

H. B. DE GROOT.

MAST.

APPLICATION FILED AUG. 11, 1908.

Patented May 18, 1909.

2 SHEETS—SHEET 1.

922,400.

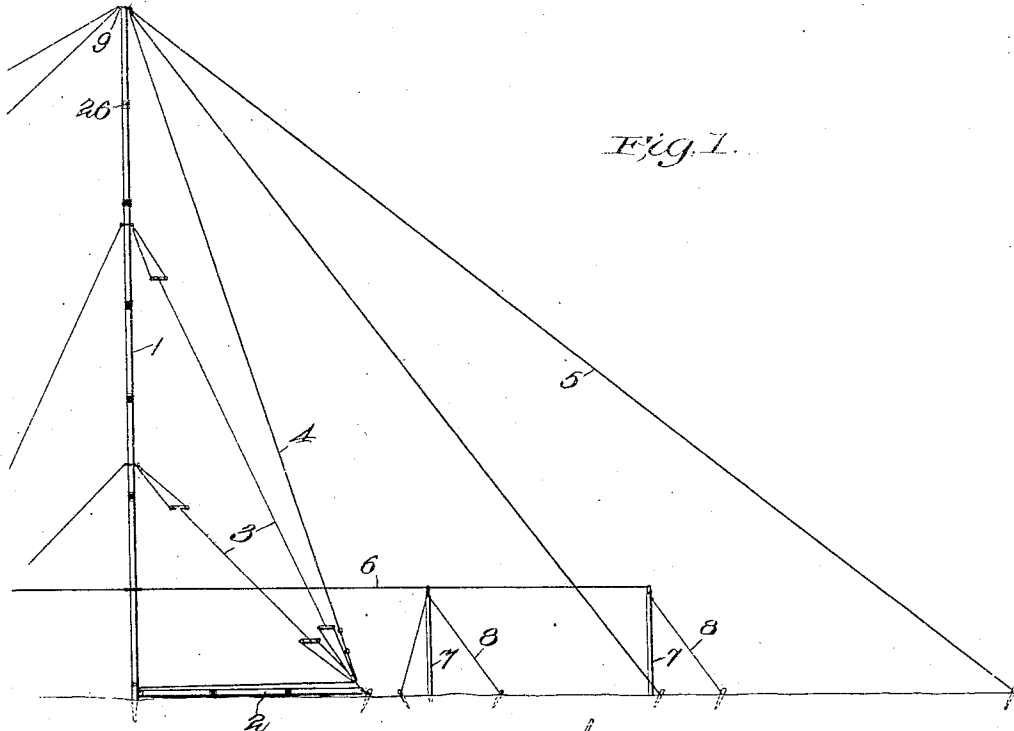


Fig. 1.

Fig. 2.

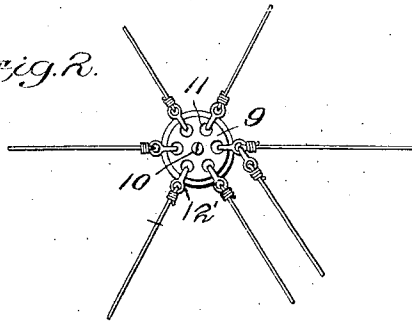
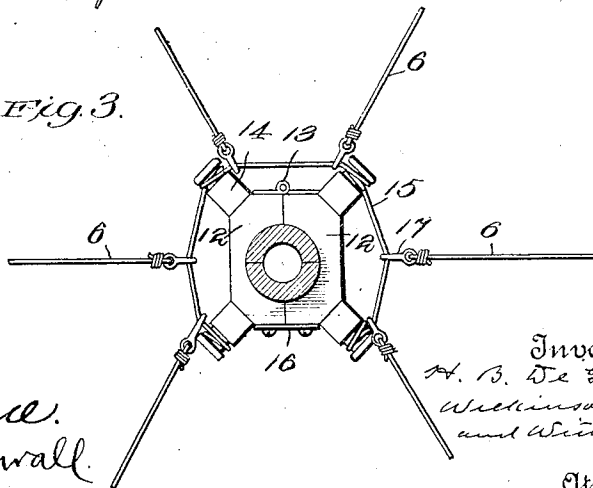


Fig. 3.



Witnesses

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2 SHEETS-SHEET 2.

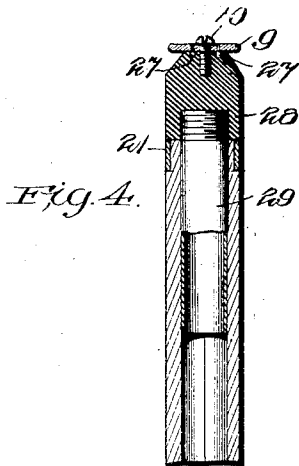


Fig. 4.

