

(No Model.)

M. J. ALTHOUSE.  
BRACE LOCK FOR WINDMILL TOWERS.

No. 525,324.

Patented Sept. 4, 1894.

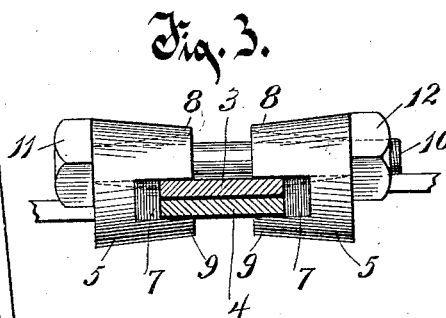
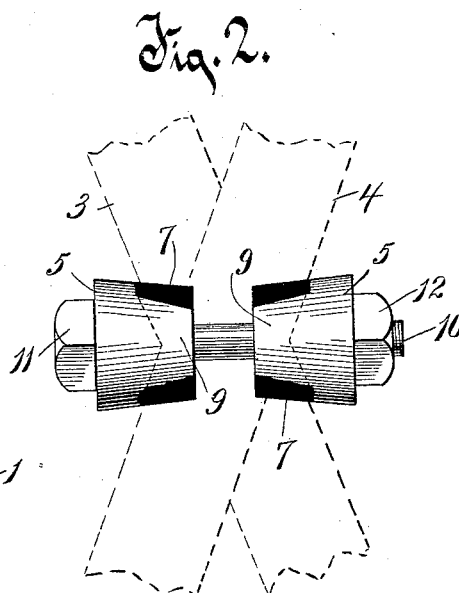
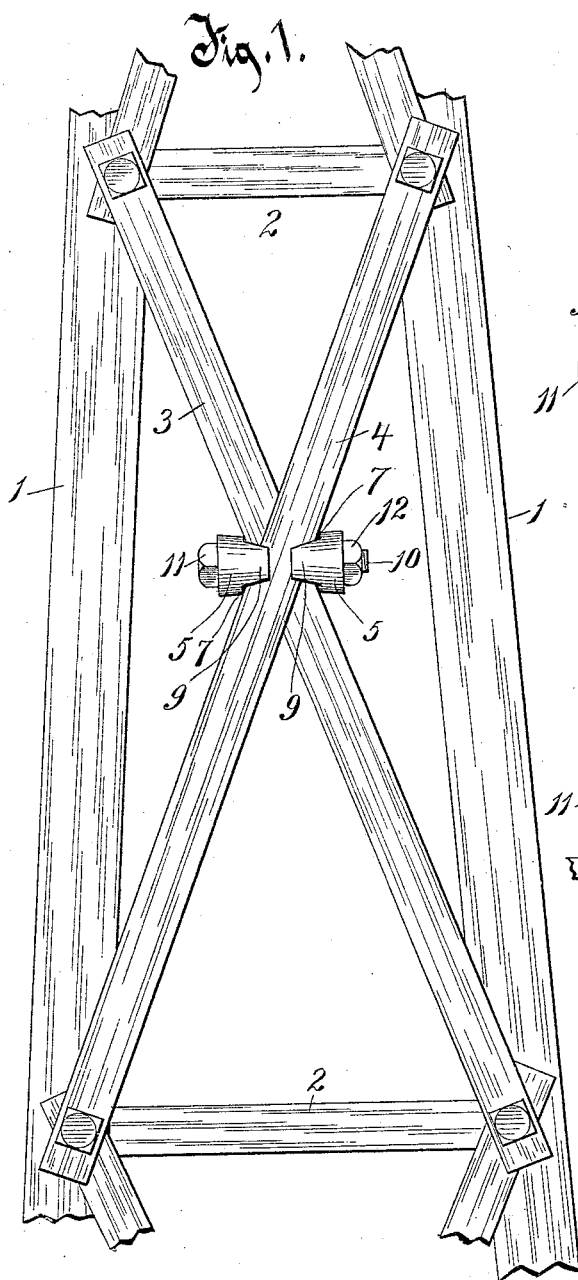
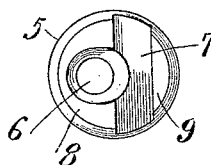


Fig. 4.



Witnesses:

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# UNITED STATES PATENT OFFICE.

MILO J. ALTHOUSE, OF WAUPUN, WISCONSIN.

## BRACE-LOCK FOR WINDMILL-TOWERS.

SPECIFICATION forming part of Letters Patent No. 525,324, dated September 4, 1894.

Application filed January 8, 1894. Serial No. 496,120. (No model.)

