Sept. 10, 1968 R. J. SCHALLER 3,400,503

PROTECTIVE DEVICE

Filed April 17, 1967

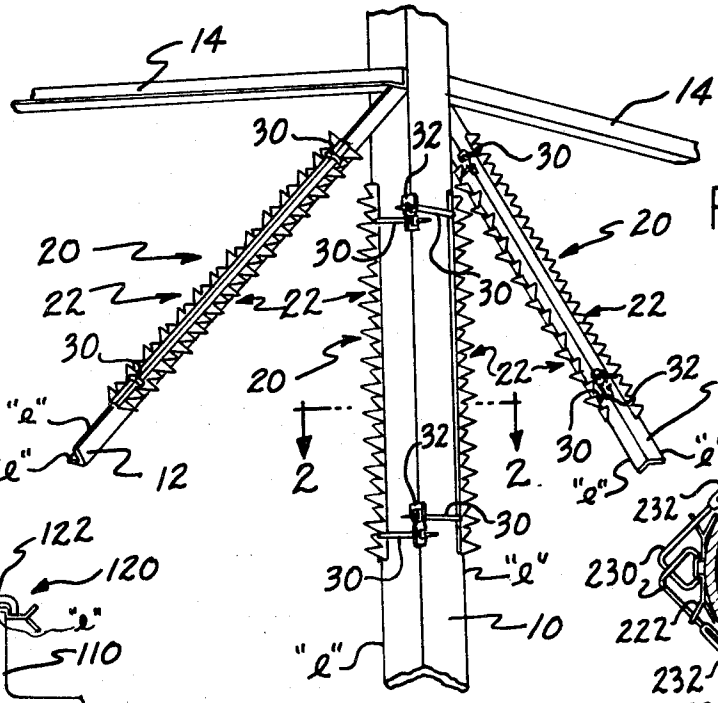


FIG. 1

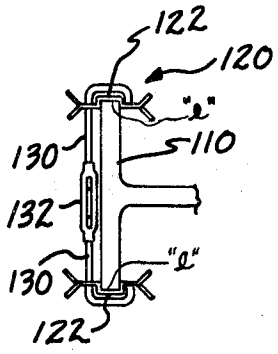


FIG. 4

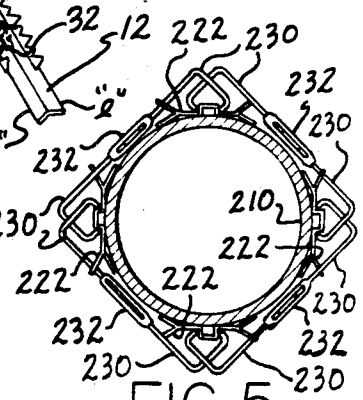


FIG. 5

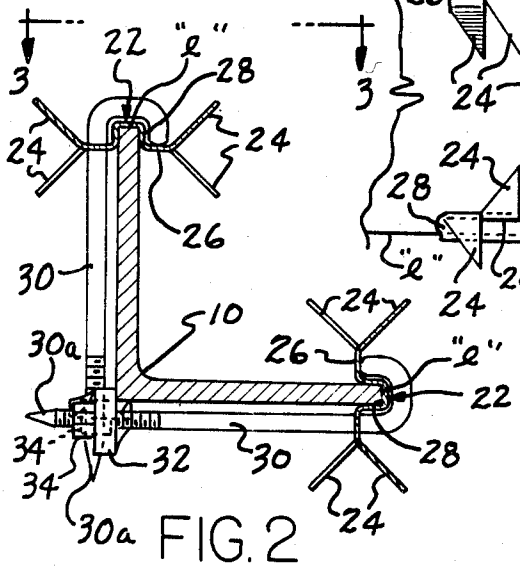


FIG. 2

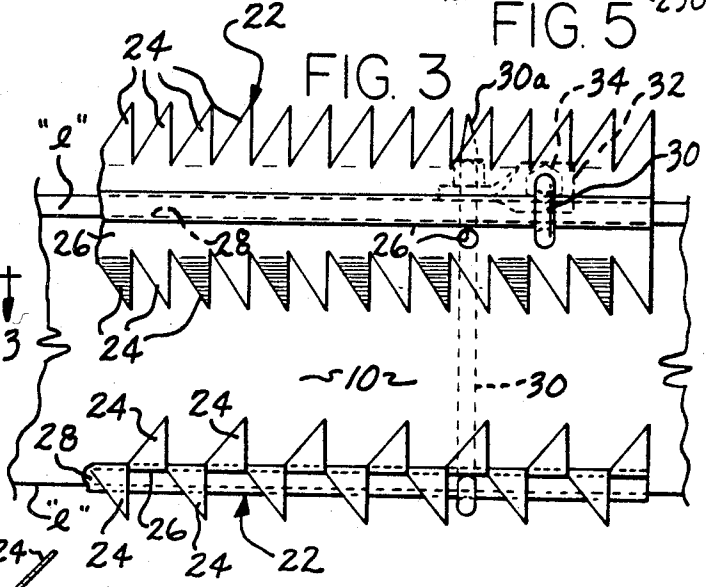


FIG. 3

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PROTECTIVE DEVICE

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ABSTRACT OF THE DISCLOSURE

A protective device for discouraging climbers from scaling and climbing the structural members of support towers and the like for electrical transmission lines, comprising an elongated guard extending longitudinally along an edge of the structural member. The guard includes a plurality of sharp, toothlike projections arranged in rows along opposite edges thereof to extend transversely outward of the structural member and thereby discourage climbers from gripping or holding onto the structural member. Clamping means are provided to secure the guard in place along the edge of the structural member without requiring the member to be cut, punched, drilled, or welded.

The present invention relates to a protective device for discouraging climbers from scaling and climbing the structural members of support towers for electrical transmission lines and the like. While the invention is particularly useful in preventing persons and animals from climbing electrical power line towers, it is to be understood that the invention is not limited to this particular application and may be used with various other diverse types of upright structures having elongated structural members wherein it is desirable to prevent people and animals from scaling or climbing the structure. Accordingly, the invention is useful in connection with water towers, fence posts, billboard supporting structures, and structural posts and columns of buildings that are in the process of construction, etc.

