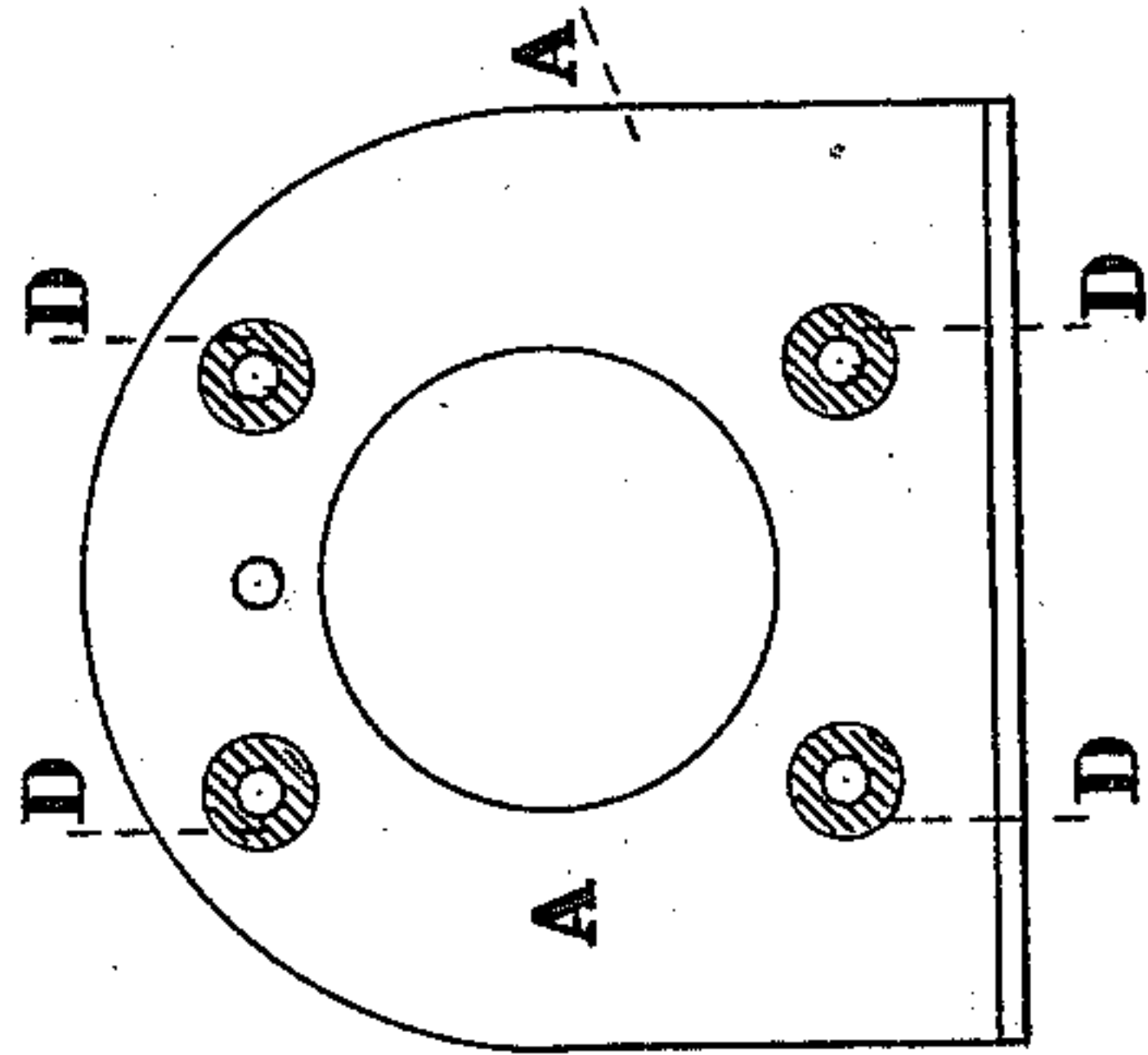
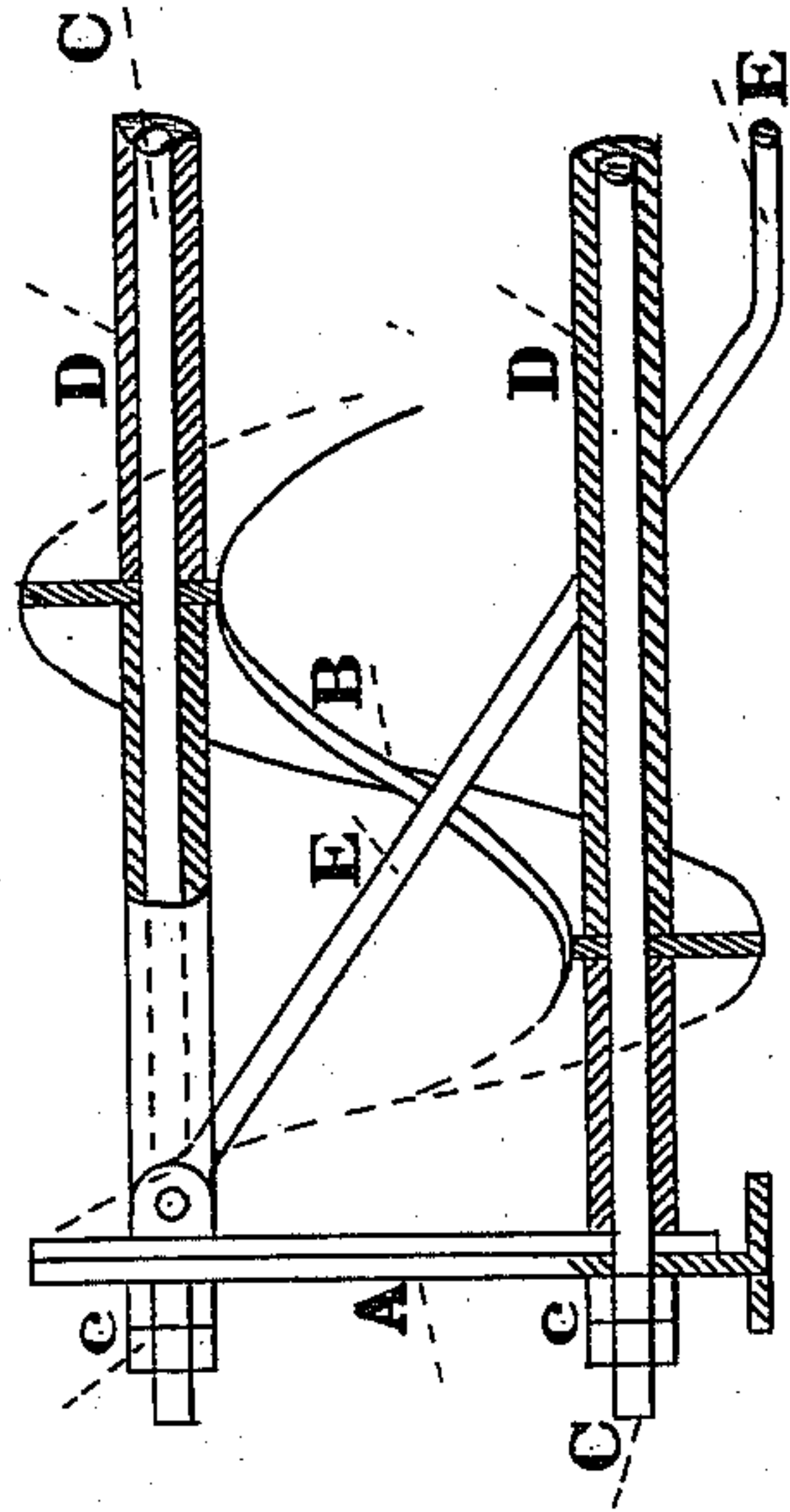
