(No Model.)

LA VERNE W. NOYES.

WINDMILL TOWER.

No. 457,820. Patented Aug. 18, 1891.

Fig. 1.

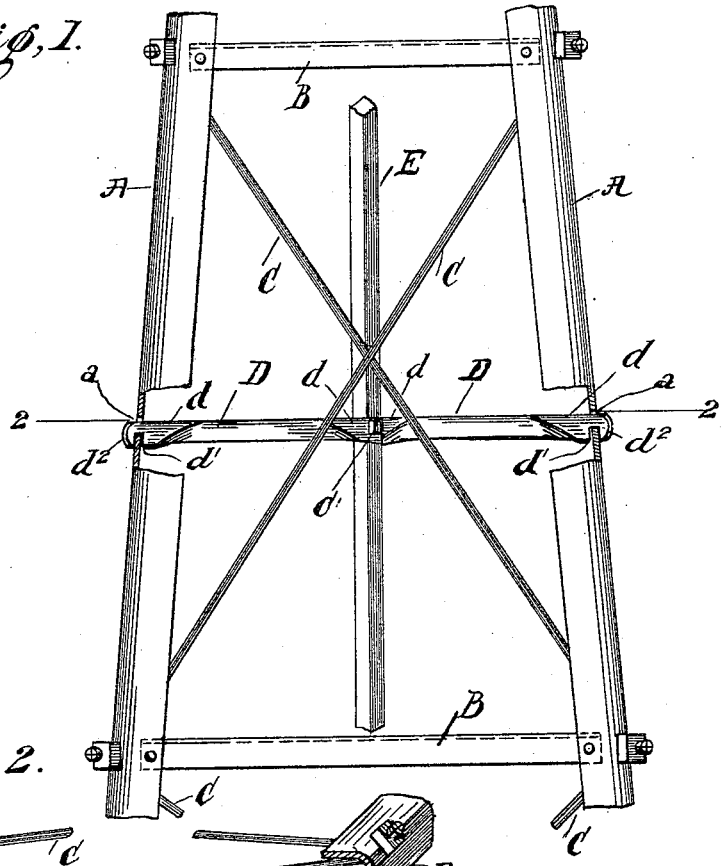


Fig. 2.

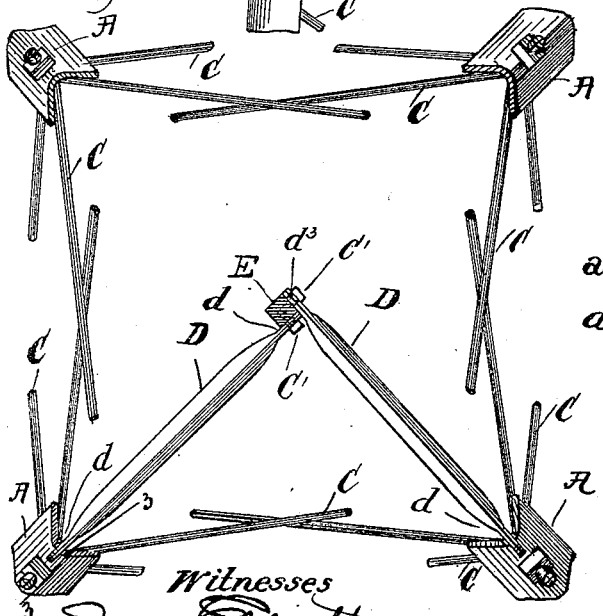
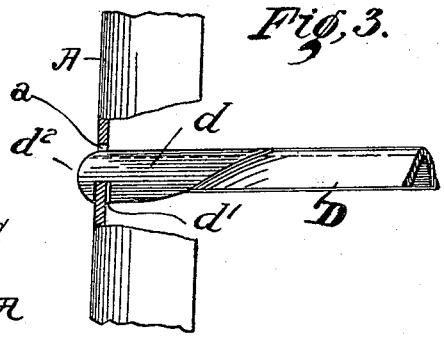


Fig. 3.



Witnesses
Jean Elliott.
Julia Usler.

Inventor
La Verne W. Noyes
By his Attorneys
Burton and Burton

UNITED STATES PATENT OFFICE.

LA VERNE W. NOYES, OF CHICAGO, ILLINOIS.

WINDMILL-TOWER.

SPECIFICATION forming part of Letters Patent No. 457,820, dated August 18, 1891.

Application filed May 15, 1891. Serial No. 392,846. (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, county of Cook, and State of Illinois, have invented certain new and useful Improvements in a Tower, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

This invention is an improvement in detail construction of a tower shown in my pending application Serial No. 390,615, filed April 27, 1891.

