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3,256,656

BRACING MEANS FOR TELEPHONE POLES AND THE LIKE

Filed Dec. 22, 1960

2 Sheets-Sheet 1

FIG. 1

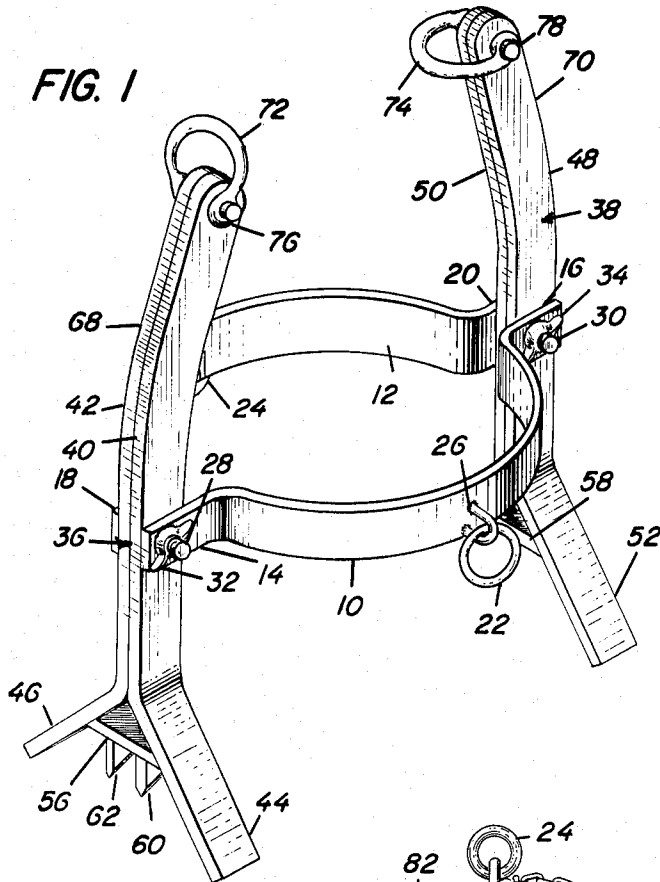


FIG. 2

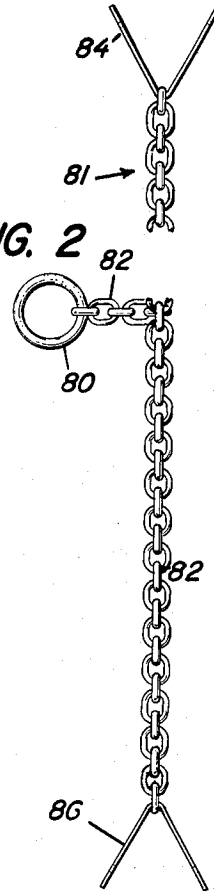
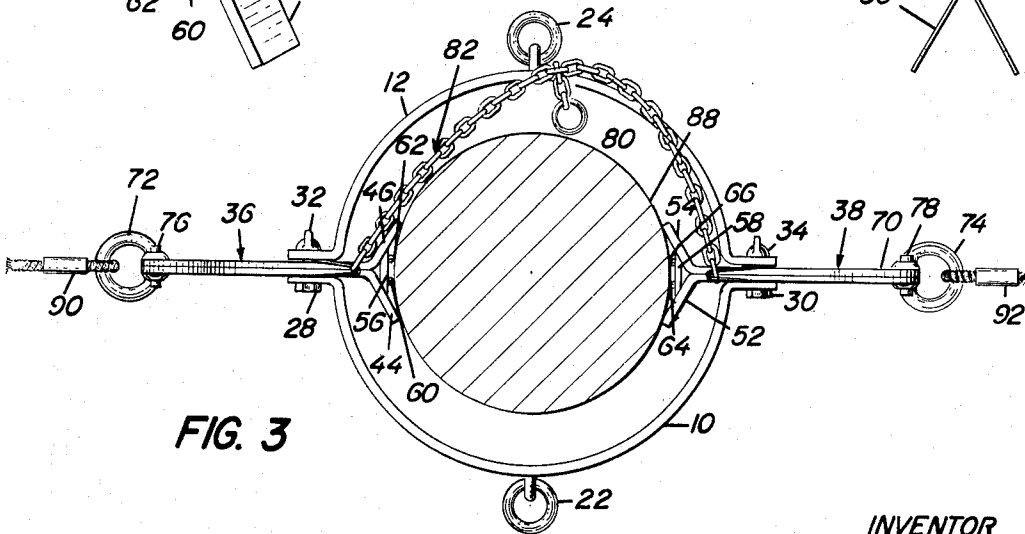


