Aug. 9, 1938. H. O. PETERSON 2,126,030

ANTENNA SUPPORT

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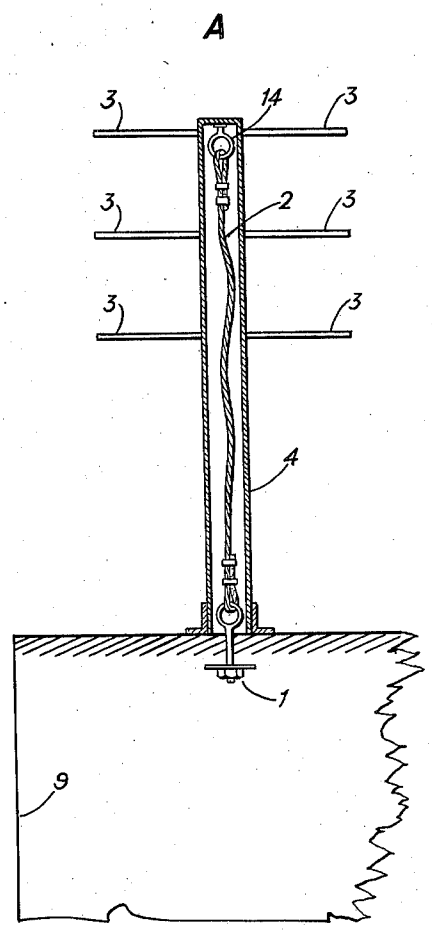


Fig. 1.

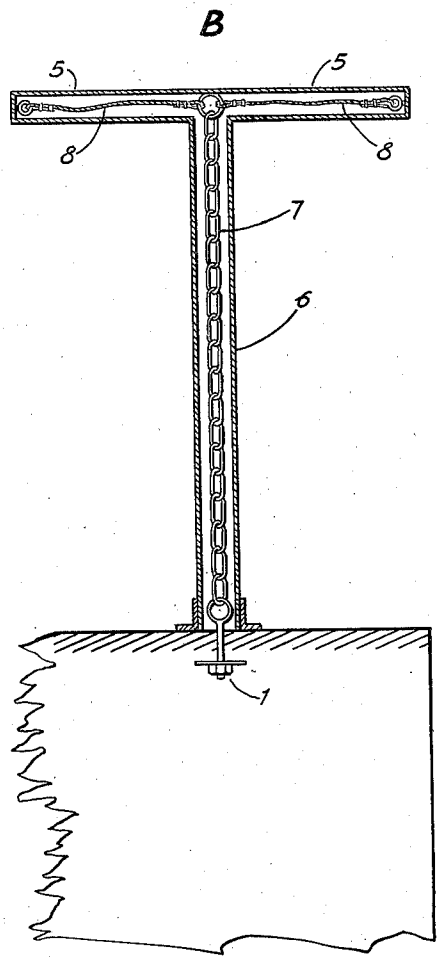


Fig. 2.

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ANTENNA SUPPORT

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8 Claims. (Cl. 250—33)

This invention relates to supporting means for tubular masts, and particularly to such masts as are used for antenna structures.

It is frequently desirable to place antenna structures in the form of masts on top of tall buildings, towers, monuments etc. Such antenna structures are often made self supporting because of the adverse effects of guys. In such designs, the mechanical strength of the mast is called upon to keep the antenna in its proper position. These structures are exposed to high winds and are known to vibrate, and may eventually crystallize to such an extent that they become brittle and might, therefore break off and fall from the building. Furthermore, severe weather conditions, such as are due to sleet and storms, subject the antenna mast to great stress and may also cause it to break off at some point. It will thus be apparent that any mechanical failure of such a structure makes it extremely dangerous to human life and property.

The present invention is designed to prevent the tubular mast and accompanying elements from falling even though it may become broken in places.

A better understanding of the invention may be had by referring to the following specification which is accompanied by a drawing, in which Fig. 1 shows a simple type of antenna structure wherein the tube mast is secured by means of a flexible cable; Fig. 2 is another modification of this invention as applied to an antenna having a horizontal doublet and is secured by means of a flexible chain.

