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Berger

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[54] **ANCHOR PLATE FOR FENCE POST**

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[52] **U.S. Cl.** **52/153;** 256/47

[51] **Int. Cl.**[2] **E04H 17/22**

[58] **Field of Search** ..... 256/58, 47, 48, 32, 34; 52/153, 154, 738 D, 758 F; 24/257, 81 C, 81 R; 248/40, 41, 43, 314; 403/397, 398, 399

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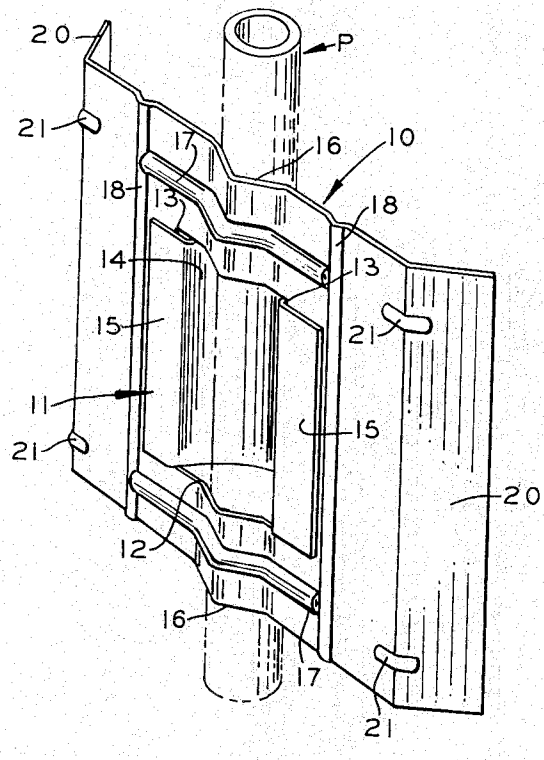
Primary Examiner—Dennis L. Taylor

Attorney, Agent, or Firm—Mahoney, Miller & Stebens

[57] **ABSTRACT**

An anchor plate for fence post is provided having a sheet metal plate and U-shaped bracket which cooperatively interengage to mechanically couple with a fence post or the like. The plate is formed with an aperture into which the U-shaped bracket is positioned and form an open ended socket. When thus assembled, the plate and bracket cooperatively engage an elongated post which has been previously positioned in the ground and extends through the open ended socket. When assembled with the post the plate and bracket are positioned vertically and driven into the ground to prevent and restrict lateral displacement of the post in resisting forces applied laterally to the post. The plate is formed with laterally offset marginal end portions to resist displacing forces in a direction normal to the plane of a plate. Providing a U-shaped bracket which cooperatively interfits with the plate, enables the plate to be utilized with various sized posts through mere interchange of the brackets adapted for specific post sizes and configurations.

