(No Model.) 2 Sheets—Sheet 1.

W. C. WESTAWAY.

METAL TOWER.

No. 455,424. Patented July 7, 1891.

Fig. 2.

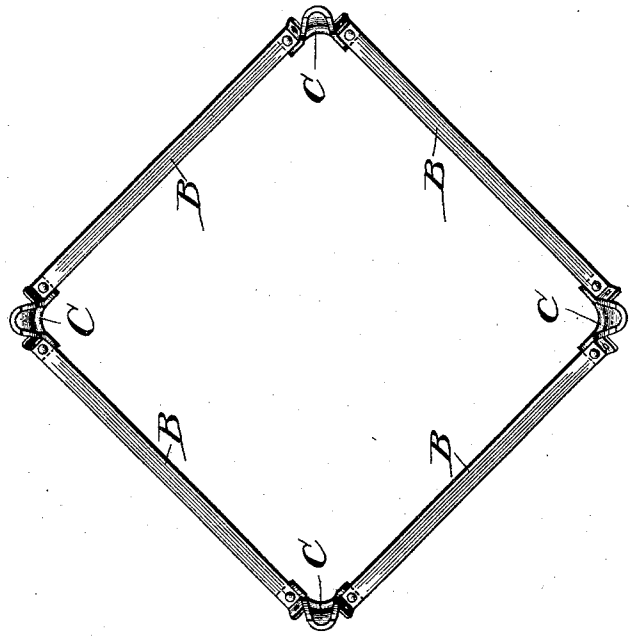
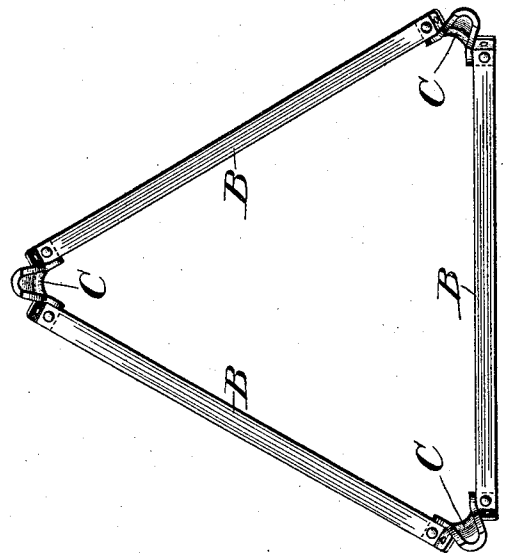


Fig. 1.



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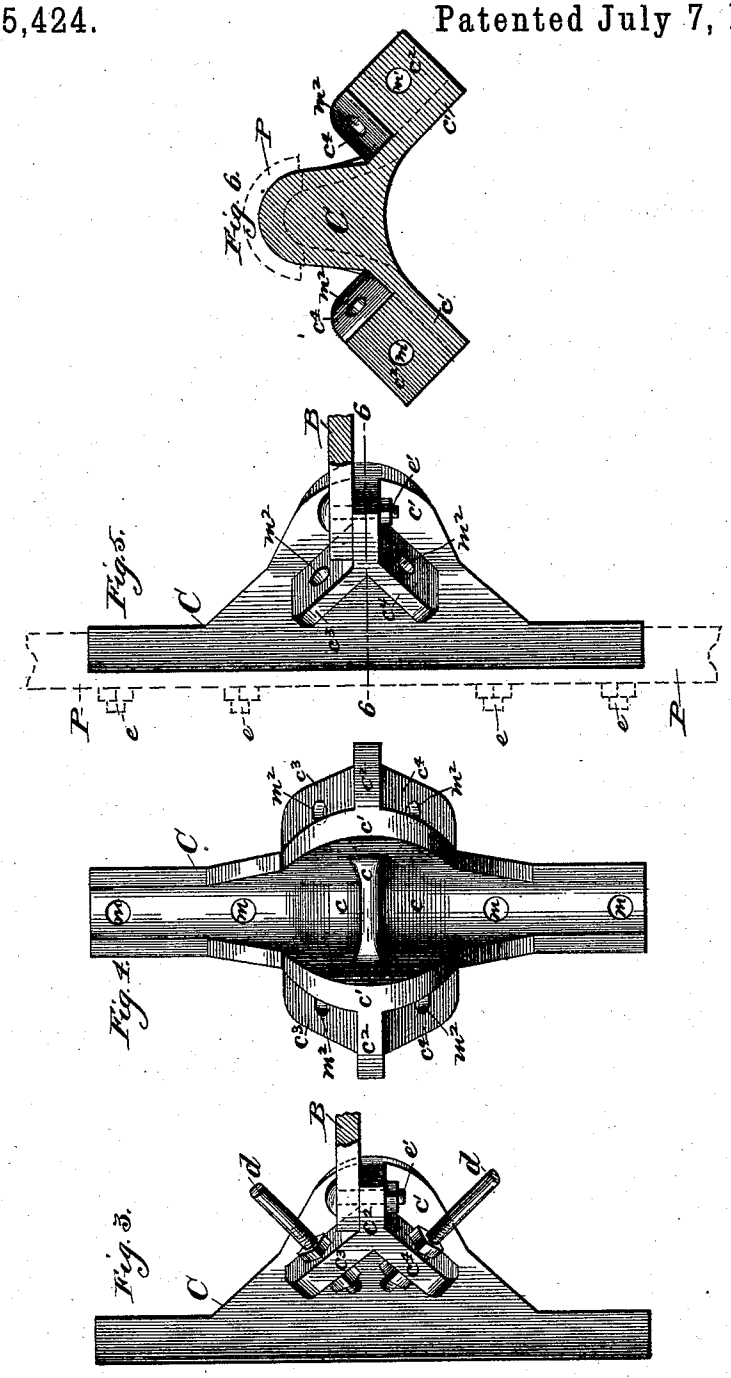
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(No Model.) 2 Sheets—Sheet 2.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WALTER C. WESTAWAY, OF DECORAH, IOWA.