One of the problems facing electrical power companies is that of protecting their remote transmission lines against vandalism and damage. Enterprising human aerialists, animals, and children intent on climbing unguarded towers sometimes are injured by falling or by electrical shock, and the electrical companies sometimes have been held liable for such injuries, even though the excursions were unauthorized and, in fact, prohibited. One means often used for discouraging climbers from scaling tower structures has been to erect a protective fencing around the base with several strands of barbed wire usually being provided along the top of the protective fence. The cost of these projects is relatively high and, once the protective fence has been scaled, the tower itself is usually unprotected and readily accessible for climbing by the would-be aerialist. Another means of protection often used is the installation of barbed wire barriers around the individual legs and braces of the tower structure and, while these types of barriers are effective, they present problems to linemen and other persons who are authorized to and required to climb the structures in performance of their duties.

Accordingly, it is an object of the present invention to provide a new and improved protective device for discouraging unauthorized climbers from scaling and climbing the structural members of towers and the like.

Another object of the present invention is the provision of a new and improved device of the type described which is relatively inexpensive, easy to install, and yet extremely effective in discouraging even the most enterprising arialists from climbing.

Another object of the invention is the provision of a new and improved device of the character described which may be easily attached to a structural member without requiring any drilling, punching, cutting, or welding of the member.

Still another object of the invention is the provision of a new and improved device of the character described which can be removed from the structure with the proper tools, in order to permit a lineman, or other authorized party, to climb the protected structure.

