

(No Model.)

M. J. ALTHOUSE.

ADJUSTABLE BRACE FOR WINDMILL TOWERS, &c.

No. 483,520.

Patented Oct. 4, 1892.

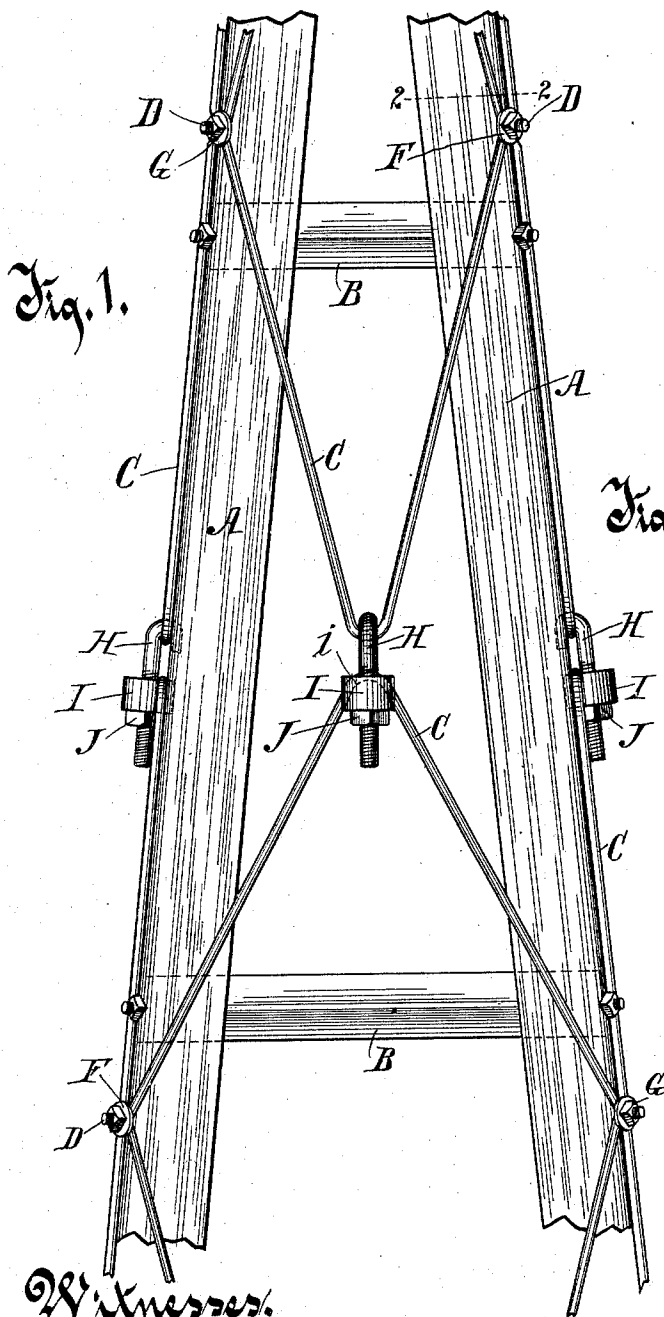


Fig. 2.

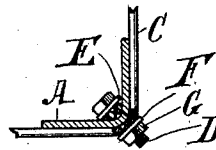


Fig. 3.

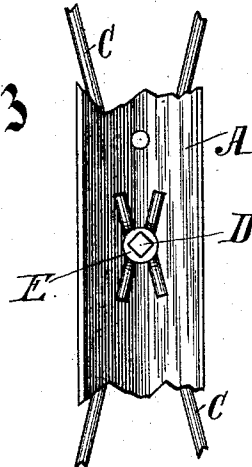
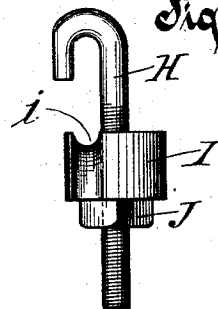


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

MILO J. ALTHOUSE, OF WAUPUN, WISCONSIN.

ADJUSTABLE BRACE FOR WINDMILL-TOWERS, &c.

SPECIFICATION forming part of Letters Patent No. 483,520, dated October 4, 1892.

Application filed April 23, 1892. Serial No. 430,308. (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 Adjustable Braces 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 adjustable braces for windmill-towers.

In the usual form of steel towers which are now commonly employed no means have been provided for conveniently adjusting the brace-rods used in connection therewith. As these rods often become slack, a convenient means of rendering the same taut is of course a desideratum.

My device has in contemplation the accomplishment of the above-pointed-out desirable object; and with this in view the invention consists in the improved construction and combination of parts, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a side elevation of a fragment of a windmill-tower embodying my invention. Fig. 2 is a cross-sectional view on line 2 2, Fig. 1. Fig. 3 is a view of the inner angular surface of a fragment of one of the uprights composing the tower, illustrating the means for securing the extremities of the brace-rods; and Fig. 4 is a detail view of the adjusting device.