In the drawings, Figure 1 is a side elevation of a portion of the tower having the corner-post, to show a certain detail of construction which embodies the invention. Fig. 2 is a horizontal section at the line 2 2 on Fig. 1. Fig. 3 is a vertical detail section at the line 3 3 on Fig. 2.

The improvement relates to a link for controlling the pump-rod or pitman. Other parts of the structure of the tower herein shown are fully described in my said former application, and are only illustrated here for the purpose of showing the relation of the specific improvement.

A A A A are corner-uprights of the tower, which are made of angle-iron with blunted corners.

B B are the horizontal cross-ties connecting the corner-uprights.

C C C are the oblique ties or braces, which, together with the horizontal ties, make up the trussed construction of the tower.

E is the pump-rod.

D D are the stays or guides for the pump-rod, which constitute this invention. Their purpose is to prevent the lateral bending or buckling of the pump-rod in its downward or thrusting movement or to limit such bending to that which can take place between any two consecutive stays, several being connected at different points of the length of the rod, the number varying with the length. I make these stays of light angle-iron and pinch or fold together the two flanges of the angle-iron at the ends, as seen at *d*. At one end I notch the edges of the flanges thus pinched together, such notch being shown at d', and round off the end, as seen at d^2. Through the corner-uprights A, at the blunted corner or angle, I punch holes *a*, of such size that the hook formed on the end of the stays *d* by the notch d' can be hooked into such hole *a*, the rounded end d^2 permitting this to be done readily without making the hole *a* large enough to permit the hook to escape unless the stay is dropped to nearly vertical position, which cannot occur in the operation of the structure. Through the two flanges, flattened together at the opposite end, I make the hole d^3, and the bolt or screw C′, inserted through said hole into the pump-rod E, becomes a pivot of the stay D to the pump-rod, the extent of the flattening at this end being a little greater than the width of the pump-rod, so that the stay may by the bolt be bound quite closely to the pump-rod, which is thereby somewhat steadied and prevented from twisting. A precisely similar connection is made from the pump-rod to two adjacent corners of the towers, the stays D thus standing in vertical planes at right angles to each other, one tending to prevent the buckling or springing of the pump-rod in one plane and the other tending in like manner to prevent such defective action in the right-angular plane, and the two together therefore tending to stay the rod in the line of its stroke. Such lateral motion as the rod necessarily receives from each stay as it swings vertically about its pivotal connection with the tower is not prevented by the other stay, because they are both sufficiently loose at their connections, respectively, to the corner-uprights to receive each the slight lateral motion which the vertical movement of the other causes.

It will be observed that the construction above described—to wit, the pinching together of the flanges of the angle-iron for purpose of pivoting them to the pump-rod and to the tower corners—locates the portion of the flanges which is not thus separated in positions oblique to a vertical plane through the angle, thus making both flanges contribute vertical stiffness to the stays and place them in such relation to the strains which they experience as to best adapt them to resist the same.

In order to make the holes in the corner-uprights for the pivotal connection thereto of the stays as described, these corner-uprights are desirable, and for practical construction

may be considered as necessarily blunted or rounded at their corners, instead of having the angle developed fully, and this same blunting or rounding is equally necessary in order to permit the pivotal action of the hooked ends of the stays in such holes and also the slight lateral action which they obtain, as above described, since if the hole were made through a fully-developed angle the hook, having the necessary lateral play in the hole, would almost of necessity slip off the point of the exterior angle and lodge at one side of it, and so either have longitudinal play, which is not desirable, or would be caught by the angle and cramped in respect to the lateral movement which it should have.

I claim—

1. In combination with the corner-uprights of the tower and the pump-rod within the tower, the stays D, pivotally connected to the corner-uprights and to the pump-rod, said stays being made of angle-iron and placed with their flanges oblique to a vertical plane, substantially as set forth.

2. In combination with the pump-rod and the corner-uprights of the tower, the stays pivotally connected at their opposite ends to the pump-rod and tower corners, respectively, said stays being made of angle-iron, having flanges pinched together at their ends for the purpose of such pivotal connection, substantially as set forth.

3. A pump-rod and the tower corner-uprights, combined with the stays pivotally connected at their ends to the pump-rod and said uprights, respectively, the corner-uprights having their angles blunted or rounded and pierced with holes through such blunted portion and the stays being pivotally connected to the tower by having their ends provided with hooks, which are hooked through the holes, substantially as set forth.

In testimony whereof I have hereunto set my hand, at Chicago, Illinois, in the presence of two witnesses, this 13th day of May, 1891.

LA VERNE W. NOYES.

Witnesses:
J. B. ROBINSON,
JULIA USLER.