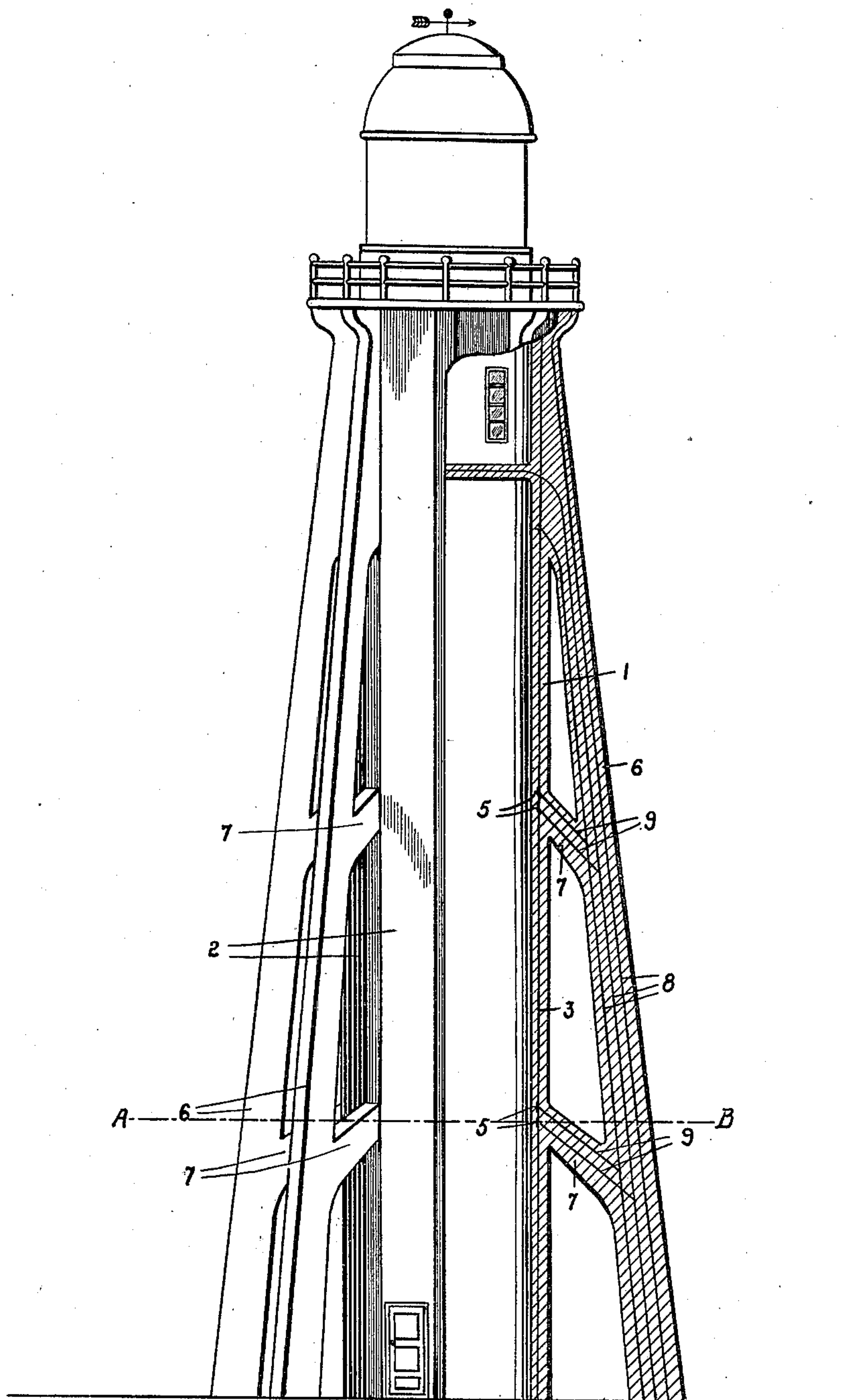


L. F. H. DE MIFFONIS.
 REINFORCED CONCRETE TOWER.
 APPLICATION FILED DEC. 3, 1908.

960,666.

Patented June 7, 1910.

2 SHEETS—SHEET 1.



Witnesses.