17 Claims, 8 Drawing Figures



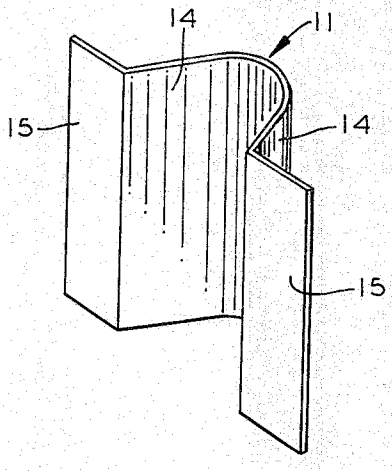


FIG. 2

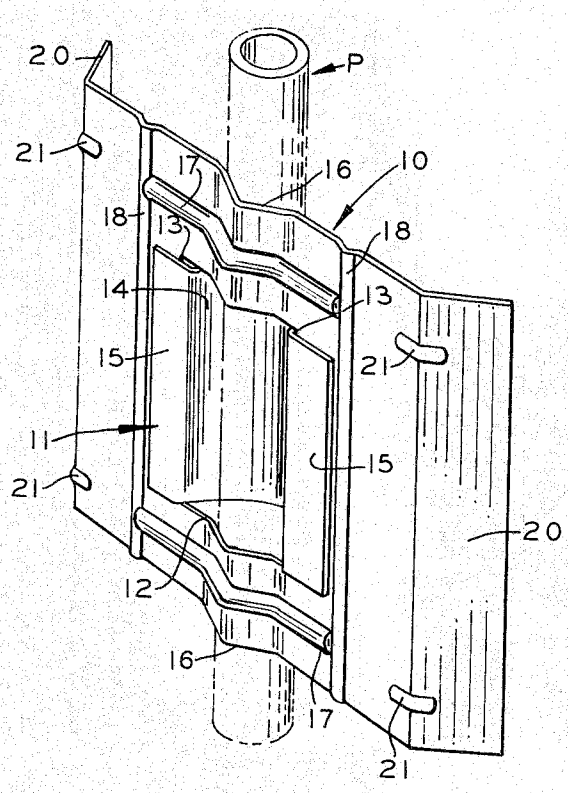


FIG. 1

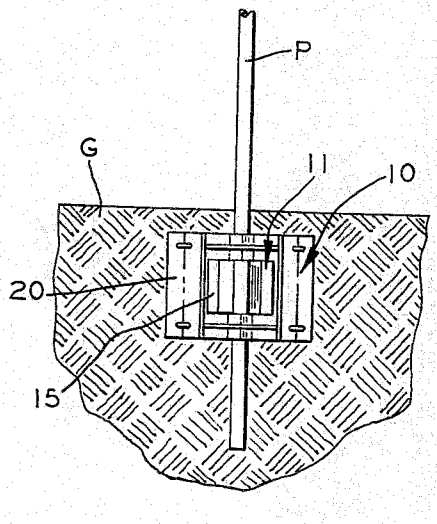


FIG. 3

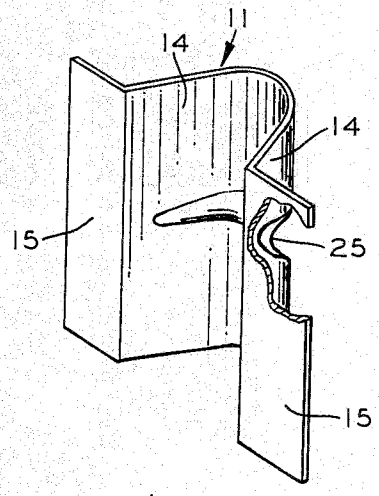


FIG. 6

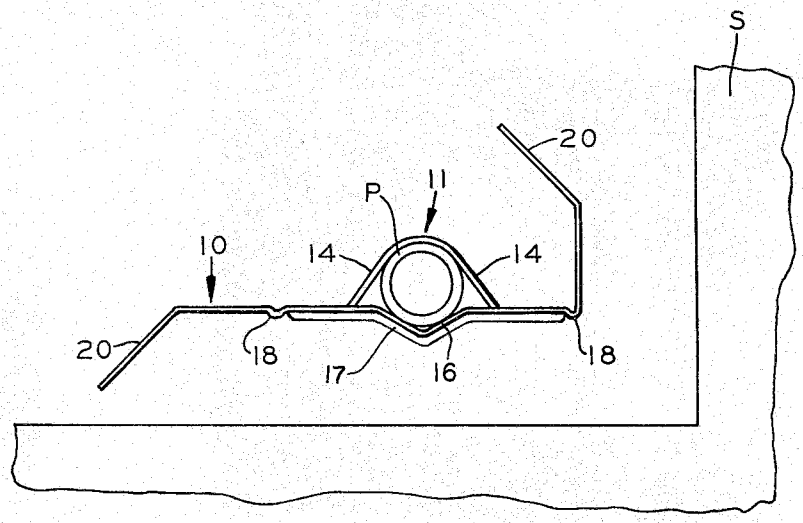


FIG. 4

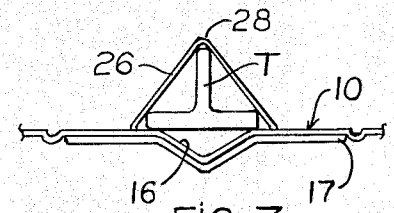


FIG. 7

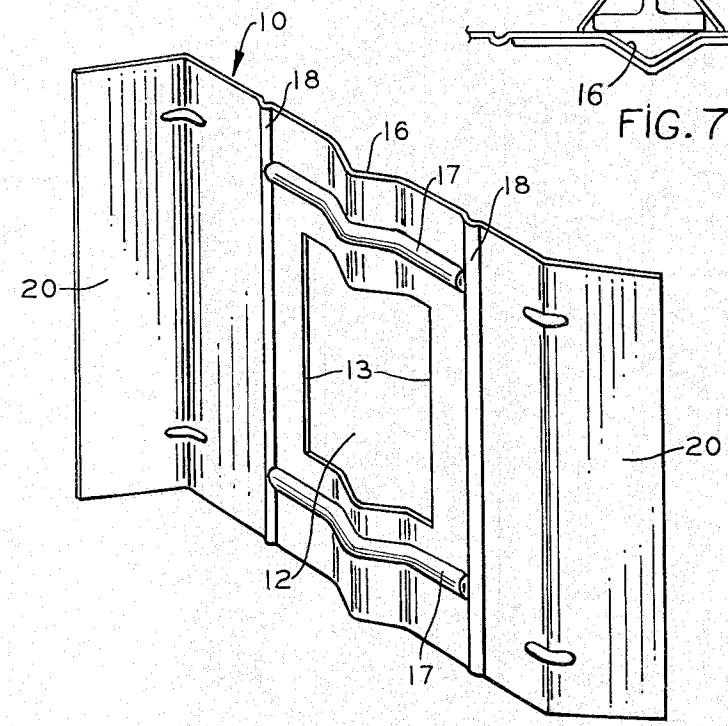


FIG. 5

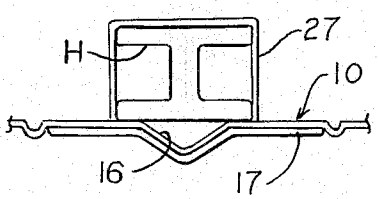


FIG. 8

ANCHOR PLATE FOR FENCE POST

BACKGROUND OF THE INVENTION

The secure setting of fence posts in accordance with the prior art to effectively resist lateral forces applied to the upper portions of the post as well as maintain the post in substantially permanent fixed relationship to the ground has either required that the post be set in a body of concrete or that a platelike member be attached to or interfit with the post. Utilization of a poured concrete footing or base into which the post is set provides a means for anchoring the post; however, this procedure is relatively expensive and a concrete footing is very susceptible to being worked upwardly and out of the ground through the action of alternate freezing and thawing during the winter. Excavation necessary for making a hole of sufficient size into which to pour the concrete entails a substantial expense in labor and time, as well as a substantial expense in the concrete necessary for filling the hole. In the case of metal fence posts, such as the tubular pipe type or T-rail, it has been the practice to utilize a platelike structure attached or mounted on the post and driven into the ground to maintain the post in an upright position against lateral forces. Whether the plate is initially attached to the post or is assembled therewith and driven into the ground as a second step, the plate must necessarily be positioned adjacent to the upper surface of the ground into which the post is set. The prior art type plates are relatively less expensive to install than the concrete setting method, thereby warranting the use of the metal plate post anchors but these prior art type plates are smooth surfaced and offer little resistance to frost braving if they should be positioned on top of rocks buried in the ground.

