(No Model.)

T. SNOW.

TOWER FOR WINDMILLS.

No. 493,660. Patented Mar. 21, 1893.

Fig. 1.

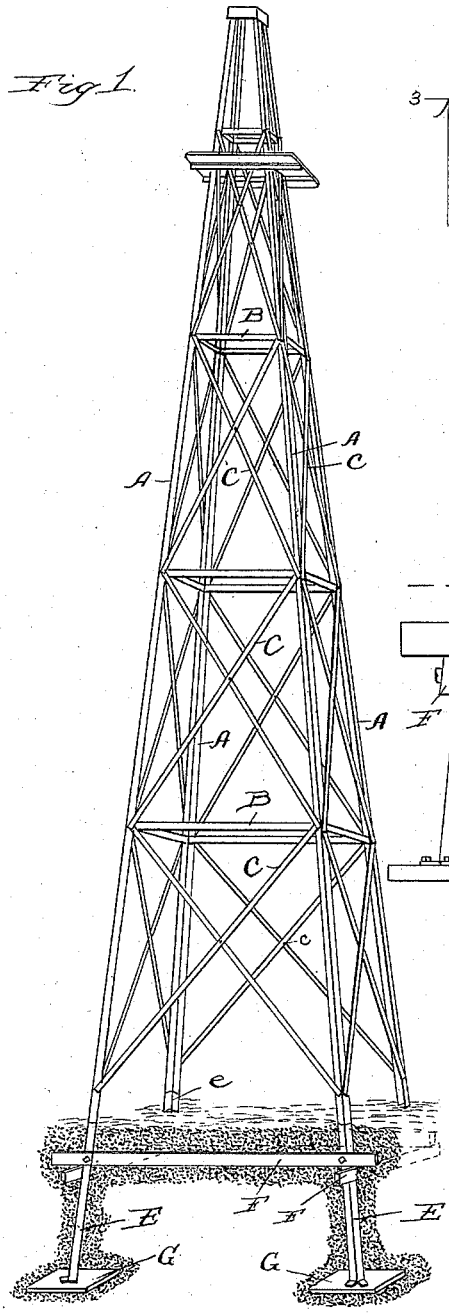


Fig. 2.

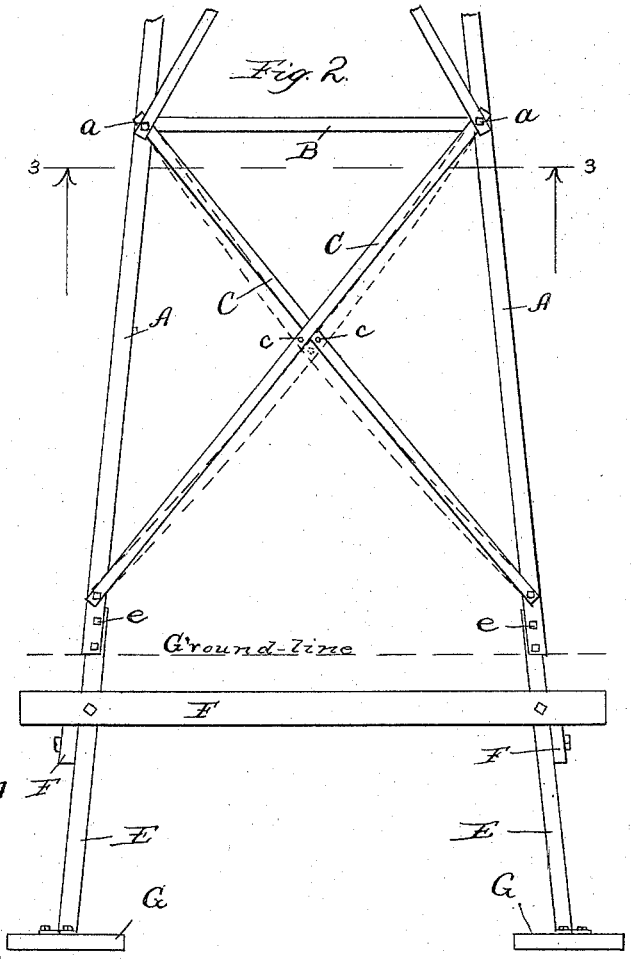
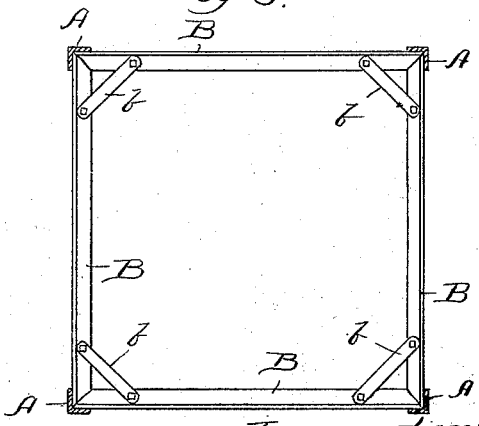


Fig 3.