Lloyd Blackmore
R. W. Carnochan

Fig. 1.

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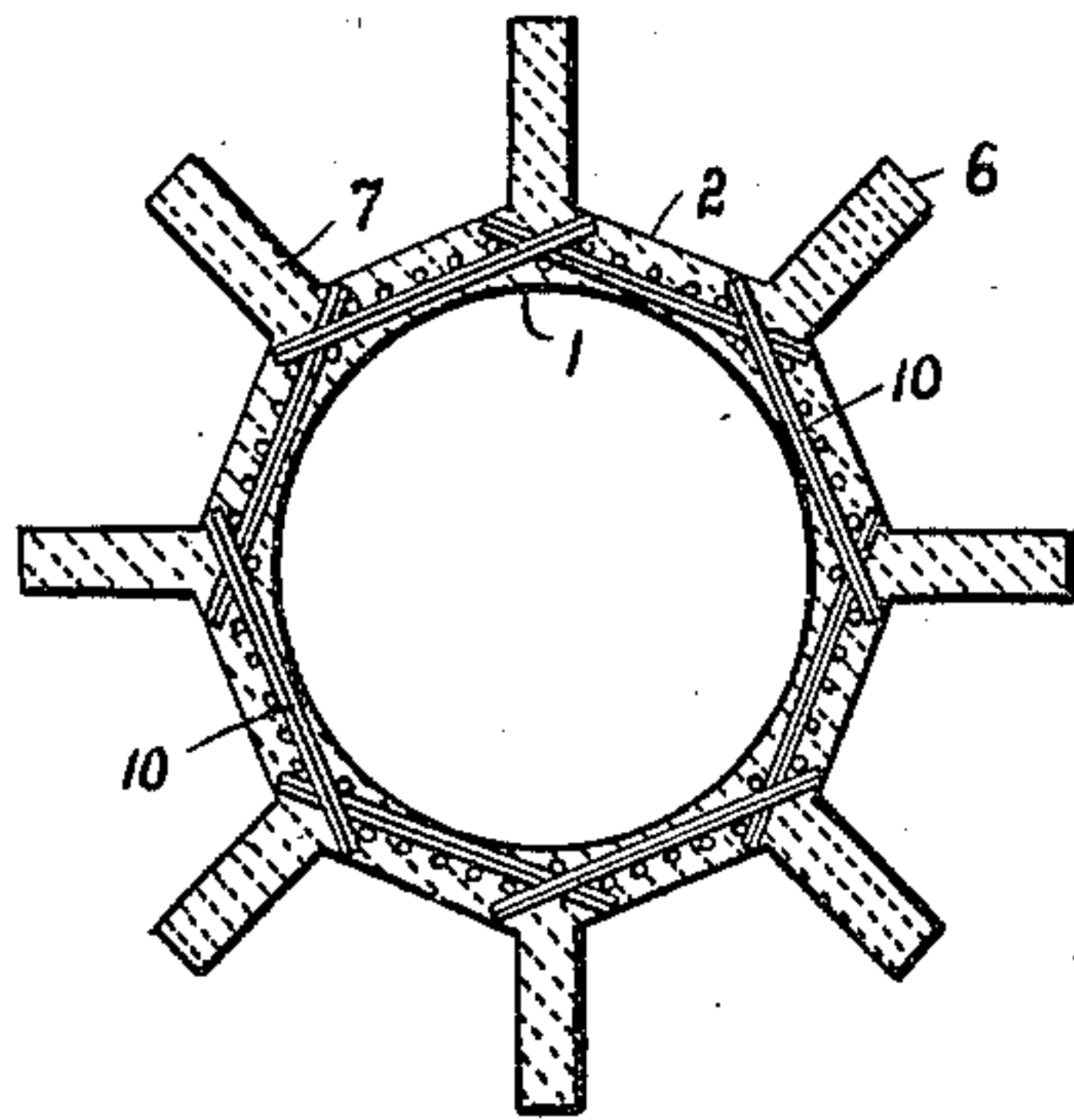


Fig. 3.