In view of the relative economy factors, various types of plates have been devised and an example of a separate plate that is subsequently positioned on the post and driven into the ground is illustrated in U.S. Pat No. **3,132,726,** issued to Johnson on May **12, 1964.** That patent illustrates a substantially planar sheet metal structure having a tubular socket formed in the structure as an intregral part thereof through which the post extends. While a plate structure of this form presents a relatively effective surface area of substantially large extent it will be readily seen that a planar sheet does not offer any effective resistance to laterally displacing forces applied in a direction parallel to the surface of the plane of the sheet. Other relatively complex structures formed from sheet metal are known; however, these structures do not provide the necessary economy to permit widespread utilization and are in essence, of little more effect in resisting lateral forces than the plate disclosed in the Johnson patent.

An obvious advantage and main reason for utilization of anchor plates of this nature is the relative ease and simplicity of utilization with a maximum degree of effectiveness. Since fences are normally constructed of substantial longitudinal extent, the plates are normally positioned to resist forces applied laterally to the direction of the fence. It will be readily seen that these planar type plates are relatively ineffective for situations where forces may be encountered that are applied in a direction aligned with the plane of and with the fence line. A further advantage of the separate plates is that they are simple to install by merely being slipped over the post and driven directly into the ground separately from the post. There is no requirement for excavation or expensive and complicated equipment for driving the plates into the ground.

SUMMARY OF THIS INVENTION

An anchor plate formed from a metal sheet is provided in accordance with this invention comprising two interfitting components. These two components include a plate-like main body or metal sheet having a central aperture into which a U-shaped bracket will interfit. A sheet metal plate and U-shaped bracket assembled in interfitting relationship are constructed and configured to form an open ended socket for receiving a post which extends longitudinally relative to the plate. The terminal ends of the bracket are formed with outwardly and laterally projecting lugs or flanges which interengage with the surfaces of the plate and retain the bracket in assembled relationship when a post is cooperatively inserted through the socket.