Witnesses:
Sam. E. Curtis
H. W. Munday

Inventor:
Thomas Snow
By Munday, Evarts & Adcock.
His Attorneys.

UNITED STATES PATENT OFFICE.

THOMAS SNOW, OF BATAVIA, ILLINOIS.

TOWER FOR WINDMILLS.

SPECIFICATION forming part of Letters Patent No. 493,660, dated March 21, 1893.

Application filed February 3, 1892. Serial No. 420,244. (No model.)

To all whom it may concern:

Be it known that I, THOMAS SNOW, a citizen of the United States, residing at Batavia, in the county of Kane and State of Illinois, have invented a new and useful Improvement in Towers for Windmills, of which the following is a specification.

This invention relates to the construction of the towers of wind mills and the manner of anchoring the same to the ground, and is more especially intended for use with towers constructed of metal, which are now coming into extensive use.

The invention consists in the novel features and novel combinations of parts and devices hereinafter set forth and pointed out in the claims.

In the drawings Figure 1 is an elevation of my improved tower, the supporting earth being in section. Fig. 2 is an enlarged detail elevation of the lower portion of the tower. Fig. 3 is a section upon the line 3—3 of Fig. 2.

In the drawings A represents the corner posts formed of angle bars.

B represents the cross girts connecting the posts A together at different levels. These girts form squares, which are rendered rigid by corner braces *b*, and they are also formed preferably of angle iron, and the horizontal webs thereof are beveled at the abutting ends so as to form a close joint, as clearly shown at Fig. 3.

C C are the diagonal braces applied to and connecting the posts A and the girts B. In order to avoid weakening the posts A, I secure both the braces and the girts to the posts by a single bolt *a* at each joint, as seen at Fig. 2, such bolt passing through the end of one of the braces and of that one of the girts located immediately above or below the brace, and also through the adjacent portion of the web of the post lying parallel with the brace and girt. Each post is therefore perforated with but one bolt or rivet opening at each of its junctions with the braces and girts.

In order to give the tension to the braces which is desirable to render the structure rigid, the braces are deflected slightly from a straight line and joined together permanently in such deflected condition. This result I accomplish by providing them with rivet openings *c* located in a plane slightly above (or below) their natural meeting point, and then bending them to bring such openings into register with each other, and secure them together in the deflected condition by passing a bolt or rivet through the openings *c*. I show at Fig. 2 the braces in full lines prior to the imparting of the deflection, and in broken lines the positions occupied by them after they are deflected and secured together. By thus deflecting the braces at the centers, I secure a drawing by them which prevents any looseness at the joints with the posts and renders the entire structure very rigid. Of course they may be otherwise joined together at the points where they cross each other.

Below the posts A are anchor posts E, preferably of like angle iron but separate from the posts and bolted thereto, as shown at *e*. They are joined together so as to form a united frame by bars F located below the ground line, and at their feet they are bolted or otherwise secured to anchor blocks G. These blocks afford the posts such an amount of supporting area as will prevent any tendency by the posts to cut or work their way deeper into the ground and they also prevent their drawing upward under the action due to the rocking of the tower by the wind. The entire anchoring structure which may be thus composed of posts E, bars F and blocks G, may be embedded in the earth entirely out of sight and the tower be tied thereto subsequently.

I claim—

1. In a tower, the combination with corner posts of angle iron arranged with their corresponding flanges in line, of struts connecting these posts, and arranged in the same horizontal plane, said struts being formed of angle iron having one flange secured to the corner posts, and the other flange having abutted mitered ends to form a rigid frame, substantially as specified.

2. In a tower the combination with corner posts of angle iron, arranged with their corresponding flanges in line, of rigid frames connecting said posts at intervals and formed of angle iron struts having their horizontal flanges mitered and abutted at the corners, and the vertical flanges secured to the corresponding flanges of the corner posts, and of corner braces connecting the adjoining struts, substantially as specified.

3. A metallic tower composed of posts A, girts B and braces C, the braces and girts being unitedly secured to the posts by a single bolt at each joint, substantially as specified.

4. The combination with a tower of braces C deflected and joined together so as to produce drawing strains by such braces, substantially as specified.

5. The combination with a steel tower of an anchoring frame work consisting of posts E, bars F and anchor blocks G substantially as specified.

6. The combination in a steel tower of the girts B, forming a square and corner braces *b* rendering the square rigid, substantially as specified.

7. The combination in a tower of the girts, mitered and forming a rigid frame, and secured by their members respectively to the flanges of the upright posts, as and for the purpose set forth.

THOMAS SNOW.

Witnesses:
C. A. WHITING,
JAMES TODD.