Antennas A of Fig. 1 and B of Fig. 2 show the application of the invention to two types of antenna mast structure commonly used. Both of these structures are shown mounted on the top of a building 9. Structure A illustrates a vertical array of horizontal doublets 3 supported on a vertical tube or mast 4. An arrangement of this type is adequately described in a copending application of Philip S. Carter, Serial No. 342, filed January 4, 1935, to which reference is made for a more complete description of the operation of the antenna per se. The transmission line associated with the horizontal doublet 3 has not been shown, for the sake of simplicity.

Inside the tubular mast 4 there is provided a flexible cable 2 of such material as to have high tensile strength. This cable is securely fastened to the top of the mast at a point 14 and is securely fastened to the top of the building 9 by a suitable anchoring device 1. The cable 2 or restraining device is not ordinarily under stress until the time of mechanical failure or great stress of the mast at which time the cable is called upon to keep the mast and associated elements from being carried away, thus preventing the antenna structure from falling off the building.

Structure B illustrates the same principles applied to a simpler form of antenna. In this case there is shown a horizontal doublet 5, a vertical mast 6, and inside this mast a flexible chain 7 of great strength. Attached to chain 7 and extending throughout the length of the arms of doublet 5 is a flexible cable 8 which connects with the extremities of the doublet. In case either the doublet S or mast 6 becomes broken, the cable 8 and chain 7 will restrain the parts and keep them from falling off the building on to property or persons below.

The word "bond" recited in the appended claims is intended to cover all types of restraining elements, whether cable, chain or other material.

I claim:

1. The combination with a vertical tubular mast mounted on a supporting structure, of flexible restraining bond of high tensile strength which is loosely fitted within said mast and functioning only when breakage of said mast occurs, one end of said bond being attached to said supporting structure and the other end to the upper portion of said mast, said mast being securely supported independently of said flexible restraining bond.

2. The combination with an antenna including a vertical tubular mast mounted a distance above the earth and having no guy supports, of means for preventing the falling of said antenna and mast in the event of mechanical failure thereof, said means comprising a bond loosely extending inside and throughout the length of said mast and securely affixed at one end to the mounting for said mast and at the other end to the uppermost part of said mast, said mast being securely supported independently of said flexible bond.

3. An arrangement in accordance with claim 2 characterized in this, that said bond is flexible steel cable and not under stress when said mast is exactly vertical.

4. An arrangement in accordance with claim 2 characterized in this, that said mast is made of metal and said bond is a loose fitting chain.

5. The combination with an antenna structure mounted on top of a building, said antenna comprising a vertical tubular mast and a plurality of horizontal doublets supported by said mast, of a flexible bond inside and extending throughout the length of said tubular mast, said bond being

loosely anchored at a point below the bottom of said mast to said building and at the top to said mast, said mast being securely supported independently of said flexible bond.

6. An antenna mast comprising a vertical tubular member, a plurality of conducting members extending out from the sides of said mast at the upper portion thereof, securing means in the top and bottom of said mast, and a safety device in the form of a loosely fitting bond member extending between said securing means, said mast being securely supported independently of said safety device.

7. An antenna mast comprising a vertical tubular member, a horizontal tubular member located at the top of said vertical tubular member, securing means at each end of said horizontal member and at a point below the bottom of said vertical member, a safety device in the form of a loosely fitting bond member located between each end of said horizontal member, and a second loosely fitting bond member extending from the bottom of said vertical tubular member to the central portion of said first loosely fitting bond member, said mast securely supported independently of said safety device.

8. An antenna mast comprising a vertical tubular member, a horizontal tubular member located at the top of said vertical tubular member, securing means at each end of said horizontal member and at a point below the bottom of said vertical member, a safety device in the form of a loosely fitting cable located between each end of said horizontal member, and a chain extending from the bottom of said vertical tubular member to the central portion of said loosely fitting cable, said mast securely supported independently of said safety device.

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