R. A. FESSENDEN.

SIGNALING BY ELECTROMAGNETIC WAVES.

APPLICATION FILED DEC. 17, 1906.

998,567.

Patented July 18, 1911.

2 SHEETS—SHEET 1.

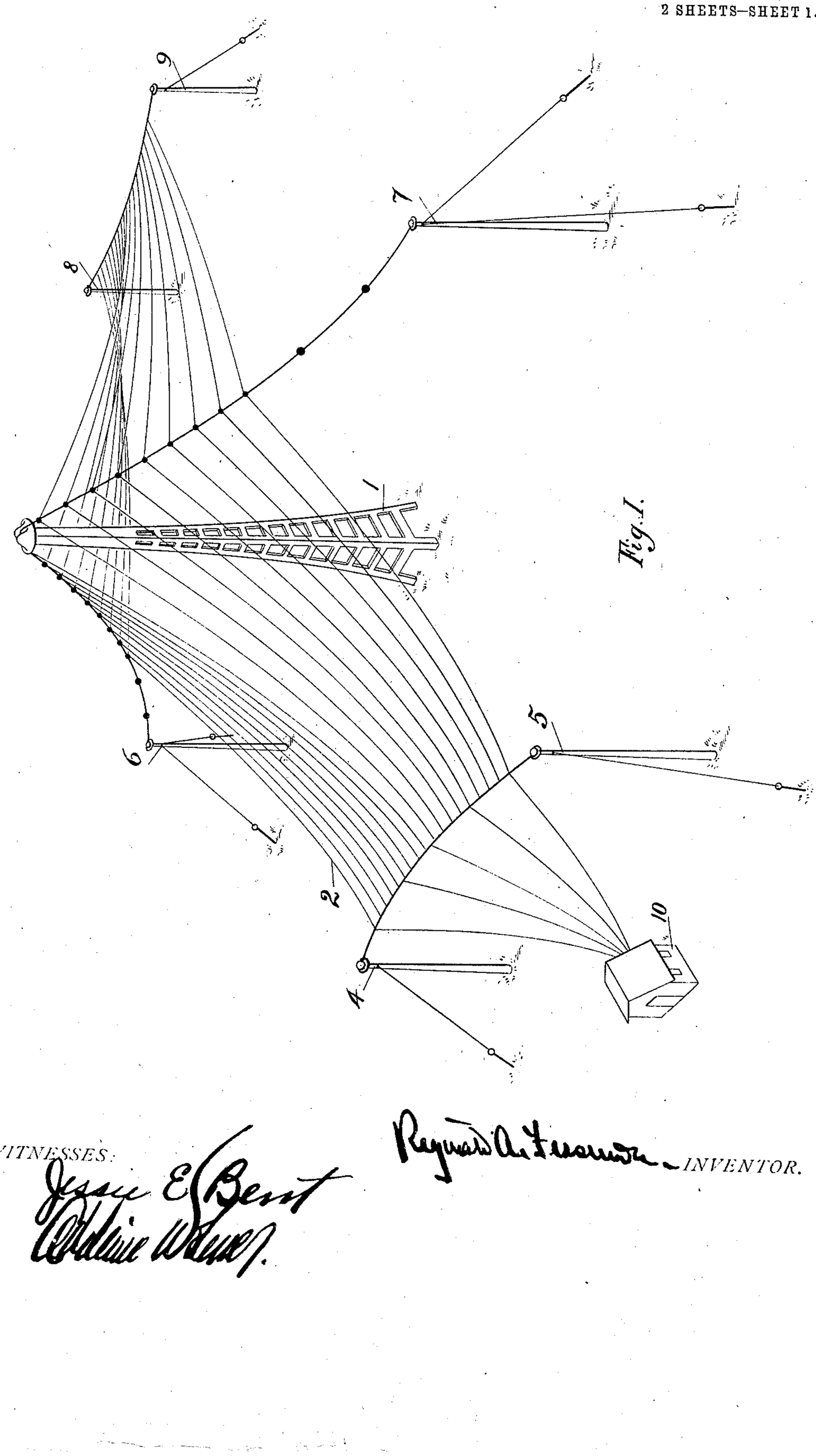

Fig. 1.

WITNESSES:

Jesse E. Bent

Eddie Dewey.

Reginald A. Fessenden — INVENTOR.