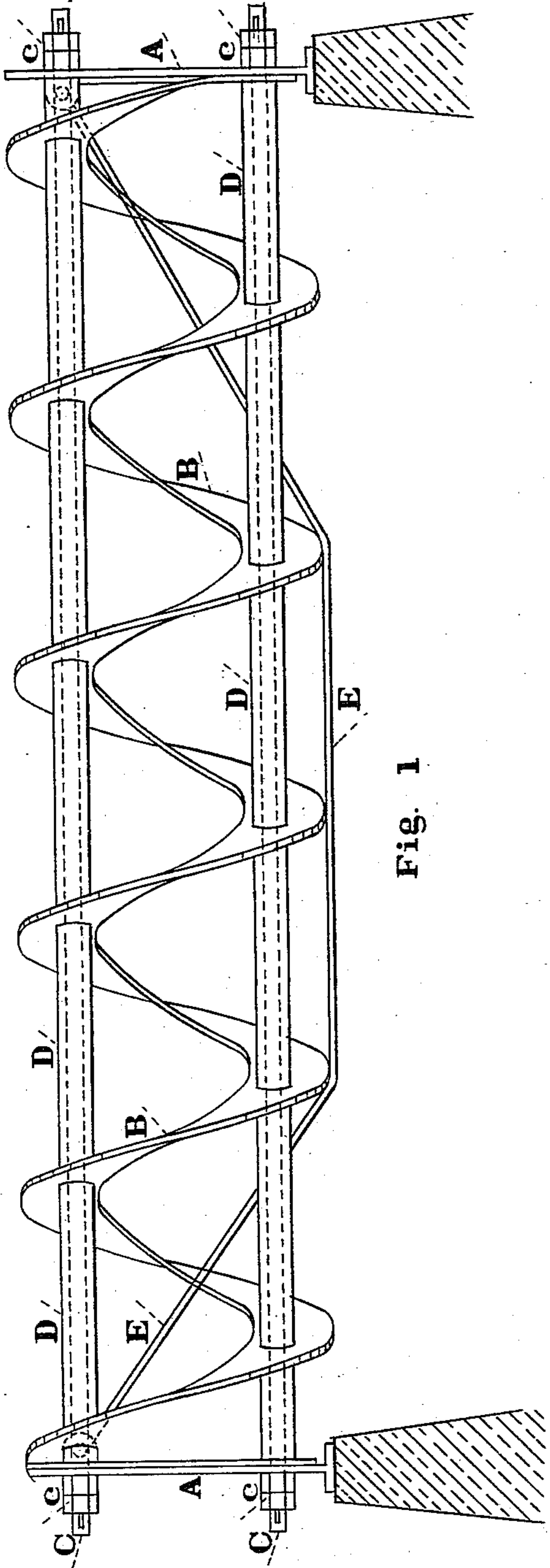