Forming this structure in two components in accordance with this invention results in economy in the fabrication of the apparatus and greater versatility in utilization thereof. While the same sized plate is utilized with various diameters or sizes of posts, the U-shaped bracket, being independently formed, can be configured to specifically accommodate various sizes and cross-sectional shapes of posts. Accordingly, several different size or configured U-shaped brackets may be provided for utilization with the main plate without requiring an inventory of a large number of the complete units to meet the requirements for any particular fence construction. The most common form of post which is utilized in most fence construction is the cylindrical, tubular type. However, the structure of this invention may be readily constructed to accommodate T-rails or H-beamed posts with mere adaptation of the U-shaped bracket that is interfit with the plate. This permits a substantial reduction in fabrication costs as a single stamping die may be used for the plates while relatively less expensive dies may be utilized in stamping out the sheet metal brackets of the particular desired configurations.

Also, in accordance with this invention, the main body plate is formed with laterally offset marginal end portions which aid in resisting lateral forces applied to the post in a direction aligned with the plane of the plate. These laterally offset portions need not be of the same surface area as the main body of the plate, since the forces that may be expected to be encountered in this direction are of substantially less in magnitude. Several elongated bead formations are integrally stamped into the plate to provide greater rigidity and permit bending of the plates at selected points. These bead conformations are also arranged to provide additional resistance to forces that normally cause the plates to work upwardly from the ground.

These and other objects and advantages of this invention will be readily apparent from the following detailed description of embodiments thereof and the accompanying drawings.

DESCRIPTION OF THE DRAWING FIGURES

FIG. **1** is a perspective view of an anchor plate embodying this invention including a plate and interfitting U-shaped bracket.

FIG. **2** is a perspective view of the bracket.

FIG. 3 is an elevational view of the anchor plate assembled with a post and positioned in the ground.

FIG. 4 is a top plan view of an anchor plate assembled with a post and positioned in the ground with an end portion of the plate being bent for close positioning of a post to an obstructing structure.

FIG. 5 is a perspective view of a modified sheet metal plate.

FIG. 6 is a perspective view of a modified U-shaped bracket.

FIG. 7 is a fragmentary top plan view of an anchor plate having a modified U-shaped bracket for use with T-posts.

FIG. 8 is a fragmentary plan view of an anchor plate having a modified U-shaped bracket for use with H-posts.

DETAILED DESCRIPTION OF THE ILLUSTRATIVE EMBODIMENTS

An anchor plate embodying this invention is illustrated in FIG. 1 as assembled with a vertically disposed fence post P. Comprising the anchor plate is a rigid sheet metal plate **10** and a U-shaped bracket **11**. The plate **10** and bracket **11** are formed as separate units which are maintained in fixed relationship when assembled with a post. In this preferred embodiment, the plate **10** is generally rectangularly shaped and has a central area in which is formed a rectangular aperture **12** which is sized to receive the bracket **11** in interfitting relationship.

Viewing the anchor plate as shown in FIG. **1** in the vertically disposed position as utilized with a post P driven into the ground, it will be noted that the rectangular aperture **12** is formed with opposed vertical side edges **12** which are spaced apart a distance at least commensurate with the diametrical dimension of the post P. These side edges **13** thus extend vertically with the post disposed parallel and in intermediate relationship thereto.

Positionable within the aperture **12** is the U-shaped bracket **11** having spaced legs **14** that extend along respective ones of side edges **13.** Each of the bracket legs **14** terminates in a flange **15** that projects laterally outward therefrom. Each of the bracket flanges **15** overlies an adjacent marginal edge portion of the plate **10** at the respective side edge **13** of the aperture **12** thereby preventing the bracket from passing completely through the aperture. The bracket **11** is of elongated, channelform and of substantially the same length as the vertical dimension of the aperture **12** to provide a sufficient bearing surface for engagement with the post P. When interfit in the aperture **12,** the bracket **11** forms an open ended socket which receives the post as illustrated in FIG. **1.** In the embodiment illustrated in FIGS. **1** and **2,** the bracket **11** is arcuately curved to closely conform with the outer circumferential surface of the cylindrical post.