FIG. 3



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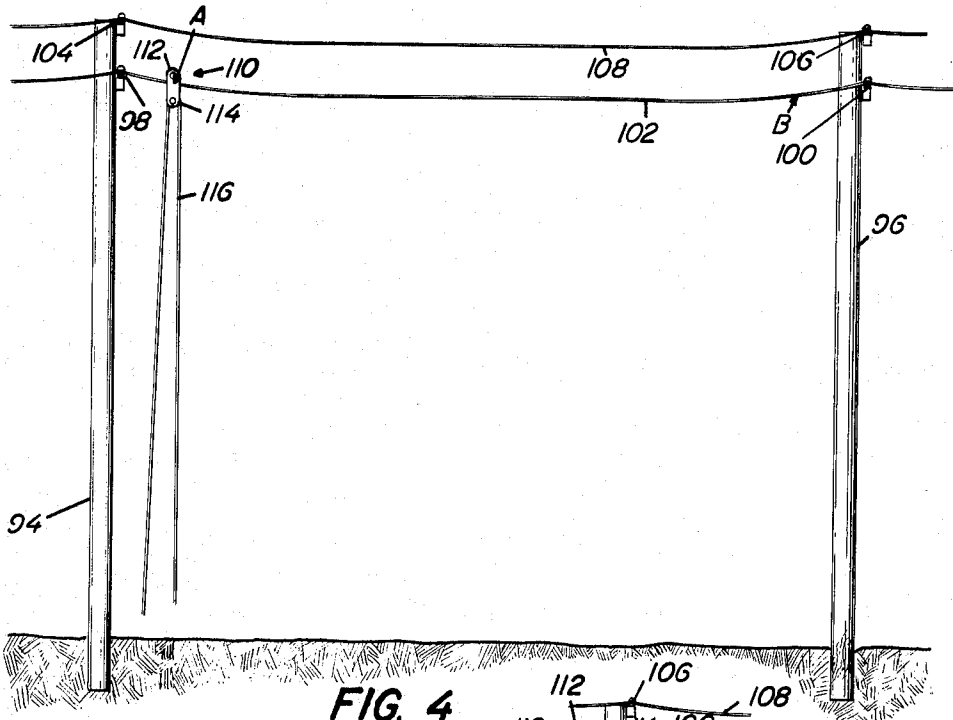