The foregoing and other objects and advantages of the present invention are accomplished by the provision of a new and improved protective device of the character described, comprising an elongated guard extending longitudinally along one edge of a structural member in a tower or the like to be protected. The guard includes a plurality of sharp, toothlike projections arranged in rows along opposite longitudinal edges thereof, and these projections extend transversely outward of a structural member, making it extremely difficult for a person or animal to grip or hold onto the edge of the structural member. Special clamping members are provided to hold the guard in place along the edge of the structural member, but a lineman or other authorized persons with the proper tools and know-how, can readily remove the guard from the structure when required and then replace the guard in proper position after the maintenance chore on the tower has been performed.

For a better understanding of the present invention, reference should be had to the following detailed description when taken in conjunction with the drawings, in which:

FIG. 1 is a fragmentary, perspective view illustrating a portion of a typical corner leg structure of an electrical transmission line supporting tower equipped with protective devices in accordance with the invention for discouraging climbers from climbing or scaling the tower;

FIG. 2 is a transverse cross-sectional view through the tower leg, taken substantially along the line 2—2 of FIG. 1;

FIG. 3 is a fragmentary side elevational view of the tower leg and protective device, looking in the direction of the arrows 3—3 of FIG. 2;

FIG. 4 is a transverse cross-sectional view similar to FIG. 2 illustrating a protective device in accordance with the invention installed on the flange of an I-beam or T-beam type structural member; and

FIG. 5 is a transverse cross-sectional view similar to FIG. 4 illustrating a protective device in accordance with the invention installed on a round column.

Referring now, more particularly, to the drawings, there is illustrated in FIG. 1, a fragmentary portion of a typical transmission line tower leg structure including an upwardly extending corner angle or leg 10, a pair of diagonally extending angle braces 12 joined with the corner angle, and a pair of horizontal, angle cross braces 14.

In accordance with the present invention, the corner angle 10 and each of the diagonal braces 12 are provided with a protective guard assembly 20 for discouraging persons or animals from scaling or climbing the tower structure. Each protective guard assembly 20 comprises a pair of elongated guard plates 22 which are mounted to extend longitudinally along the free outer edges *e* on the flanges of the respective angle members. The guard plates 22 are fabricated of sheet metal having the desired thickness [i.e., 16 or 18 gauge is suitable] and having the desired finish [i.e., a galvanized finish is suitable and sometimes corrosion-resistant materials, such as stainless steel and "Cor-ten" brand steel, are used]. Each guard plate 22 includes two rows of sharp, toothlike projections 24 disposed along opposite, longitudinal side edges, and a web or body portion 26 between the spaced rows of teeth.

The web **26** is formed with wall means **28** defining a longitudinally extending groove (FIG. 2) spaced midway between the spaced rows of teeth along the opposite edges of the guard. The longitudinal groove is adapted to receive the outer edge portion *e* of the flange of a structural member, such as the angles **10** or **12**, and the sidewalls forming the groove maintain the guard **22** with its web portion **26** generally at right angles or normal to the flange of the respective structural member. The width and depth of the channel shaped groove defined by the wall means **28** is dimensioned to appropriately accommodate each different-sized angle or structural member flange on which a guard plate **22** is to be used, and the transverse or lateral width of the web portion **26** is likewise dimensioned to be appropriate with the size of the structural member on which the guard is used.

As best shown in FIGS. 2 and 3, the sharp, toothlike projections **24** extend transversely outwardly of the angle **10**, and adjacent projections or teeth in each row are alternately staggered or offset in opposite angular directions from a common plane parallel of the main body or web **26** of the guard plate. The projecting teeth **24**, with their sharp points and sharp edges, make it difficult to grasp or hold onto the structural member **10** or **12** on which the guard plates **22** are mounted, and, because the guard plates extend longitudinally of the structural members for a considerable length, it is extremely difficult, if not impossible, for even the most enterprising aerialist to climb a structure equipped with the guards **22**.