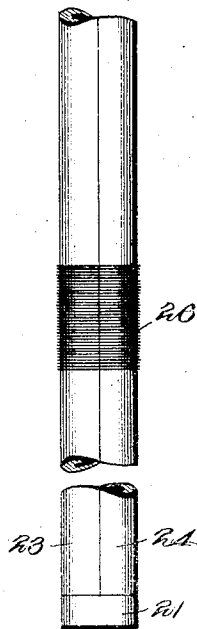


Fig. 5.

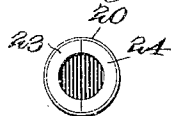


Fig. 6.

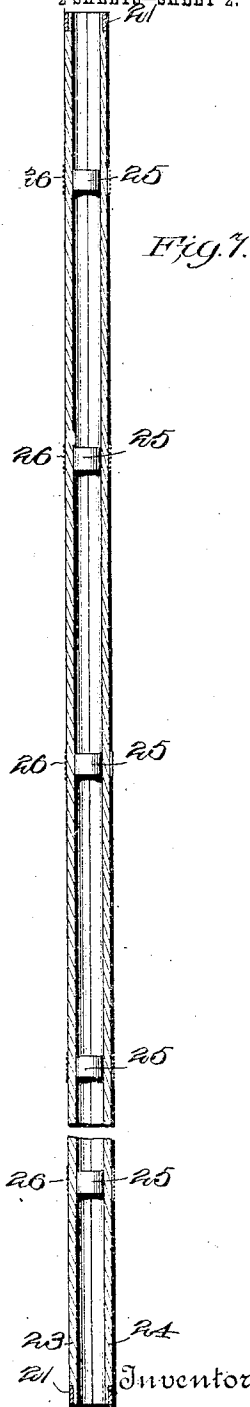
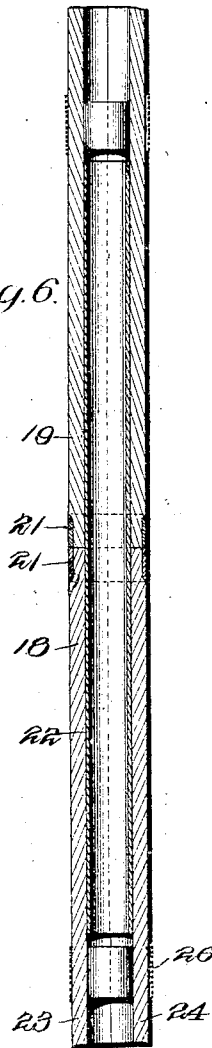


Fig. 7.

Witnesses

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# UNITED STATES PATENT OFFICE.

HENRY B. DE GROOT, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR OF ONE-HALF TO THE UNITED WIRELESS TELEGRAPH CO. OF NEW YORK, N. Y., A CORPORATION OF MAINE.

MAST.

No. 922,400.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed August 11, 1908. Serial No. 448,015.

*To all whom it may concern:*

Be it known that I, HENRY B. DE GROOT, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Masts; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to masts, and has for its object the production of a built up structure for wireless telegraphic and other purposes which will combine a maximum of strength and flexibility with a minimum of material. It is well known that nature discloses in a bamboo pole a structure having the above characteristics, and the object of this invention is to so closely imitate the structure of such poles as to preserve all of their desirable properties for engineering purposes.

To these ends the invention consists in the novel combination of parts and details of construction more fully hereinafter disclosed, and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this application in which like numerals indicate like parts in all the views:—Figure 1, represents an erected wireless telegraph mast built in accordance with this invention. Fig. 2, a plan view of the top of said mast. Fig. 3, a cross sectional view showing the counterpoise support. Fig. 4, a view of a section of the mast showing the upper end in longitudinal section, and the lower end in elevation. Fig. 5, a plan view of the lower end of the mast section shown in Fig. 4. Fig. 6, a longitudinal sectional view of the joint made when two mast sections meet, and Fig. 7, a longitudinal sectional view of a mast section showing the filling plugs and outside wrappings that occur throughout the length of the mast.

The mast is indicated by 1, and is preferably provided with an erecting lever 2, although this is not essential, it has the guys 3, the lead wires 4, the antenna wires 5, the counterpoise wire 6, and the counterpoise stakes 7, provided with the back stays 8.

The top of the mast shown in Fig. 2, is provided with a disk 9, secured by fastenings 10 to the mast proper; and the said disk is provided with the holes 11, through which

snap the hooks or other fastenings 12, to which the various wires leading from said top are secured. The mast is also provided near its bottom with a counterpoise support to which the counterpoise wires are secured. This support shown in Fig. 3, preferably consists of a pair of metallic half ring like pieces 12 hinged together at 13, and provided with the insulators 14, around which runs the wire 15. 16 represents a catch or other fastening for the two half rings which encircle the mast. The various counterpoise wires 6, are preferably provided with hooks 17, which catch over the wire 15, as shown.