FIG. 4

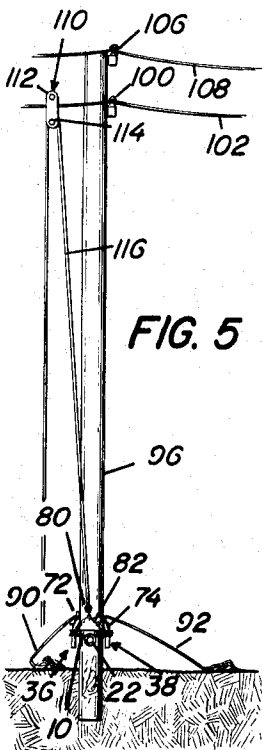


FIG. 5

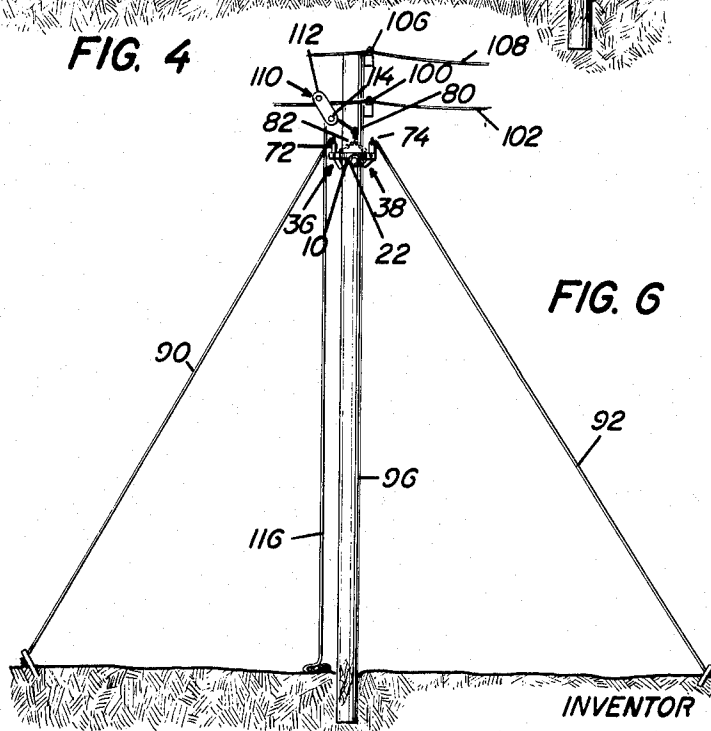


FIG. 6

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## BRACING MEANS FOR TELEPHONE POLES AND THE LIKE

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3 Claims. (Cl. 52-148)

### Introduction

This invention generally relates to certain new and useful improvements in pole bracing means and in particular it relates to a novel method and apparatus for bracing telephone and telegraph poles so that a line-man can climb such poles with safety.

### Background

In the maintenance of electrical distribution systems which include one or more wires supported by wooden poles placed in the ground, it is frequently necessary to temporarily guy a pole. For example, such pole guying may be necessary when (a) the wires are to be detached for replacement or repair of the conductors, (b) for replacement or repair of the cross-arm of the pole or (c) when a pole is being removed or (d) when a new pole is to be erected. Prior to this invention temporary guying of a pole has usually been accomplished with the aid of long pike poles in hands of two, three or four workmen or by the use of hand lines tied to the pole and anchored to stationary objects located some distance from the pole. However, both of these methods suffer from certain disadvantages. For example, the use of pike poles has a tendency to lift the pole and permit its lower end to shift about whenever the pole is insecurely anchored with respect to the ground because of rotting of the lowermost portion of the pole, or due to washing or cutting away of the ground at the base of the pole. The hand line method of guying poles is also not always satisfactory since it frequently requires that a man climb an insecurely supported pole in order to initially attach the hand lines thereto.

### Objects

One of the primary objects of this invention, therefore, is to provide a bracing means of the character which is simple, compact, durable, inexpensive in construction and which is so designed that it can be installed in a minimum period of time.

A further object of the invention is to provide pole bracing assembly which requires but a minimum of working space around the pole in order to effectively brace it.

Another object of this invention is to provide a pole bracing means which eliminates the necessity for pike poles and which does not require that a lineman climb an unsteady pole in order to attach guy lines.

Other objects and advantages will appear after reading the following description in conjunction with the drawings.

FIGURE 1 is a perspective view of the main bracing assembly of my invention;

FIGURE 2 is a top partial perspective view of a chain hoist device useful in connection with the bracing assembly of FIGURE 1;

FIGURE 3 is a plan view showing how the bracing assembly of FIGURE 1 and the chain hoist device of FIGURE 2 are attached together in relationship to a telephone pole;

FIGURE 4 is a perspective side view of two poles and a pulley means;

FIGURE 5 and FIGURE 6 are side views showing the manner in which this invention is utilized on telephone poles.