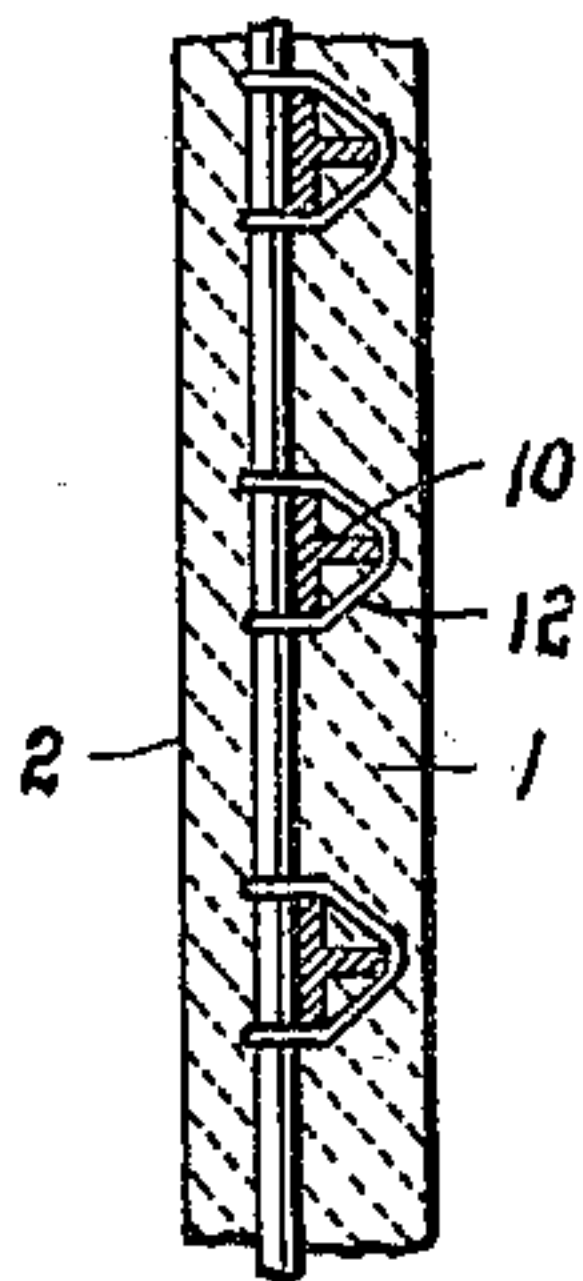


Fig. 4.