The mast 1 is preferably made in sections, two of which 18 and 19 are shown in Fig. 6, with their ends respectively provided with the ferrules 21, and joined together by the metal tubular plug 22. Each section is likewise preferably made of wood in the form of two half tubes 23 and 24, Figs. 5, 6, and 7, glued or otherwise fastened together, and provided at frequent intervals with plugs 25 closely fitting the bore of the tube. On the outside of these plugs, the mast is securely wrapped with wires 26, the ends of which are preferably soldered to the wrapping turns, or otherwise fastened.

The disk 9 is preferably fastened to the extreme top of the mast by a screw 10, as above stated, and additional fastenings 27 pass into the top piece 28, as shown in Fig. 4. This top piece is of the general shape shown, and is preferably screw threaded over the tubular plug 29, which fits into the top of the mast proper, as illustrated.

It will thus be seen that the entire mast pole is a hollow tubular structure from end to end; that it is provided with the comparatively short plugs 25, at frequent intervals which solidify the structure where they occur; and that the wrappings 26, cause the whole to be firmly bound together, so that great flexibility is combined with the strength of the tube in a manner very closely resembling that of a bamboo pole.

It is evident that this particular structure of a pole, or rod, is not confined to masts, but is useful in many other relations where it is desired to combine great flexibility with the maximum strength of the material used. Such uses are to be met with in the construction of flying machines, for example, as well as in bicycle frames, in automobile work, and even in some bridge con-

structions. It is also evident that the stick, rod or pole, may be made of steel.

I do not wish to be understood as confining this invention to the specific details of construction nor to the specific uses described, except as is pointed out in the claims.

What I claim is:—

1. A stick adapted to form a part of a mast composed of a flexible tubular body divided longitudinally, provided with tightly fitting plugs at intervals; and with an outer strengthening means opposite the plugs whereby said stick is rendered rigid wherever the plugs occur, but remains flexible in those portions of its body that lie between the plugs, substantially as described.
2. A stick adapted to form a part of a mast composed of a flexible tubular body divided longitudinally, provided with tightly fitting plugs at intervals, and having circumferentially wound strengthening means on its outside opposite said plugs, substantially as described.
3. A stick for a mast composed of a flexible tubular body, divided longitudinally and said body provided with tightly fitting plugs at intervals, and having circumferential windings of wire opposite said plugs, and means to aid in supporting said mast stick in an upright position, substantially as described.
4. A stick for a mast composed of two half tubes secured together forming a flexible tubular body, said body provided with tightly fitting plugs at intervals, and having circumferential windings of wire opposite said plugs, and means to aid in supporting said mast stick in an upright position, substantially as described.
5. A mast stick composed of a plurality of partly tubular bodies secured together to form a flexible single tubular body, said body provided with tightly fitting plugs at intervals and having circumferential strengthening windings opposite said plugs; said body also having means to aid in supporting said mast stick, and a ferrule on one end, substantially as described.
6. A plurality of mast sticks constituting a mast, each stick formed of half tubular bodies secured together to form a flexible tube; each tube provided on its inside at intervals with plugs, on its outside opposite said plugs with strengthening means, and at

one end with a ferrule; and means joining said sticks together to form the mast, substantially as described.

7. A plurality of mast sticks constituting a mast, each stick formed of tubular bodies secured together to form a flexible tube; each tube provided on its inside at intervals with plugs, on its outside with means for aiding in supporting the mast, and opposite said plugs with strengthening means, and at one end with a ferrule; and means joining said sticks together to form the mast, consisting of a tubular plug, substantially as described.

8. A wireless telegraph mast composed of a plurality of flexible tubular mast sticks, each stick provided with closely fitting plugs on its inside, and with wrappings of wire opposite said plugs on its outside; the topmost stick being also provided with means to which the lead and antenna wires may be secured, and the bottom stick with means to which the guy and counterpoise wires may be secured; and the abutting ends of the several sticks provided with a tubular plug for joining the same together, substantially as described.

9. A wireless telegraph mast composed of a plurality of flexible tubular mast sticks, each stick provided with closely fitting plugs at intervals in its inside, and with wrappings of wire opposite said plugs on its outside; the topmost stick being also provided with means consisting of a top piece provided with a disk having holes to which the lead and antenna wires may be secured, and the bottom stick with means to which the guy wires may be secured, and means consisting of a ring provided with insulators to which the counterpoise wires may be secured; and the abutting ends of the several sticks provided with a tubular plug for joining the same together, substantially as described.

10. A mast for wireless telegraph purposes comprising a flexible tubular section provided on its inside with a plurality of closely fitting plugs, a counterpoise support on its outside with means to aid in supporting said mast and an erecting lever near its bottom, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

HENRY B. DE GROOT.

Witnesses:

T. A. WITHERSPOON,  
W. MAX. DUVALL.