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### The invention

Referring now to FIGURE 1 it will be seen that pole gripping and bracing device of this invention consists of only a relatively few interrelated parts. First of all, there is a supporting frame member comprising two semi-circular steel bands 10 and 12 which are preferably as large or larger than the largest telephone pole which might be encountered in line repair work. Each end of semi-circular steel band 10 has opposite flanged extensions 14 and 16 and likewise semi-circular flanged band 12 has opposite flanged extensions 18 and 20. These extensions can vary in length from about 1 to 10 inches. On the opposite curved outer portions of semi-circular steel bands 10 and 12 there are preferably provided auxiliary anchoring rings 22 and 24 respectively, each of such rings being movable to a limited degree by virtue of the type of ring fastener 26 employed.

The outer extremity of flanged extensions 14, 16, 18 and 20 are provided with holes of suitable size for the reception of pivot bolts 28 and 30. One end of each pivot bolt preferably has a head (not shown) while the opposite end is preferably threaded to receive wing nuts 32 and 34 or an equivalent type of end connector. It will further be observed that between flanged extensions 14 and 18 there is mounted a pivot member 36 and between flanged extensions 16 and 20 there is mounted pivot member 38. In the particular embodiment shown, pivot member 36 consists of a pair of substantially straight vertical members 40 and 42 which at their lower ends branch apart into outwardly diverging portions 44 and 46 respectively. The exact angle of divergence is not critical. Likewise, pivot member 38 comprises a pair of vertical members 48 and 50 having at their lower ends outwardly diverging portions 52 and 54 respectively. A hole is provided through members 40 and 42 in alignment with the hole already mentioned with regard to flanged extensions 14 and 18, said holes all being in alignment for reception of the pivot bolt 28. Said holes are preferably of somewhat greater diameter than the pivot bolt so that pivot members 36 and 38 are free to be moved toward and away from each other in a vertical plane. (Holes are likewise provided in members 48 and 50 in alignment with the holes of flanged extensions 16 and 20 for the reception of pivot bolt 30.)

It is preferred that cross members 56 and 58 span the outwardly diverging portions 44, 46 and 52, 54 respectively. These cross members primarily serve as a base or foundation for teeth 60, 62, 64 and 66.

It will further be noted that the upper portions of pivot members 36 and 38 consist of inwardly extending sections 68 and 70 respectively. The angle of inward inclination may vary considerably. At the upper end of inwardly extending sections 68 and 70 there are provided pull rings 72 and 74 which are shown as being secured to the said sections by bolts 76 and 78. Members 40 and 42 and members 48 and 50 are welded together as shown, but any other equivalent fastening means (such as bolts or rivets could be used).

Referring now to FIGURE 2, there is shown a hoisting device 81 comprising a hoist ring 80 and a plurality of interconnected chain links 82. At the ends of the chain links 82 there are provided two V-shaped connectors 84 and 86. Each of these connectors 84 and 86 preferably has a pair of aligned holes through the ends thereof corresponding to the holes in the aforementioned flanged extensions 14, 16, 18 and 20 and vertical members 40, 42, 48 and 50.

Referring now to FIGURE 3, which is a plan view of the bracing and clamping assembly shown in FIGURE 1 and the hoist device of FIGURE 2 when these two devices are placed in position around a telephone pole, the relationship of the various parts to the telephone pole will

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be noted. The bracing and clamping assembly of FIGURE 1 is assembled around the pole most conveniently by first loosening wing nuts 32 and 34 and detaching the semi-circular steel band 10 from the rest of the apparatus shown in FIGURE 1, placing the semi-circular band 12 and the remaining parts of the device around the pole and then replacing semi-circular steel band 10 and then tightening wing nuts 32 and 34 so as to securely hold the semi-circular steel band in place. If the semi-circular metal band is resilient enough, one can alternatively merely remove one wing nut (e.g. 32), press the band 10 away far enough so that the rest of the bracing and clamping device shown in FIGURE 1 can be slipped around the pole, press the band 10 back in place and then replace wing nut 32. When this alternative arrangement is used the wing nut 34 can be replaced with an ordinary nut or rivet is desired.