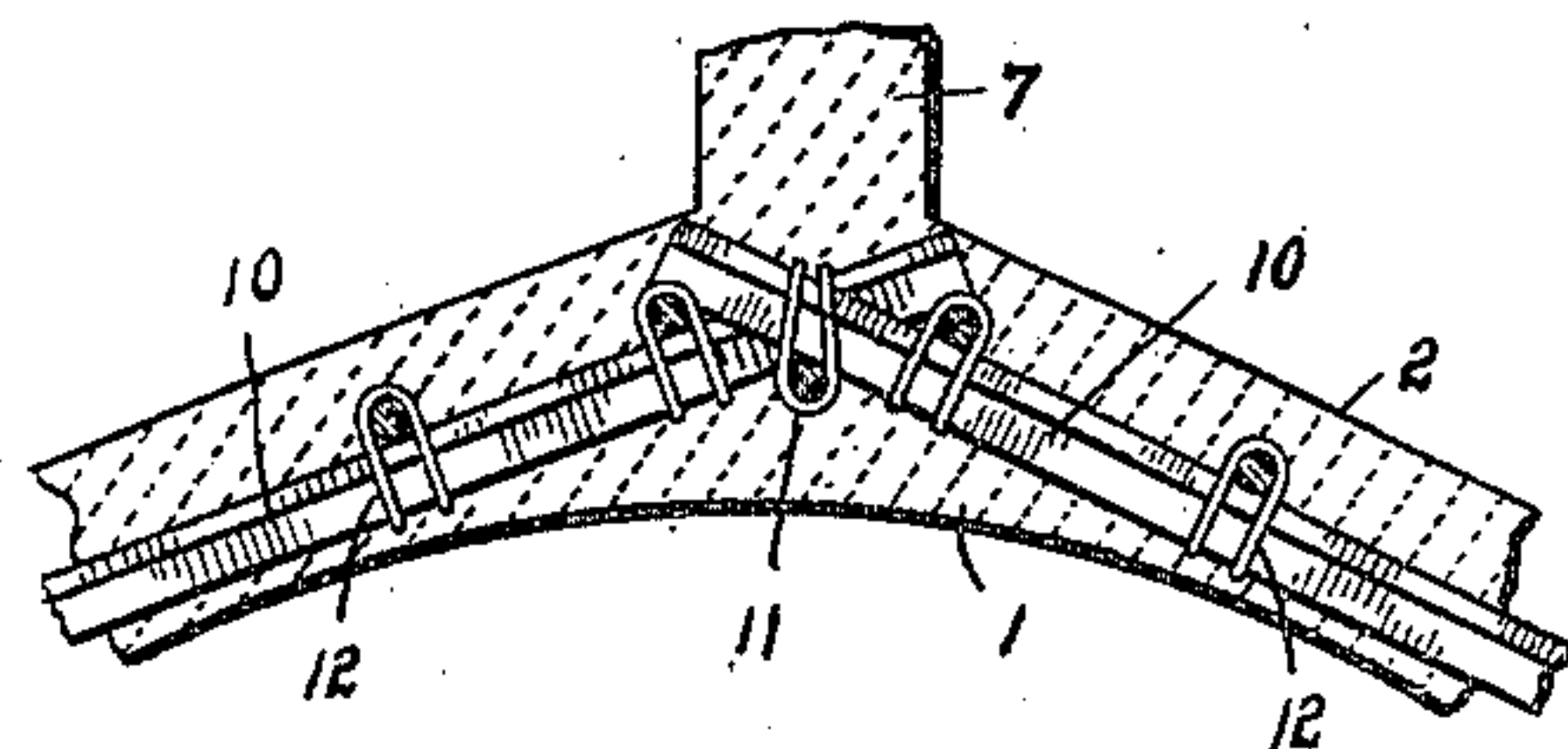


Fig. 5.