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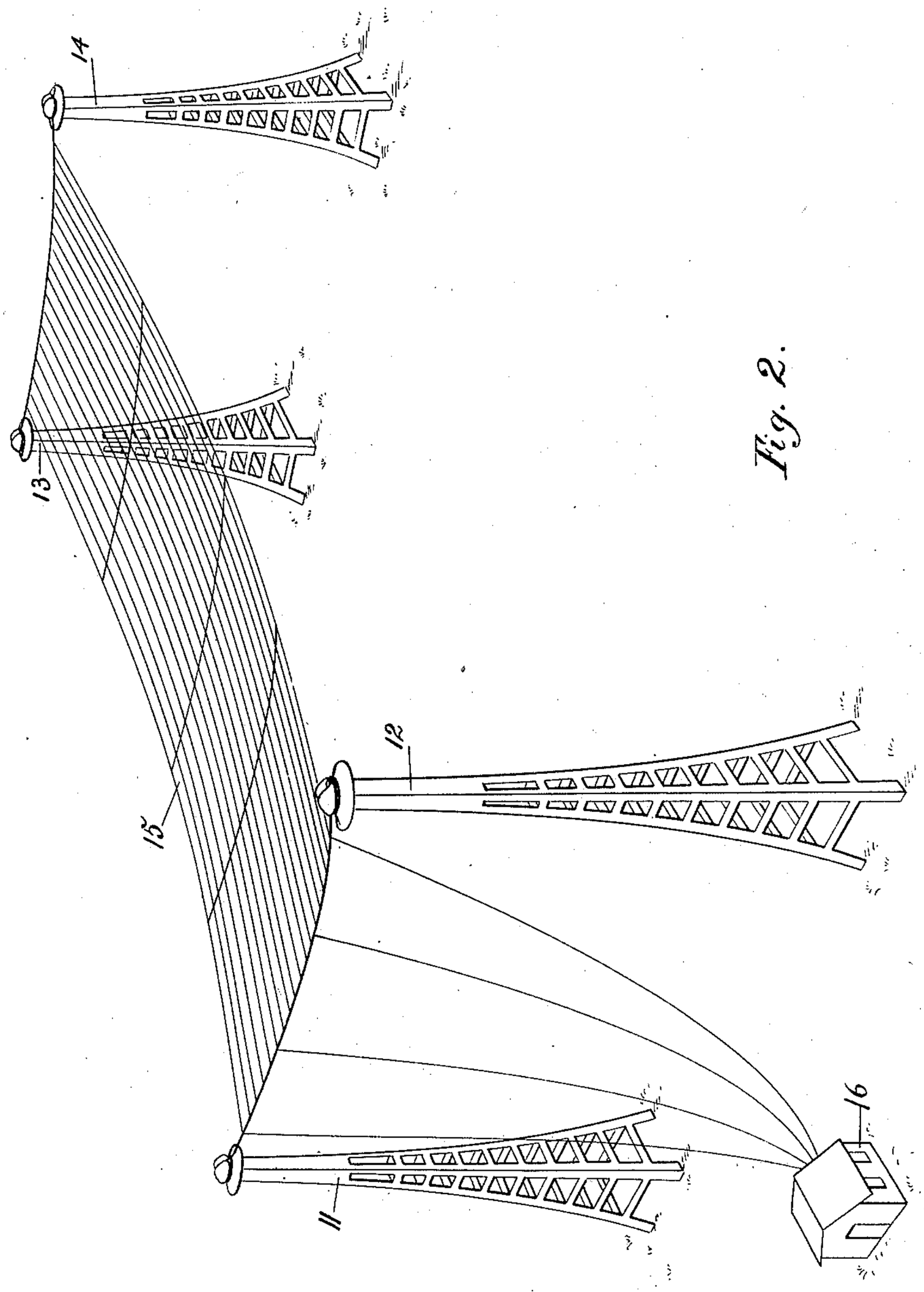

Fig. 2.

WITNESSES:

Joyce E. Kent

Adeline Wilson

Reginald A. Fessenden *INVENTOR.*

UNITED STATES PATENT OFFICE.

REGINALD A. FESSENDEN, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO NATIONAL ELECTRIC SIGNALING COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

SIGNALING BY ELECTROMAGNETIC WAVES.

998,567. Specification of Letters Patent. Patented July 18, 1911.

Application filed December 17, 1906. Serial No. 348,195.

To all whom it may concern:

Be it known that I, REGINALD A. FESSENDEN, a citizen of the United States, and resident of Washington, in the District of Columbia, have invented certain new and useful Improvements in Signaling by Electromagnetic Waves, of which the following is a specification.

My invention relates to antennæ for wireless stations.

In the accompanying drawings forming a part of this specification Figures 1 and 2 show arrangements embodying the invention hereinafter described.

Heretofore in the practice of the art supports for antennæ have been made of insulating material, or when made of conducting material the supports have been utilized to form a part of the antenna itself or the support has been either conductively or inductively insulated in sections, or else it has been allowed to absorb a portion of the waves which manifestly decreases its efficiency. In the arrangements here proposed the supports are formed of a combination of conducting and insulating material of a character which would block off the receipt of the waves if used in the usual manner, but are here so arranged and placed as not to interfere with the receipt or emission of the waves.

In Fig. 1, 1 is a tower constructed of concrete and iron bars. The antennæ 2 are supported on it and the posts 4, 5, 6, 7, 8, 9. 10 is the station facing in the direction from which it is desired to receive the electromagnetic waves.

In Fig. 2, 11, 12, 13, 14 are ferro-concrete structures supporting the antennæ 15, and 16 is the station placed in the direction to or from which it is desired to send or receive the electromagnetic waves. By thus placing the station in front of the ferro-concrete supports and alined in the direction of the station to which it is desired to communicate, I have ascertained that the useless absorption of the waves is greatly reduced.

What I claim is:

1. In apparatus for electromagnetic wave telegraphy, the combination with an operating instrument at the station, of an antenna connected thereto having a horizontal portion extending backwardly in the line of propagation of the message and supported by a metallic structure at its rear end, whereby the antenna protects the support from useless absorption of the waves.

2. In apparatus for electromagnetic wave telegraphy, the combination with the working instruments, of an antenna connected thereto and extending backwardly in the line direct away from the line of propagation and a ferro-concrete structure supporting the rear end of the antenna, whereby the active part of the antenna lies between the supporting structure and the station being communicated with.

3. An antenna for wireless telegraphy, comprising a series of wires lying in an oblique position with respect to the horizontal and having a horizontal component extending in the direction of propagation, said antenna being connected at the forward end to the telegraph instruments and being supported at the rear end by a ferro-concrete tower, which latter is thereby protected from useless absorption of the waves.

Signed at Brant Rock, in the county of Plymouth and State of Massachusetts this 15th day of December A. D. 1906.

REGINALD A. FESSENDEN.

Witnesses:

ADELINE WOLENER,

JESSIE E. BENT.