It will be noted that the V-shaped connectors 84 and 86 are preferably fitted around the outside of vertical members 40, 42 and 48, 50 respectively, the holes in said respective parts being in alignment. It will further be noted that the V-shaped connectors 84 and 86 are shown as being disposed on the inside of flanged extensions 14, 18 and 16, 20 respectively, the holes being in alignment for reception of the bolts 28 and 30.

The teeth 60, 62, 64 and 66 will be either close to the sides of the pole or spaced therefrom depending upon the angular disposition of pivot members 36 and 38. In FIGURE 3, the teeth members are shown contacting the outer circumference of the pole, which is the position that they would be in if the anchor ropes 90 and 92 were drawn downwardly and taut (see FIGURE 6).

FIGURES 4-6 are presented to show the manner in which the pole bracing and clamping device of FIGURES 1-3 can be lifted to an elevated point on a defective or leaning pole. In FIGURE 4 it will be seen that there are two spaced apart poles 94 and 96. Pole 94 represents a good pole whereas pole 96 represents a defective pole.

A telephone repairman first climbs pole 94. At the top of poles 94 and 96 there is a neutral wire 102 which is supported upon supports 98 and 100. Poles 94 and 96 also have one or more live wires 108 supported by supports 104 and 106. When the lineman reaches the top of the good pole 94 he attaches to the neutral wire a pulley assembly 110 primarily consisting of an upper pulley 112 adapted to ride upon the neutral wire 102 and a lower pulley 114 which is adapted to support a hoisting rope 116. When the pulley assembly 110 has been satisfactorily assembled in place near the top of pole 94 on neutral wire 102, the lineman then descends to the ground. The lineman next walks from pole 94 to pole 96 and pulls or "tows" the pulley assembly 110 horizontally along neutral wire 102 from approximately point A to approximately point B.

When the pulley assembly and attached hoist rope 116 reach point B then the lineman can attach hoisting ring 80 to one end of the rope as shown in FIGURE 5. After one end of hoist rope 116 has been attached to hoist ring 80, the lineman can then pull downwardly upon the other end of hoist rope 116 and the entire bracing and clamping assembly shown in FIGURES 1-3 will be raised to the upper part of the pole as shown in FIGURE 6. When the bracing and clamping assembly has been raised to the desired height on the pole, then the two rope lines 90 and 92, which are shown as being loose in FIGURE 5, can be pulled upon to render them taut. Since the lower portions of pivot members 36 and 38 will move inwardly in response to a downward pull the teeth members shown more clearly in FIGURES 1 and 3 will bite into and firmly grip the sides of the telephone pole, the lower ends of ropes 90 and 92 can thereafter be anchored by any suitable means. When ropes 90 and 92 are thus anchored, then the defective pole is securely braced in one position and the lineman may then climb the pole to do

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whatever work needs to be done. If desired, additional anchoring lines may be secured to rings 22 and 24 to stabilize the pole in four directions.

When the lineman has completed his work upon the pole and has descended, the ropes 90 and 92 can be loosened and by pulling upwardly on the bracing device by pulling downwardly on hoist rope 116. The bite or grip of the teeth 60-66 is thus decreased and the bracing and clamping assembly will then slide down the sides of the telephone pole and return to its original position as shown in FIGURE 5.

