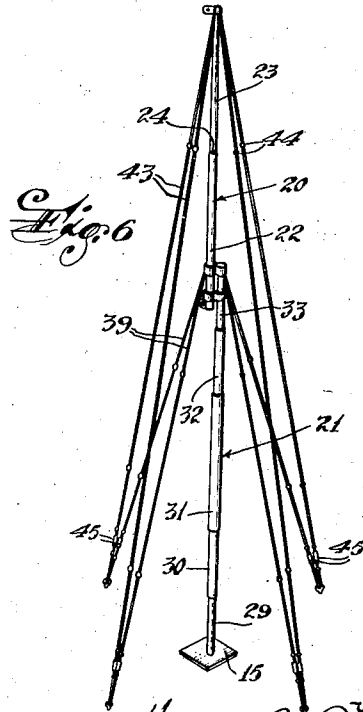
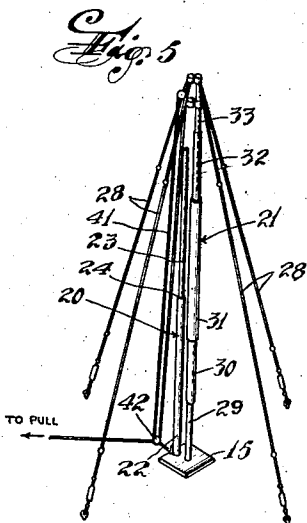
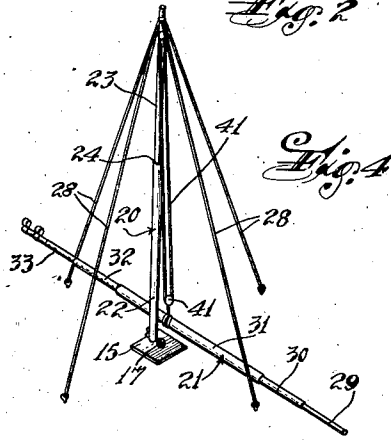
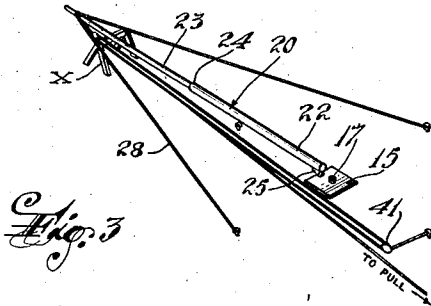
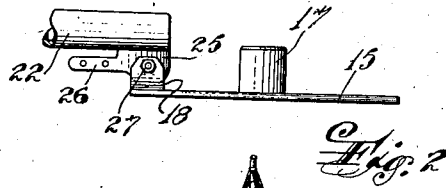
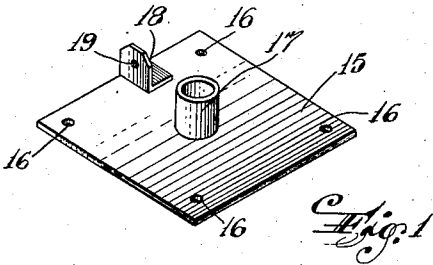


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H. C. PFAFF, JR  
RADIO ANTENNA MAST  
Filed April 26, 1943