*To all whom it may concern:*

Be it known that I, MILO J. ALTHOUSE, of Waupun, in the county of Fond du Lac and State of Wisconsin, have invented a new and useful Improvement in Brace-Locks for Windmill-Towers, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in brace locks for windmill towers, the device being particularly adaptable for the flat braces used in steel windmill towers.

In full sized towers the braces often become loose owing to different causes, and this of course is quite a disadvantage. It is therefore the object of my invention to provide for locking, and thus maintaining the tightness of, the braces; and with this in view the invention consists of the devices and parts as hereinafter described and claimed or their equivalents.

In the accompanying drawings, Figure 1, is an elevation of a section of a windmill tower, showing my improved device applied to the flat braces thereof. Fig. 2, is an enlarged view of the lock, the braces being shown in dotted lines, so as not to obscure the recesses of the locking collars. Fig. 3, is a plan view of the lock with the braces in transverse section, on a plane at the center of intersection, or point of crossing, of the braces, and Fig. 4, is an elevation of the inner end of one of the locking collars, the bolt being removed.

Like numerals of reference denote like parts throughout the several views.

Referring to the drawings, the numerals 1, 1, indicate the steel uprights composing the tower, which are connected, and held apart the proper distance by horizontal braces 2, 2.

The numerals 3 and 4 indicate diagonal flat brace bars, which cross each other at medial points. At the point of intersection, my improved lock is applied. This lock consists of two collars 5, 5, said collars provided with eccentric bolt openings 6, 6, and with recesses 7, 7 respectively, also disposed to one side of the center, the bottoms of said recesses being of double inclined form, and the bolt openings extending to about the centers of said double inclined bottoms, at the apices

or points thereof. By the construction just described two lips upon each collar are formed, the rear lips 8, 8 being of semi-circular form, and having their rear edges bearing against the rear face of the rear brace, and the front lips 9, 9 having their flat inner sides bearing against the outer side of the front brace.

The numeral 10 indicates a locking bolt which is passed through the bolt opening 6, 6, and bears against the face of the rear brace. This bolt is provided at one end with a head 11, and its opposite end is threaded to receive a nut 12.

After the braces are tightened to the required extent, my improved device is adjusted thereto, for the purpose of maintaining the tautness of the braces. In the operation of adjusting the lock, one of the collars is first arranged properly so that its lips will embrace the two braces in the manner shown. The bolt is then passed to its full extent through the bolt-hole of this collar, said bolt bearing against the face of the rear brace, as previously described; and after this the other collar is properly adjusted to place, and the nut 12 screwed up upon the threaded end of the bolt. In this manner, the braces are securely locked. It will be noticed that after the parts are adjusted together in the manner just described, the right hand edge of brace 4 will bear against the upper incline of the recess 7 of the collar on the right of Fig. 1 and the brace 3 will bear against the lower incline of said collar, while the left hand edge of the brace 4 will bear against the lower incline of the recess of the collar on the left of Fig. 1, and the brace 3 against the upper incline of said collar. The apex of the double inclined bottom of each recess fits accurately the adjacent angle formed by the crossing braces.

From the foregoing description, it will be seen that I provide not only a simple device, but also one which is most effective for holding the braces tight. After the braces are locked, should they subsequently again become loose through the effects of cold weather, heavy winds, or other causes, all that is necessary to do is simply to loosen the nut 12, and slide the lock down until the braces are

tight, after which the nut can be again tightened, in order to hold the lock to its adjusted position.

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

1. In a brace lock for windmill towers, the combination, with braces, of collars provided with recesses adapted to engage the opposite edges of said braces, and a locking bolt passing through said collars, substantially as set forth.

2. In a brace lock for windmill towers, the combination, of collars provided with recesses having double inclined bottoms, said recesses adapted to receive the respective angles formed by the intersecting brace rods of the tower, of a bolt adapted to pass through the collars, and to hold said collars in locked position, substantially as set forth.

3. In a brace lock for windmill towers, the combination, with diagonal flat brace rods,

crossing each other at a medial point, of a locking device, consisting of collars provided with eccentric bolt openings, and with recesses also disposed to one side of the center, and forming front and rear lips, the recesses provided with double inclined bottoms, adapted to receive the respective opposite angles formed by the crossing brace bars, and the lips adapted to embrace said bars at the point of intersection, the rear lips bearing against the rear brace, and the front lips against the front brace, a headed bolt passing through the registering bolt holes, and bearing against the face of the rear brace, and a nut on the threaded end of the bolt, substantially as set forth.

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

MILO J. ALTHOUSE.

Witnesses:

C. E. HOOKER,  
CHRIS NIELSEN.