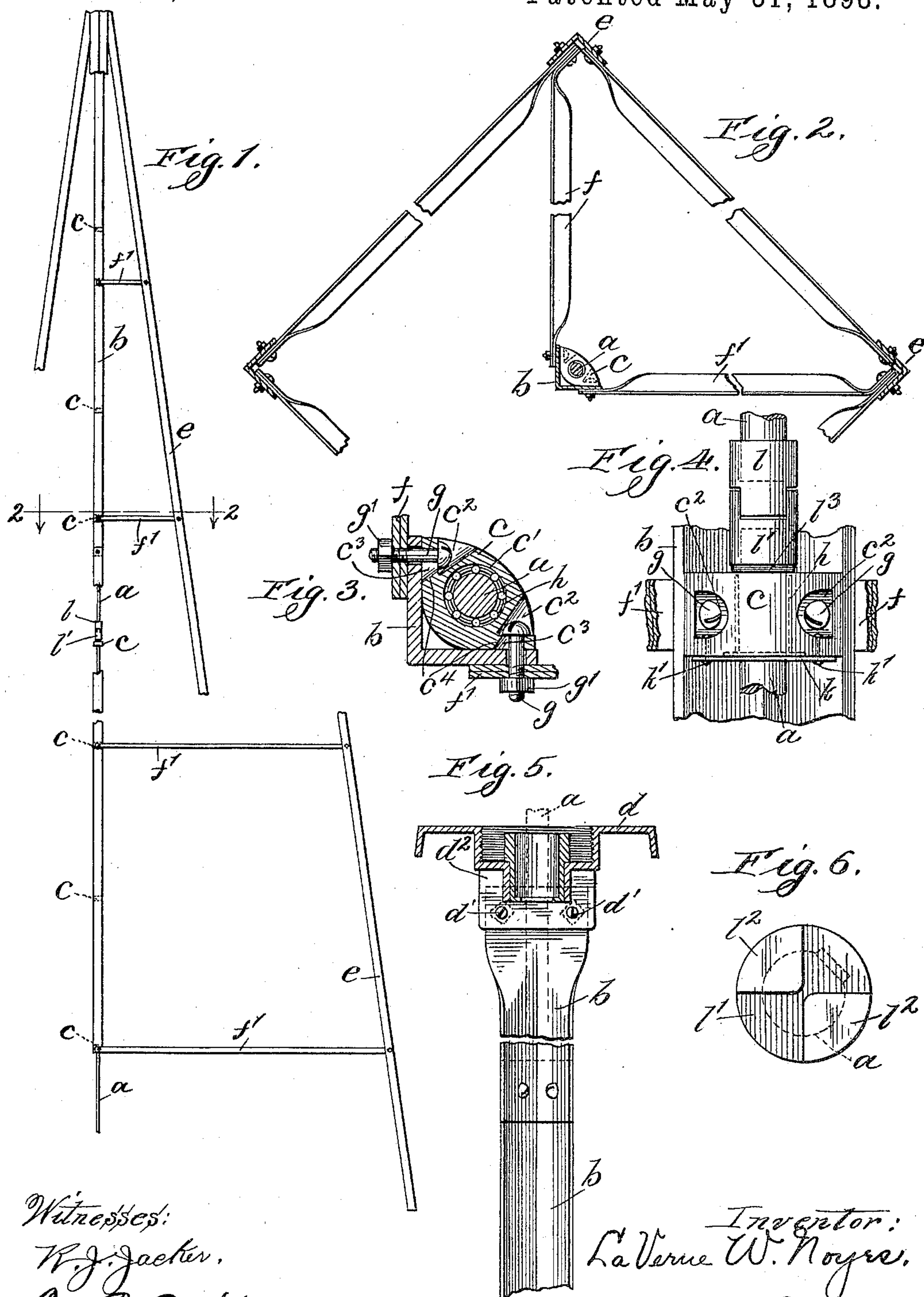


(No Model.)

LA VERNE W. NOYES.
SHAFT SUPPORT FOR WINDMILLS.

No. 604,780.

Patented May 31, 1898.



Witnesses:

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UNITED STATES PATENT OFFICE.

LA VERNE W. NOYES, OF CHICAGO, ILLINOIS.

SHAFT-SUPPORT FOR WINDMILLS.

SPECIFICATION forming part of Letters Patent No. 604,780, dated May 31, 1898.

