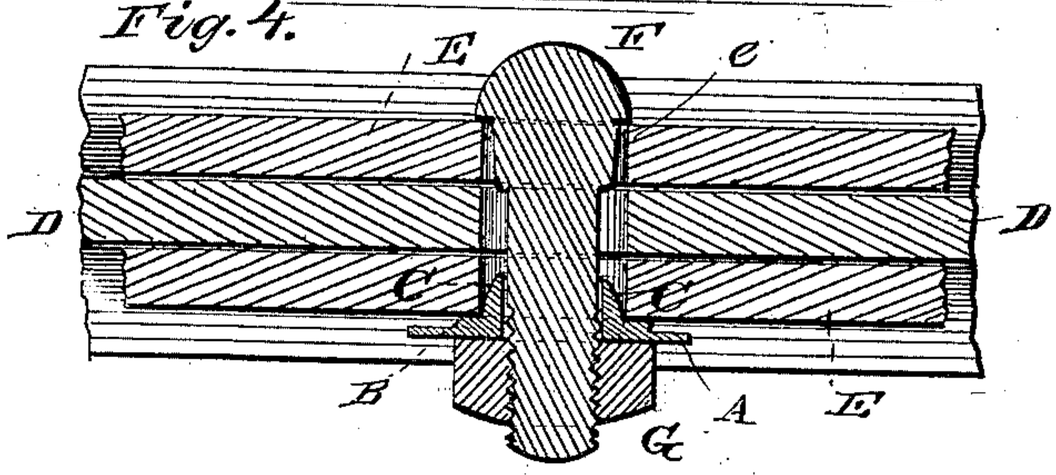
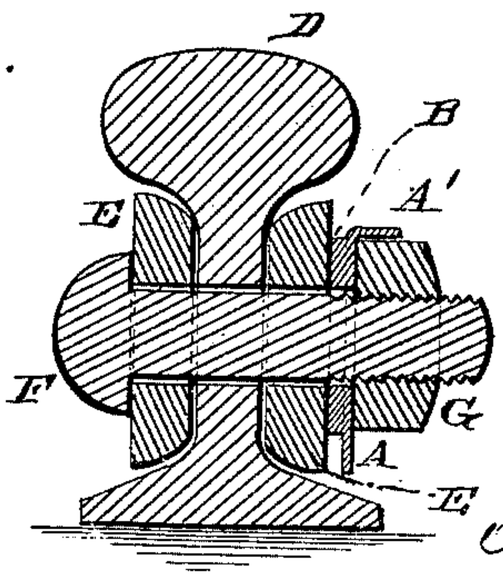


Fig. 5.



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SAMUEL H. SHIVELY, OF FREMONT, OHIO.

WASHER.

SPECIFICATION forming part of Letters Patent No. 271,373, dated January 30, 1883.

Application filed March 8, 1882. (Model.)

To all whom it may concern:

Be it known that I, SAMUEL H. SHIVELY, a citizen of the United States, residing at Fremont, in the county of Sandusky and State of Ohio, have invented a certain new and useful Improvement in Lock-Washers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective front view of my improved lock-washer. Fig. 2 is a longitudinal central section of the same through the line *x x* in Fig. 1. Fig. 3 is a side view of a portion of the rail and its fish-plate with the bolt inserted through it, the nut and lock-washer having been removed. Fig. 4 is a longitudinal horizontal sectional view of the rail, fish-plates, bolt, and washer; and Fig. 5 is a vertical cross-section of the same, showing the edge of the washer bent down over the nut.

Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to that class of lock-nut washers by which the nut is locked or prevented from working loose on the bolt by turning the edge of the washer outwardly against one side of the nut; and it consists in the detailed construction of the lock-washer, as hereinafter more fully described and claimed.

In the accompanying drawings, the letter A represents the flat circular body of the washer, which has a central aperture, *a*, of sufficient size for the insertion of the bolt shown at F.

B is a concentric shoulder or offset, on two sides of which, opposite to each other, are curved lips or projections C C, of the shape clearly shown in the drawings. These lips are made tapering from their bases *b* (see Fig. 2) to their outer edges, *c*, which are rounded or curved to conform to the curvature of the bolt-hole *a*, while a line following the outline of the bases *b* of the lips and the outline of the bolt-hole, where the line of the bases merge into this, would form not a circle, but an oval or ellipse.

The application of the washer will readily be understood by reference to Figs. 4 and 5 of the drawings, in which D represents the rail; E E, the fish-plates; F, the bolt, and G the bolt-nut. The bolt is inserted through oval or elliptical bolt-holes *e* in the fish-plates, the contour or outline of which corresponds in size and shape to the contour of the base lines *b b* and bolt-hole *a* of the washer. In placing the washer in position its lips C C will fill up the space on opposite sides of the bolt, as shown in Fig. 4, and thus prevent play or sidewise motion of the washer, the raised shoulder or offset B of which abuts against the fish-plate. The nut is then screwed home, after which the edge of the washer A is turned down outwardly upon the side of the nut, as shown at A′ in Fig. 5.

The offset B permits a chisel or other suitable tool to be inserted between the washer and the fish-plate for the purpose of bending the edge of the former, besides re-enforcing the lips C C, which prevent the washer from turning on the bolt.

Metal is also saved by this construction, inasmuch as the outer circular flange, A, of the washer, part of which is turned down upon the nut, may be made thinner without weakening the washer than would otherwise be the case. By making the lips C with broad bases, as shown, they will not readily "give" or yield in bending the flange A down over the nut, as where these lips are made thin and of the same thickness as the body of the washer-plate only, but will remain intact and uninjured.

I do not claim broadly a metal washer adapted for locking in position a nut or bolt-head by being secured beneath the same, and having its edge turned outward against the side of said nut or head, and provided with means for preventing it from turning upon the bolt; but

What I claim as my improvement, and desire to secure by Letters Patent of the United States, is—

As an article of manufacture, the cast-metal lock-washer herein shown and described, the same consisting of the circular plate or disk A, having central bolt-hole, *a*, and cast with the concentric annular shoulder B, having the wedge-shaped curved lips C C cast with broad bases *b b*, as shown and set forth.

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Witnesses:

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