The guards **2** are secured against longitudinal movement on the structural members by two pairs of J-bolts **30**. When the guards are installed on angular structural members, such as the angles **10** and **12**, the J-bolts in each pair are at right angles to each other and are interconnected by a twisted connector link **32** formed of bar stock and having end segments disposed at right angles to each other. The curved end of each J-bolt **30** bears against the outer surface of the grove forming wall means **28** on the guard members and forces the members tightly against the outer edge portion *e* of the angle flange. The shanks of the J-bolts extend through openings **26'** in the web portions of the guards and project through openings formed in respective end segments of the connector links **32**. Nuts **34** are threaded onto the outer ends of the J-bolt shanks and bear against the connector links **32**, to hold the guard plates **22** tightly against the outer free edges *e* of the angle flanges. Preferably, the J-bolt shanks are sharpened on their outer ends as at **30***a* to present another pointed projection for discouraging a would-be climber.

When an authorized person, such as a repair lineman, needs to climb the tower structure, the guard plates **22** may be removed by loosening the nuts **34** with a wrench, and after repairs have been made, the guard assembly may be reassembled in place on the structure.

FIG. 4 illustrates a guard assemby **120** similar to the assemblies **20** previously described, and suitable for use with structural members, such as I-beams, T-beams, and the like. Each assembly **120** comprises a pair of guard plates **122** identical to the guard plates **22** and held in position on opposite edges *e* of the beam flange by pairs of J-bolts **130**. The J-bolts **130** in each pair are axially aligned and are interconnected together by a turn buckle **132** instead of a twisted connector link **32** and nuts **34**.

FIG. 5 illustrates a protective guard assembly **220** employing a plurality of equilaterally spaced plates **222** mounted on a round column **210**. The individual guard plates **222** are identical with the guard plates **22** and are secured in place on the column **210** by pairs of J-bolts **230** and turn buckles **232**.

From the foregoing description, it will be seen that the present invention provides a simple and inexpensive, yet effective, means for discouraging climbers from unauthorized climbing or scaling of tower structures. In addition, the protective device of the invention can be installed without damage to the structural integrity of a tower and can be removed when desired to permit an authorized person to climb past the device. The present invention is useful with many different structural shapes, and lends itself readily to mass production processes.

While there have been illustrated and described several embodiments of the present invention, it should be understood that numerous changes and modifications will readily occur to those skilled in the art, and it is intended in the appended claims to cover all such changes and modifications which fall within the true spirit and scope of the present invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A protective device for attachment on an elongated structural member to prevent climbing thereon, comprising a pair of elongated guards extending longitudinally along spaced apart edge portions of said structural member, each guard including a web portion and rows of sharp, toothlike projections disposed along opposite, longitudinal edges of said web and extending transversely of said structural member, said web portion of each guard including means defining a longitudinally extending groove receiving an edge of said structural member, and connector means for securing said guards in place on said structural member including at least one pair of connectors, each connector having one end engaged with a respective one of said guards and an opposite end interconnected with the other connector.

2. The device of claim **1** wherein said groove of each guard is substantially channel shaped in cross section and includes opposite side flanges, said web portion including a pair of outer segments extending outwardly from said opposite side flanges forming said groove in a direction generally normal thereof.

3. The device of claim **2** wherein the rows of teeth formed along opposite edges of said web are angularly disposed with respect to said outer web segment.

4. The combination of claim **1** wherein said connectors comprise J-bolts with the curved ends thereof disposed against said groove defining means of said guards to hold said guards against the edges of said structural member.

5. The combination of claim **4** wherein said structural member is angular in cross section and the connectors in each pair are interconnected by a coupling link extending longitudinally along the apex of said angular structural member.

6. The combination of claim **5** wherein said coupling link includes segments at opposite ends thereof angularly disposed to one another about the longitudinal axis of said link, each segment having an aperture therein for permitting the shank of a J-bolt to project therethrough.

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