Application filed November 20, 1897. Serial No. 659,231. (No model.)

To all whom it may concern:

Be it known that I, LA VERNE W. NOYES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Shaft-Supports for Windmills, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a shaft-support for windmills, my object being to provide improved means for rigidly supporting the vertical shaft of a windmill within the tower.

In geared windmills a vertical shaft extends from the mill down the axis of the tower to the mechanism to be driven, which is usually located at the base of the tower, and great difficulty has been experienced in securing a sufficiently rigid support for the shaft and its bearing-boxes. In accordance with the present invention a vertical angle-bar of one or more sections extends along the shaft and is secured and braced to the tower at intervals, the shaft lying within the angle between the flanges of the angle-bar and being supported at intervals in boxes, which are secured between the flanges of the angle-bar by bolts or otherwise, the points of support of the boxes being preferably in line with each other and with the axis of the shaft, whereby the box is securely held in position.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a view of a tower embodying my invention. Fig. 2 is a plan view through a section of the tower. Fig. 3 is a sectional view through the journal-box. Fig. 4 is a view in elevation of the journal-box and shaft-coupling. Fig. 5 is a view illustrating the manner of securing the upper end of the angle-bar. Fig. 6 is an end view of one member of the shaft-coupling.

Like letters refer to like parts in the several figures.

The shaft *a* rests within the angle of the angle-bar *b* and is supported at intervals by boxes *c*, secured to the flanges of the angle-bar. The upper end of the angle-bar is secured to the lower end of the casting *d*, that supports the windmill, the end of the angle-

bar being shown as flattened and secured by bolts *d' d'* to the lug or plate *d²*, cast upon the supporting-casting *d*. At intervals, usually every ten feet, the angle-bar is braced to the posts *e e* of the tower by braces *f f'*, extending at right angles, the braces preferably being formed from angle-bars having the flanges flattened together at the ends and bolted to the angle-bar and the posts. The boxes are usually placed about five feet apart and are provided with a central opening *c'* for the passage of the shaft, recesses *c² c²* being provided in the opposite sides for the passage of the bolts *g g*, which pass through the holes *c³ c³* and through corresponding holes provided in the flanges of the angle-bar. The ends of the braces *f f'* rest against the outer faces of the flanges, and the nuts *g' g'* being screwed upon the ends of the bolts securely hold the boxes and the braces in position. The sides of the holes *c³ c³* are cut away at an angle to provide an oblique side wall *c⁴*, which permits the insertion of the bolt, so that the head thereof may rest within the recess *c²*. The bolts and the axis of the shaft are preferably arranged substantially in line to provide supports upon opposite sides of the shaft to thus securely hold the box in position. I usually provide roller-bearings for the boxes, a cage *h* being placed within the opening *c'* from beneath and held in position by a plate *k*, secured in position by means of rivets *k' k'*.

The shaft *a* is usually made in several sections, coupled together by means of a coupling of any preferred form. In the present instance the coupling is illustrated as being formed of two interlocking members *l l'*, secured to the respective shaft-sections, and each having the end cut away to form two projections in the form of sectors *l² l²*, adapted to interlock with a similar pair of sectors on the other member. The coupling is preferably placed just above one of the boxes, and a number of washers *l³ l³* are placed between the lower members of the coupling and the top of the box.

I claim—

1. In a windmill, the combination with a vertical angle-bar braced at intervals to the posts of the tower, of journal-boxes secured between the flanges of said angle-bar, and a shaft journaled therein and lying in the an-

gle between the flanges of said angle-bar, substantially as described.

2. In a windmill, the combination with a vertical angle-bar braced at intervals to the
5 posts of the tower, of a shaft lying in the angle between the flanges of said angle-bar, and journal-boxes for said shaft at intervals resting against and secured to the inner faces of
10 said flanges, the axis of the shaft and the points of support of the box lying substantially in line, substantially as described.

3. The combination with an angle-bar of a journal-box secured between the flanges thereof, and a shaft journaled therein and ly-

ing within the angle between said flanges, 15 said journal-box having a central opening and recesses in the sides communicating with holes having oblique side walls, and securing-bolts passing through said holes and having the heads resting in said recesses, sub- 20 stantially as described.

In witness whereof I have hereunto subscribed my name in the presence of two witnesses.

LA VERNE W. NOYES.

Witnesses:

W. CLYDE JONES,
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