(No Model.)

W. W. GREEN.
SPIRAL GIRDER.

No. 379,217.

Patented Mar. 13, 1888.



WITNESSES:

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WILLIAM WARREN GREEN, OF CHICAGO, ILLINOIS.

SPIRAL GIRDER.

SPECIFICATION forming part of Letters Patent No. 379,217, dated March 13, 1888.

Application filed September 22, 1886. Renewed August 11, 1887. Serial No. 246,682. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WARREN GREEN, of Chicago, Illinois, have invented a new and useful Spiral Girder, of which the following is a full, clear, and accurate description.

My invention relates to a novel manner of constructing a spiral girder, in which a spiral or hoop of metal is used to hold in position the various braces and tension rods or cables composing the spiral girder. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the spiral girder. Fig. 2 shows in part a longitudinal section through the tension and compression rods or pipes of the girder. Fig. 3 shows an end elevation of the brace-plates between which the spiral is confined.

Similar letters of reference indicate corresponding parts throughout the several views.

A are the breast-plates, between which the spiral of girder is confined.

B is a spiral, composed of iron, and is instrumental in keeping the tension and compression rods or pipes through which the whole strain of the girder is taken at their respective distances apart.

C are rods or cables extending the entire length of the girder, and bind the girder together.

D are the compression rods or pipes through which the compression strain of girder is taken.

E is a guy rod or cable, and is secured to the breast-plates A at each end, the middle part of said guy-rod passing underneath the spiral of girder.

The spiral B is secured to the breast-plates A by the rods or cables C and nuts *c*, the said rods or cables taking into the said breast-plates. The cables or rods C pass through the metal of spiral, and are secured at each end to the breast-plates A by nuts *c*.

Each individual compression rod or pipe D equals in length the distance between the successive helical surfaces of the spiral, and each

continuous line of said compression pipes acts as one undivided length. A cable C, passing through the center of each individual compression-pipe, forms each of the said lines of compression-pipes into one, so that each of the said continuous lines acts as one incorporate whole.

The guy-rod E is of importance in certain cases that the girder may be placed in, notably when the girder is supported at each end. When the girder is supported at the middle, such guy-rod is of no service; or, if used, it should be placed diametrically opposite, or on the top side of girder.

The guy-rod E, of which there may be several, sustains a similar strain as the tension-rods C of the girder, and also acts as a diagonal brace.

The spiral girder is applicable in all cases of ordinary girders, and the same form of girder is suitable to be used for masts of vessels, light-houses, or wherever a vertical column requires to be erected to a great vertical height.

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

1. The combination, in a spiral girder, of the spiral B, extending from and connecting with the breast-plates A, the tension rods or cables C, passing through each successive helix of the spiral B and connecting with the breast-plates A, and the compression pipes or rods D, which reach from helix to helix of spiral B, substantially as shown and described.

2. The combination, in a spiral girder, with the guy rods or cables E, extending from breast-plate to breast plate of the spiral B, and compression-pipes D, reaching from helix to helix of spiral, of the rods or cables C, secured to the breast-plates A by nuts *c*, substantially as shown and described.

WILLIAM WARREN GREEN.

Witnesses:

WM. H. ROSS,
E. D. GREEN.