Like letters of reference designate like parts throughout all the figures of the drawings.

Referring to the drawings, the letter A indicates the steel uprights, which are of the usual angular form and are connected and held the proper distance apart by horizontal braces B, preferably of rectangular form, in order to constitute a continuous connection for the four uprights.

The letter C indicates the brace rods or wires, the ends of which are passed through apertures formed at the angles of the several uprights and then bent down at right angles upon the inner side of the metal. In order to secure these ends firmly against being drawn out of these apertures, I provide bolts D, passing through said apertures and be-

tween the several wires, the inner ends of said bolts receiving between the heads thereof and the bent ends of the wires metal washers E, bearing firmly against said wires or rods. Similar washers F are inserted upon the outer ends of the bolts, which latter are screw-threaded to receive nuts G, said nuts being screwed tightly against the washers. It will be seen that by this arrangement the ends of the wires are held most securely in place. The wires after leaving the apertures are extended in loop form to the spaces between the uprights, the looped ends thereof being brought near to each other.

The adjusting mechanism is shown clearly in Fig. 4, and it will be seen that it consists of a bolt H, provided with a hooked upper end and receiving thereon loosely a collar I, said collar provided with semicircular recesses *i* to receive the looped portion of the lower brace-rods. The upper hooked portions of the bolts H engage the looped portions of the upper brace-wires. Upon the lower screw-threaded ends of the bolts work nuts J, which are adapted to be turned against the collars I, and thereby force the latter upwardly and at the same time draw bolts H downwardly. This of course has the effect of bringing the two looped ends of the brace-wires closer together, and thus compensate for any slack that may exist. In order to loosen the braces, the nut is turned in the reverse direction, as is obvious.

It will be noticed that the apertures formed at the angles of the several uprights receive therein the ends of four different wires or rods. From Fig. 1 of the drawings the course taken by these wires will be readily understood. Each aperture throughout the series receives one end of each of two of the wires whose loops are upward and located upon angularly-adjacent sides of the tower and also receiving one end each of two of the wires similarly located, but having their looped portions downward.

While I prefer to use my invention in connection with steel towers for windmills, and have so shown and described the same in this specification, still I do not wish to be understood as limiting myself to that particular adaptation, inasmuch as it may be found

equally desirable not only in other classes of windmill-towers, but also in structures adapted for different purposes.

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

1. In an adjusting device, the combination of looped wires, a bolt having a hooked end to engage one of the loops and its opposite end screw-threaded, a collar loose upon said bolt to receive the other loop, and a nut turning upon the screw-threads against the collar, substantially as set forth.

2. In an adjusting device, the combination of looped wires, a bolt having a hooked end to engage one of the loops and its opposite end screw-threaded, a collar loose upon said bolt and provided with a recess conforming to and receiving the other loop, and a nut turning upon the screw-threads against the collar, substantially as set forth.

3. In an adjusting device, the combination of a tower composed of uprights provided with apertures, a series of looped brace-wires upon the sides of the tower, having their looped portions adjacent, the ends of said wires secured in the apertures, each aperture throughout the series receiving one end of each of two of the wires whose loops are upward and located upon angularly-adjacent sides of the tower and also receiving one end of two of the wires similarly located, but having their looped portions downward, and adjusting devices constructed to engage the adjacent loops and draw the same closer together or farther apart, substantially as set forth.

4. In an adjusting device, the combination of a tower composed of angular uprights provided with apertures at the angles thereof, a series of looped brace-wires upon the sides of

the tower, having their looped portions adjacent, the ends of said wires secured in the apertures, each aperture throughout the series receiving one end of two of the wires whose loops are upward and located upon angularly-adjacent sides of the tower and also receiving one end of two of the wires similarly located, but having their looped portions downward, bolts passing through the apertures, the heads of said bolts having metallic washers interposed between the same and the inner bent ends of the wires, nuts upon the outer ends of the bolts, washers interposed between the same and the outer portions of the wires, and adjusting devices for engaging the loops and drawing the same closer together or farther apart, substantially as set forth.

5. An adjusting device consisting of a bolt having one end hooked and the opposite end screw-threaded, a collar loose upon said bolt, and a nut turning upon the threads against the collar, substantially as set forth.

6. In an adjusting device, the combination of uprights provided with apertures, wires each having its ends passing through the apertures and bent down at right angles upon the uprights, bolts inserted between the wires, washers interposed between the wires and the heads of said bolts upon one side of the uprights, and washers upon the opposite side of the uprights, inserted between the wires, and nuts upon the threaded ends of the bolts, substantially as set forth.

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

MILO J. ALTHOUSE.

Witnesses:

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