METAL TOWER.

SPECIFICATION forming part of Letters Patent No. 455,424, dated July 7, 1891.

Application filed April 1, 1891. Serial No. 387,303. (No model.)

To all whom it may concern:

Be it known that I, WALTER C. WESTAWAY, a citizen of the United States of America, residing at Decorah, in the county of Winneshiek and State of Iowa, have invented certain new and useful Improvements in Metal Towers, of which the following is a specification.

Referring to the accompanying drawings, in which like reference-letters indicate like parts, Figure 1 indicates the couplings and cross-beams of a triangular tower; Fig. 2, the same for a square tower; Fig. 3, a side elevation of the coupling for a triangular tower; Fig. 4, an elevation of the inner side of the same; Fig. 5, a side elevation of the coupling for a square tower, and Fig. 6 a cross-section in line 6 6 of Fig. 5.

Towers for windmills, electric lights, and similar purposes have heretofore frequently been constructed of pipe-sections, coupled together and properly tied and braced, and of angle-iron sections having their ends overlapping and riveted together. Angle-iron and curved iron or "split pipe," as I prefer to term it, enable the tower to be made much lighter and cheaper than by the use of metal pipes, and of all the strength required; but so far as I am aware no means have been hitherto devised for enabling towers having angle-iron or split-pipe posts to be constructed in sections and the sections strongly united without the use of rivets, a mode of construction having many important and desirable practical advantages, such as economy of labor and expense, saving of time in putting the structure together at the place where it is to be used, convenience in taking it apart for repairs or removal, &c. The object of my invention is to supply this want by providing a cheap, simple, and strong coupling, which can be furnished from the shop with the angle-iron or split-pipe post-sections, the tie-rods, lateral braces, bolts, and nuts, and wherewith any ordinary workmen, however unskilled in mechanics, can readily put the structure together or take it apart, while even a skilled mechanic can do the same much more quickly and conveniently than by the old method.

To this end the invention consists in the coupling constructed substantially as hereinafter described, and in the combination of the same with the other members of the structure in the manner herein set forth.

These towers, in order to give maximum strength and stiffness at minimum cost, are made triangular or quadrilateral in cross-section, with corner-posts slightly inclined inward from bottom to top, braced by horizontal beams, and tied with diagonal tie-rods. I construct the posts in sections connected by my improved couplings, which re-enforce and strengthen the joints in addition to their connecting-function, and I connect the braces and tie-rods directly to the couplings, making the latter of such form as to conveniently and effectively serve all these purposes.

In the drawings, P P indicate the posts, made of angle-iron or split pipe with its concave side facing inward toward the tower.

B B are the horizontal brace-beams; *d d*, the diagonal tie-rods, and C C the new couplings. These couplings are intended to fit into the concave side of the posts, and are secured thereto by bolts *e*, passing through holes *m m*, and held in place by screw-nuts. The couplings at their rear or inner side are preferably concave; but in such case the concavity is partially filled up at and near the middle by an enlargement (shown at *c*) to increase the strength of the structure directly at the post-joints. At each side of this re-enforcement the side walls of the coupling are widened out into stout strong wings or flanges c', whose vertical planes stand at an angle to each other of ninety degrees for a quadrangular tower and one hundred and twenty degrees for an equilaterally-triangular tower, and may be fixed at any other appropriate angles for other forms of tower. On their outer sides the flanges c' are further re-enforced by a stout horizontal flange c^2, having a bolt-hole m', and divided at its outer end into two stout flanges c^3 c^4, whose planes incline forty-five degrees upward and downward, respectively, from the horizontal flange c^2. Each of these inclined flanges is also provided with a bolt-hole m^2.

The parts are assembled as follows: At every post-joint the adjacent post-sections are coupled by the couplings C, preferably applied at the concave side of the posts, and bolted thereto by bolts *e*, as above described.

The horizontal beams B are connected to the flanges c^2 by bolts e', secured by screw-nuts. The end of the tie-rod which extends downward is passed through the flange c^4 and secured by a screw nut or nuts. The end of the tie-rod which extends upward is passed through the flange c^3 and similarly secured. When all these parts have been connected and the nuts tightened up, the joint-structure is complete. The tower can be carried to any desired height by imposing section upon section; and it is obvious that any ordinary workman can readily put it together or take it apart.

It is not necessary that the body of the coupling C be made concave, as the concavity may be filled out with metal in casting, if preferred; but it is lighter, neater in appearance, and sufficiently strong when made concave, and the saving of metal and weight renders that form generally preferable.

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

1. The coupling C, provided with the lateral wings or flanges c', each re-enforced with the horizontal flange c^3, and two inclined flanges c^3 c^4, arranged and adapted for the application of the horizontal beams, and diagonal tie-rods, substantially as described.

2. The combination of the angle-iron or split-pipe posts P, the couplings C, constructed as described, the braces B, and the diagonals d d, substantially as herein set forth.

WALTER C. WESTAWAY.

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