It may therefore be seen that my invention has a number of advantages, as follows:

- (1) It is compact;
- (2) It may easily be carried on a service truck and operated by two men;
- (3) No pike poles are required (a pike pole is about 20 feet long and not easy to carry on a service truck);
- (4) My device has a positive locking action and will not fall as long as either of the two sets of teeth have some downward pressure on them;
- (5) It can be used with only one rope and one clamp in straightening poles that have been pushed or pulled over too far to climb safely;
- (6) It is safer than prior art devices;
- (7) It can be supported from four different directions.

In conclusion, while there has been illustrated and described a preferred embodiment of my invention, it is to be understood that since the various details of construction may obviously be varied considerably without really departing from the basic principles and teachings of this invention, I do not limit myself to the precise constructions herein disclosed and the right is specifically reserved to encompass all changes and modifications coming within the scope of the invention as defined in the appended claims.

What is claimed is:

1. An improved device for gripping and bracing a wooden pole which comprises in combination:
  - (a) a supporting frame member,
  - (b) said supporting frame member comprising two semi-circular steel bands which are preferably larger than the largest telephone pole which might be encountered in line repair work,
  - (c) each end of each semi-circular steel band having opposite flanged extensions,
  - (d) the outer extremity of said flanged extensions being provided with aligned holes,
  - (e) said holes being provided with pivot bolts,
  - (f) a pivot member between each opposed pair of flanged extensions and each pivot member being supported by a pivot bolt,
  - (g) the lower portion of each pivot member being branched apart into outwardly diverging portions,
  - (h) said pivot members being at least two in number and being adapted to pivot toward and away from each other through a substantially vertical plane,
  - (i) the lower diverging portion of each pivot member having a plurality of teeth-like projections which are adapted to grip the sides of the wooden pole,
  - (j) the upper section of each pivot member having means for attachment to a cable,
  - (k) said gripping and bracing device being provided with means for hoisting the entire assembly up a wooden pole.
2. An improved device for gripping and bracing a wooden pole which comprises in combination:
  - (a) a supporting frame member,
  - (b) said supporting frame member comprising two semi-circular steel bands which are preferably larger than the largest telephone pole which might be encountered in line repair work,
  - (c) each end of each semi-circular steel band having opposite flanged extensions,

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- (d) the outer extremity of said flanged extensions being provided with aligned holes,
- (e) said holes being provided with pivot bolts,
- (f) a pivot member between each opposed pair of flanged extensions and each pivot member being supported by a pivot bolt,
- (g) the lower portion of each pivot member being branched apart into outwardly diverging portions,
- (h) said pivot members being at least two in number and being adapted to pivot toward and away from each other through a substantially vertical plane,
- (i) the lower diverging portion of each pivot member being bridged by a crossbar, said crossbar having a plurality of teeth-like projections thereon which are adapted to grip the sides of the wooden pole,
- (j) the upper section of each pivot member having means for attachment to a cable,
- (k) said gripping and bracing device being provided with means for hoisting the entire assembly up a wooden pole.
3. An improved method for bracing telephone poles carrying a plurality of wires by utilizing a device for gripping and bracing a wooden pole, said device comprising in combination:
- (a) at least two spaced apart pivot members which are adapted to pivot toward and away from each other in a substantially vertical plane,
- (b) said pivot members being pivotally attached to a supporting frame member which is adapted to surround a wooden pole,
- (c) the lower section of each pivot member having a plurality of teeth-like projections which are adapted to grip the sides of a wooden pole,

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- (d) the upper section of each pivot member having means for attachment to a cable,
- (e) said gripping and bracing device being provided with means for hoisting the entire assembly up a wooden pole,
- which method comprises placing a pulley and rope on a neutral wire, conveying said pulley and rope to a point closely adjacent the pole to be braced, attaching one end of said rope to the above-mentioned means for hoisting, hoisting said device upwardly on said pole, pulling downwardly on cables attached to the upper section of each of said pivot members and then anchoring said cables.

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