2,356,085

2 Sheets-Sheet 1



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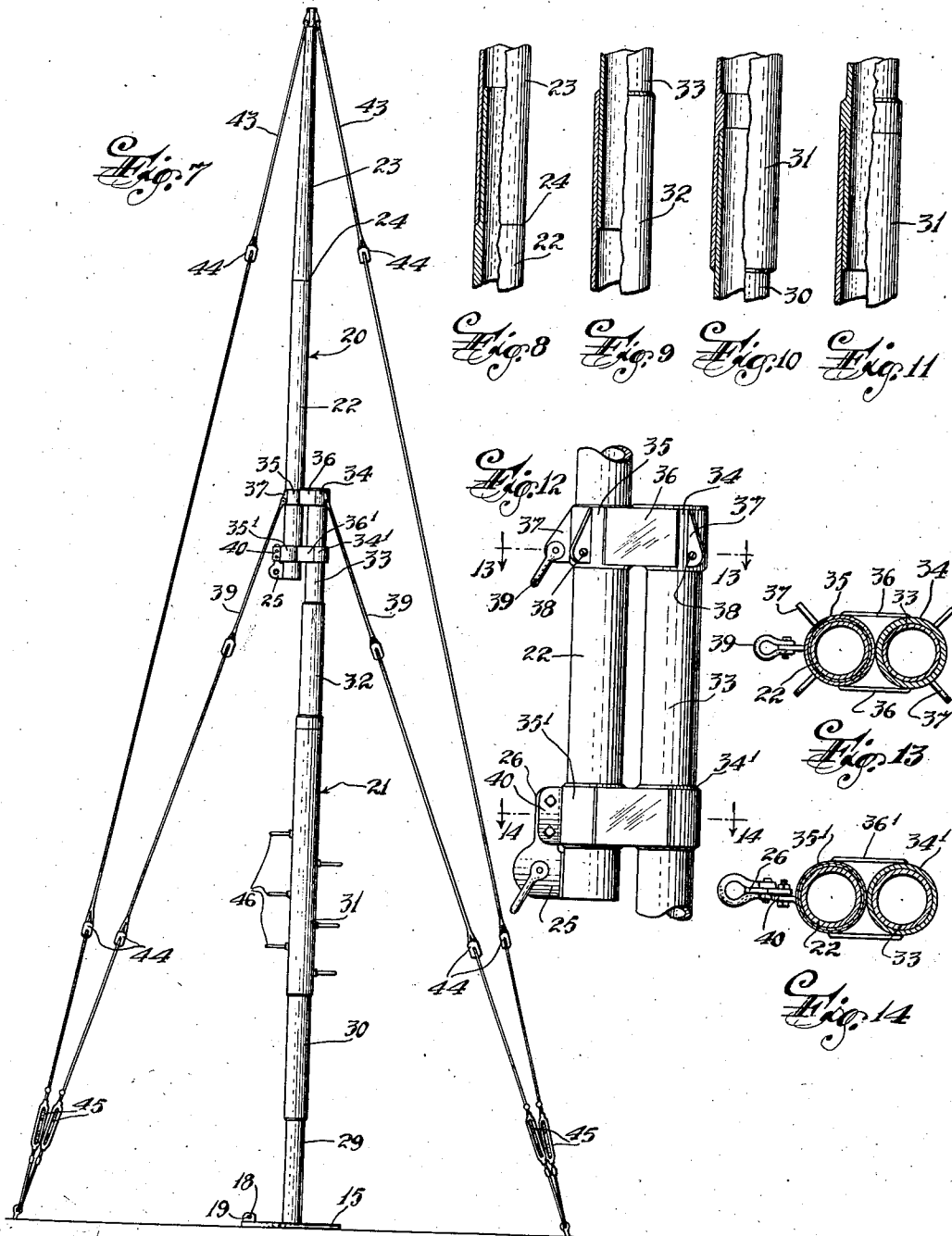
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2 Sheets-Sheet 2



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# UNITED STATES PATENT OFFICE

2,356,085

## RADIO ANTENNA MAST

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Application April 26, 1943, Serial No. 484,672

6 Claims. (Cl. 189—26)

This invention relates to masts, poles, shafts and similar upright, small diametered structures, and more particularly to radio antenna masts, including their construction and process of erection.

The type of mast herein described is mainly used by the Navy and Coast Guard service, for direct radio communication with ships at sea and like long distances; therefore the mast must be of very considerable height, approximating an average of ninety feet, in order to avoid interference with other objects, such as nearby buildings, cliffs, trees and the like.

In order to erect the mast within a restricted area it is highly desirable that sectional construction be employed; furthermore, as most vessels or trucks used in transporting the elements of the mast are limited in their carrying capacity, such elements are necessarily restricted in length and preferably in weight.

An ordinary mast of the required length may weigh 3000 to 3600 pounds, while a sectional mast, as hereinafter described, need not be more than one-third as heavy.

It is, therefore, an object of this invention to provide a two-part mast, each part composed of several sections for convenience in storage, transportation and erection, and a device for firmly connecting the two main elements to substantially constitute a unit.

A further feature is in the provision of a hollow column having steps in its outer side and provided in its interior with means for the inlet and outlet of electrical conductors and for staying the same.

Another purpose is to provide a rigid base or platform for a mast, that can be anchored on any selected location and provided with means to facilitate erection of the mast.

These and other timely objects, such as a novel method of erecting a mast and for securely staying it when in an upright position, are attained by the simple construction, combination and arrangement of parts and processes hereinafter described and illustrated in the accompanying drawings, constituting a graphical component of this disclosure, and in which:

Fig. 1 is a perspective view of the field platform in detail,

Fig. 2 is an edge view of the same and parts associated therewith,

Figs. 3, 4, 5 and 6 are perspective views illustrating the several progressive stages in erection,

Fig. 7 is a side view of the completed mast,

Figs. 8, 9, 10 and 11 are fragmentary detail views showing the different types of joint construction,

Fig. 12 is an enlarged fragmentary side view of the connection between the main upper and lower elements of the mast,

Fig. 13 is a transverse sectional view taken on line 13—13 of Fig. 12, and

Fig. 14 is a similar sectional view taken on line 14—14 of Fig. 12.

In the drawings, the numeral 15 designates a rigid metal platform of such dimensions as is compatible with supporting a considerable weight without deflection, and is anchored firmly on location by stakes, or equivalent holding means, driven through openings 16 into the underlying foundation surface.

At the center of the plate is fixed a raised, preferably hollow, cylindrical boss 17, while adjacent one of its side edges is an angle bracket 18, its raised member having a circular opening 19.

As previously indicated, the mast is composed of two main elements 20 and 21, respectively upper and lower, the upper element being made in two tapering tubular parts 22 at its lower end and 23 at the upper end, the slip joint 24, being previously prepared, as shown in Fig. 8 by scarfing the upper end of the lower part.