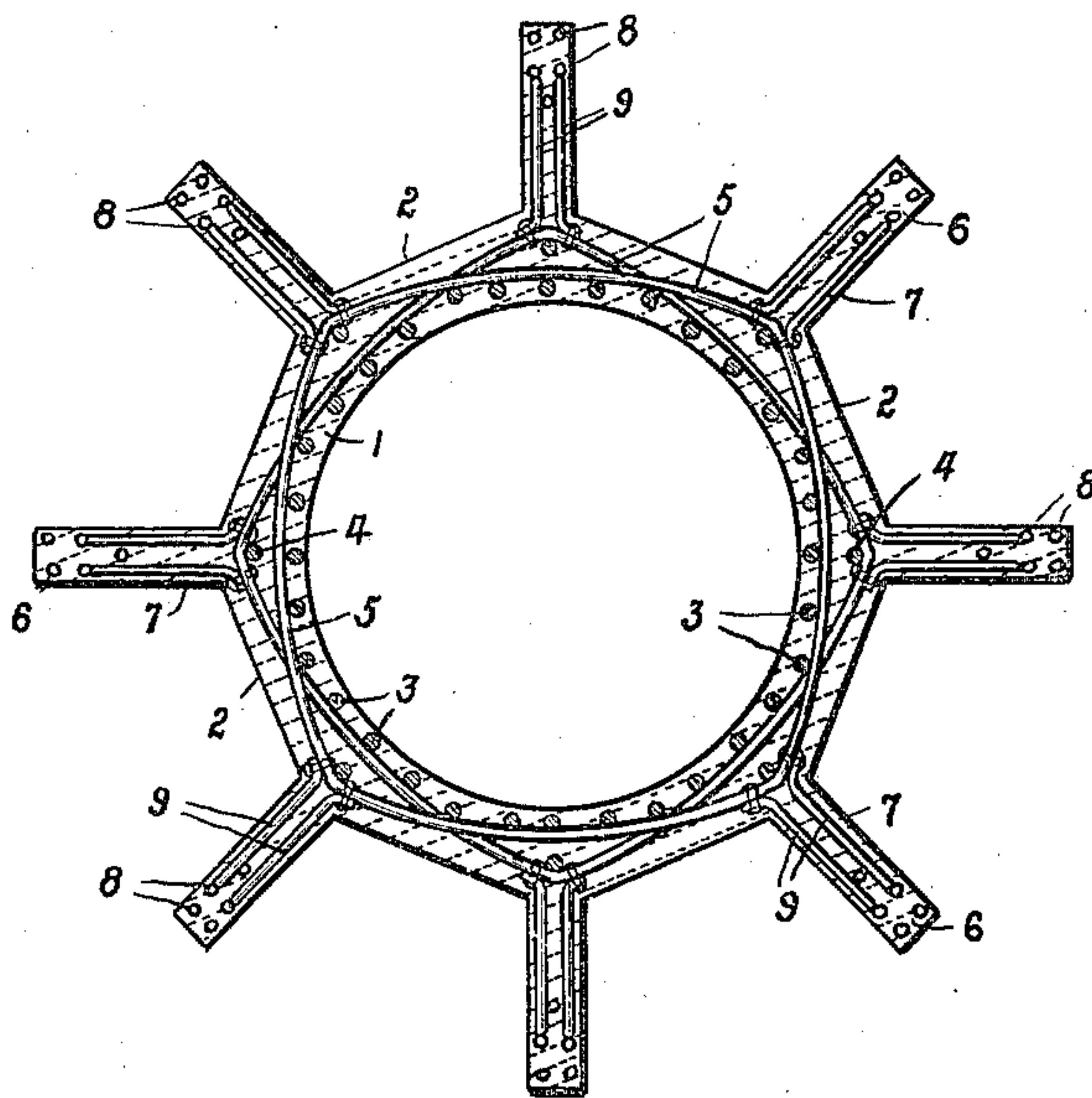


Fig. 2

Witnesses.

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Inventor.

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by E. J. Sullivan & Co. Attys.

UNITED STATES PATENT OFFICE.

LOUIS F. H. DE MIFFONIS, OF AYLMEER, QUEBEC, CANADA.

REINFORCED-CONCRETE TOWER.

960,666.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed December 3, 1908. Serial No. 465,896.

To all whom it may concern:

Be it known that I, LOUIS F. H. DE MIFFONIS, a subject of the King of Great Britain, residing at the town of Aylmer, in the Province of Quebec, in the Dominion of Canada, have invented certain new and useful Improvements in Reinforced-Concrete Towers, of which the following is a specification.

The invention relates to improvements in reinforced concrete towers, as described in the present specification and illustrated in the accompanying drawings that form part of the same.

The invention consists essentially in the novel arrangement and construction of parts, as particularly described hereinafter and pointed out in the claims.

The objects of the invention are to devise a tower, such as employed in connection with light-houses, whereby a maximum amount of strength will be maintained with a minimum amount of material.

In the drawings, Figure 1 is a half-sectional elevation of a tower illustrating the arrangement of reinforcing rings throughout the wall of the tower and the manner of connecting the reinforcing bars of the counter-forts to the reinforcing rings. Fig. 2 is a cross sectional view on the line A—B in Fig. 1. Fig. 3 is a cross sectional view of the tower showing a modified means of reinforcing the walls thereof. Fig. 4 is a detailed vertical sectional view of a portion of the wall of the tower showing the arrangement of reinforcement as illustrated in Fig. 3. Fig. 5 is a detail plan sectional view of a portion of the wall of the tower showing the manner of connecting the reinforcing bars.

Like numerals of reference indicate corresponding parts in each figure.

Referring to the drawings, 1 is the wall of the tower preferably cylindrical in shape on the interior thereof throughout its entire height and formed on the exterior with a plurality of prismatic faces 2. 3 are upright reinforcing metal bars extending throughout the entire height of the tower and spaced circumferentially at suitable intervals around the wall. 4 are upright reinforcing metal bars embedded in the wall of the tower at each of the corners of the exterior prismatic faces. 5 are reinforcing metal rings extending circumferentially around the wall of the tower at intervals

throughout the height thereof, said rings being contorted into a substantially square form in the arrangement of the tower wall, as herein shown wherein there are eight exterior faces, the rings 5 being arranged, so that the corners thereof extend adjacent to the corners of each alternate pair of prismatic exterior faces on the outside of the reinforcing bars 3 and the alternate reinforcing bars 4. The rings 5 alternate in succession, so that one ring extends into the corners next to the ring immediately under. 6 are counter-forts extending from each corner of the exterior prismatic face of the tower and joined to said tower toward the top thereof and having the braces 7 extending between said counter-forts and the wall of the tower at intervals throughout the height. 8 are reinforcing bars embedded in the counter-forts 9, and extending throughout their entire length. 9 are reinforcing bars embedded in the braces 7 and securely attached to the bars 8 in the counter-forts and the rings 5 in the wall of the tower. By this means the tower is effectually reinforced to meet all stresses thereon.