Fixed, as by welding, to the lower end of the lower part 22 is a bracket 25 having a raised perforate arm 26 and a wide extension through which may be passed a bolt 27 pivotally connecting it with the bracket 18 by passing through the opening 19.

In this condition the upper element may rest on a wooden horse, as at x, raising means, such as a hoist, attached to its upper end, which causes it to turn on the pivot 27 into a substantially upright position, as in Fig. 4, where it is held temporarily by guy ropes 28 and may be regarded as a gin pole.

The lower element is preferably composed of a base 29 shop joined to a lower intermediate part 30, connected by a field joint (see Fig. 10) to a central part 31, in turn engaged by another field joint with another intermediate part 32, which is shop joined, as indicated in Fig. 9 to an uppermost part 33.

Secured on the upper portion of the part 33 is a connector sleeve 34, a similar sleeve 35 being open to receive part 22 of the upper element, at a distance from its lower end.

These sleeves are connected at each side by plates 36 and are provided with radial flanges 37

having openings 38 in which to attach guy rods or shackles or cables 39 at least four in number.

Receptive of the lower end of the upper element 22 is a similar sleeve 35', opposite to which, on the lower element part 33 is fixed another sleeve 34', these sleeves being connected by plates 36' on opposite sides; the sleeve 35' is provided with a radial flange 40, bolted to the arm 26.

When the upper element 20 has been raised on the pivot of its supporting angle 18; and secured by the guy ropes 28, a hoist 41 is attached to the lower element, then prone upon the land surface, at a point along its length so that when raised, the base part 29 will extend downwardly, see Figs. 4 and 5, in which latter view the lower element is positioned over the locating boss 17 on the platform 15.

The guy ropes 28 are secured to the lower element 21 as shown in Fig. 5. Thereafter, by the use of suitable hoisting mechanism 42, the upper element 20, upon being released from its angle bracket and guy ropes 28, may be raised and secured in the position shown in Fig. 7, and permanent guys 43 connected at its upper end. Element 20 is threaded through sleeve 35, 35' when being raised.

Such guys may have insulators 44 in their length and also be provided with turnbuckles 45 to maintain proper tension.

If desired, the several sections of the mast may be provided with rungs 46 enabling an operator to easily ascend to the connection between the main members, and it will be obvious that electrical conductors may be safely housed within the tubular structure, leading from its apex to the base.

It is to be noted that all joints are so arranged as to shed water, whether made in the shop or in the field, and such as are made in the field are easily made and equally easy to dismantle.

The expense of construction and erection and relative light weight are factors of unusual importance.

Although the foregoing is descriptive of the best known form of the invention, it is subject to all such changes as may be desirable within the purview of the appended claims.

I claim:

1. The process of erecting a tubular mast composed of an upper and a lower section, which consists in anchoring a platform having a central step and a bracket provided with a pivot, erecting said upper section on said pivot, utilizing said raised upper section to erect the lower section, connecting the base element of said lower section with said central step, releasing said upper section from said bracket pivot, raising the upper section, connecting the base of the upper section with the apex of the lower section, and guying the apex of the upper section and said lower section.

2. The method of erecting a tubular mast, composed of an upper and a lower section, on a plat-

form having a bracket and a central positioning element which consists in pivotally securing said upper section to said bracket, pivotally raising the upper section on the bracket to a vertical position, securing said section in said position, utilizing said section as a gin pole for lowering the lower section, over said positioning element, securing said lower section in said position, disengaging the upper section from said bracket, utilizing the lower section as a gin pole for raising the upper section, securing said sections together, and guying said mast.

3. In a radio antenna mast, a platform, a tubular element constituting the upper section of said mast, means for pivotally securing one end of said element to said platform whereby said element may be pivoted to a vertical position, a second tubular element provided with an end adapted to have complementary engagement with said platform to facilitate the vertical positioning of said second element on said platform and means carried by one of said sections and adapted to be engaged by the other section for holding said sections in offset, vertically parallel planes.

4. In a radio antenna mast, a platform, a tubular element constituting the upper section of said mast, complementary means on said tubular element and platform pivotally securing one end of said element to said platform whereby said element may be pivoted on said platform to a vertical position, a second tubular element, positioning means on said platform adapted to be engaged by said second tubular element to facilitate the vertical positioning of said second element on said platform, and means secured to one of said sections for slidably receiving the other section to maintain said sections in spaced, parallel relation.

5. In a radio antenna mast, a platform, a tubular element constituting the upper section of said mast, complementary means on said tubular element and platform pivotally securing one end of said element to said platform whereby said element may be pivoted on said platform to a vertical position, a second tubular element, and positioning means on said platform adapted to be engaged by said second tubular element to facilitate the vertical positioning of said second element on said platform.

6. In a radio antenna mast, a platform, a tubular element constituting the upper section of said mast, complementary means on said tubular element and platform pivotally securing one end of said element to said platform whereby said element may be pivoted on said platform to a vertical position, a second tubular element, positioning means on said platform adapted to be engaged by said second tubular element to facilitate the vertical positioning of said second element on said platform, and means for securing the tubular elements together to constitute the mast.

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