In the modified form shown in Figs. 3, 4 and 5, the rings reinforcing the walls of the tower are formed of steel bars 10 preferably T-shaped in cross section and extending throughout the wall from the point of juncture of the braces of one flying buttress to the next, the ends of said bar being crossed over one another for a short distance and joined by the wire 11. In this instance, however, the bars being straight, they will need to pass inside several of the upright supporting bars of the wall, as shown in Fig. 3, the T-bars being secured to the upright reinforcing bars of the wall by the wires 12.

Heretofore, it has been known to construct cylindrical towers with counter-forts or flying buttresses, but as before mentioned the present invention seeks to add materially to the strength of such structures by bracing the counter-forts to the wall at proper intervals and thereby secure practically a rigid formation of the entire structure to eliminate the vibrations as the wide setting of the counter-forts, and the braces extending to the wall of the tower make the entire structure very rigid, and at the same time use very little material. Furthermore the prismatic form of the wall distributes the material properly to take care of the stress oc-

curing in the tower, and the counter-forts forming supports at the corners formed by the meeting faces of the prismatic outer side of the tower wall render a maximum support thereto, and enable a proper arrangement of the reinforcing material to completely reinforce and strengthen the tower by a proper arrangement of triangles of stress.

It must be understood that although the present description is confined to a lighthouse tower, the invention is equally applicable for other purposes, such as water reservoirs or chimneys.

What I claim as my invention is:

1. A concrete tower or the like, comprising a wall having a prismatic outer periphery, a plurality of reinforcing rings embedded in said wall and extending into each of the corners formed by the meeting exterior prismatic faces of said wall, vertical reinforcing counter-forts extending from the corners of the outer side of said wall, reinforcing bars embedded in said counter-forts, braces joining said counter-forts to the outer corners of said wall at intervals throughout the entire height thereof and reinforcing bars embedded in said braces and connected to the reinforcing bars in said counter-forts and the reinforcing rings in said wall.

2. A concrete tower or the like, comprising a wall having a prismatic outer periphery, a plurality of vertical reinforcing bars embedded in said wall at intervals therearound adjacent to the inner side thereof, longitudinally-extending reinforcing bars embedded in said wall adjacent to each corner of the exterior prismatic face, reinforcing rings embedded in said wall and extending therearound at intervals throughout the

height thereof on the outside of said inner perpendicular reinforcing bars and the outer reinforcing bars at alternate corners, flying counter-forts connected to said wall toward the top thereof at the corners of said outer prismatic face and braces extending from said counter-forts to said wall at intervals throughout the height thereof.

3. A concrete tower or the like, comprising a wall having a prismatic outer periphery, a plurality of vertical reinforcing bars embedded in said wall at intervals therearound adjacent to the inner side thereof, longitudinally-extending reinforcing bars embedded in said wall adjacent to each corner of the exterior prismatic face, reinforcing rings embedded in said wall and extending therearound at intervals throughout the height thereof on the outside of said inner perpendicular reinforcing bars and the outer reinforcing bars at alternate corners, flying counter-forts connected to said wall toward the top thereof at the corners of said outer prismatic face, longitudinally-extending reinforcing bars embedded in said counter-forts, braces extending from said counter-forts to the corners of the outer prismatic face of said wall at intervals throughout the height thereof and reinforcing bars embedded in said braces and secured at one end to the reinforcing bars of said counter-forts and at the other end thereof to the reinforcing rings embedded in said wall.

Signed at Aylmer this twenty-fifth day of November '08.

L. F. H. DE MIFFONIS.

Witnesses:

A. MARTIN,
L. MATTON.