As shown in FIG. **1,** it is preferred that the plate **10** be formed with a pair of longitudinally aligned channels **16** in the portions above and below the aperture **12.** These channels **16** are of a generally V-shape and project a distance out of the plane of the plate **10** in a direction opposite to that of the bracket **11.** Accordingly, the V-shaped channels **16** cooperate with the bracket **11** in defining a longitudinal axis along which the post P is aligned and better maintained in position. The V-shaped channels **16** are of particular advantage when the anchor plate is utilized with T-rail posts as one flange of the post will then be retained in proper alignment by the channels **16.**

In utilizing the anchor plate of this invention, the bracket **11** is interfit in the aperture **12** and when thus interfit, is assembled with a post P. This is accomplished by sliding the anchor plate down over the top of the post which has been previously driven into the ground G as shown in FIG. **3.** When the anchor plate is thus positioned on the top surface of the ground as shown in broken lines, a driving means such as a heavy tube is applied over the post and operated to force the anchor plate into the ground. Alternative installation techniques include positioning an anchor plate with assembled bracket on the ground and then positioning the post through the bracket. The post is then driven into the ground with the anchor plate also being driven with the post to obtain the desired depth. Also, an anchor plate may be set in a hole dug in extremely stoney terrain which effectively prevents use of the plate driving technique. Preferably, the anchor plate will be positioned with the uppermost edge thereof disposed a slight distance below the earth's surface. The channels **16** and bracket **11** cooperate to maintain the plate **10** in the desired vertical position while it is driven into the ground G along the side of the post P.

For greater rigidity of the plate **10,** and ability to withstand the forces required in driving the plate into the ground reinforcing beads **17** are formed in the plate both above and below the aperture **12.** These beads **17** comprise elongated channels stamped in the plate to project outwardly from the side opposite that disposed against the post. Each of the beads **17** is of a predetermined depth and projecting from the surface of the plate to perform the additional function of aiding in retaining the anchor plate in the ground. The laterally projecting surfaces form abutments that engage the ground and resist upward movement of the plate that would otherwise result from the alternate thawing and freezing of the ground. The depth of the beads **17** is determined in part by the severity of the ground movement problem that may be encountered in any particular location.

Additional reinforcing beads **18** are also formed in the plate **10** in laterally spaced relationship to the side edges **13** of the aperture **12.** These additional reinforcing beads **18** are thus vertically oriented and extend completely across the plate. Vertical orientation of these reinforcing beads **18** enables the plate to better resist buckling forces encountered while driving the plate into the ground. Furthermore, the vertical beads **18** form a hinge line about which the sheet metal plate may be more readily bent for purposes noted hereinafter. It will also be noted that both horizontal reinforcing beads **17** terminate at the vertical beads to avoid interfering with bending of the plates about the vertical beads.

The plate **10** is of a size designed to effectively resist laterally directed forces that may be exerted against the fencing material attached to and carried by the post P. However, forces directed in alignment with or longitudinally of the fence are often encountered and for this purpose the plate **10** is provided with laterally directed flanges **20** at each end of the plate. These flanges **20** extend angularly out of the plane of the plate and, in the illustrative embodiment of FIG. **1,** are both directed toward the same side of the plate **10.** It will be noted that

the flanges **20** are not perpendicular to the plane of the plate **10.** The flanges may be oriented perpendicular to the plane of the plate with the specific angle determined by particular circumstances or preference and it will be understood that the closer the flanges are oriented normal to the plate, the less surface area there will be to resist lateral forces while there will be a greater surface area providing resistance to forces exerted in alignment with the plane of the plate **10.** Greater rigidity of the flanges **20** relative to the plate **10** is obtained through formation of reinforcing beads **21** formed at the juncture of the flange **20** and the plate **10.** These reinforcing beads **21** extend a distance laterally to either side of the juncture and are best formed by die stamping of the conformations similar to the previously described reinforcing beads.

A modified form of the sheet metal plate **10** is illustrated in FIG. **5.** This modified plate **10** is similar in all respects to that previously described in reference to FIG. **1,** except that the flanges **20** at the opposed ends of the plate are oppositely directed. Accordingly, the same reference numerals are applied to the same components or elements. This opposite orientation of the flanges **20** does not provide any additional area over that of the type shown in FIG. **1** to resistance of forces directed in the plane of the plate or transversely to the plane of the plate.

An advantage of the oppositely directed flanges **20** is shown in FIG. **4.** As previously noted the anchor plate of this invention is designed to be positioned more closely adjacent to fixed obstructions, such as sidewalks or driveways or similar type objects, than is possible with prior art structures. The construction of the plate **10** with the reinforcing beads **18** extending vertically across the plate provides a further advantage in that the plate may be readily bent at that location to permit the post and plate to be even more closely positioned to the obstructing structure. This is readily seen in FIG. **4.** This relatively close positioning of the post P and anchor plate is further facilitated where the flanges **20** are oppositely directed. In the illustrative embodiments as shown in FIG. **4,** the flange **20** at the right side of the figure does not interfere with the positioning of the anchor plate in extremely close relationship to an adjoining sidewalk. This structure thus permits positioning of a post P in close proximity to the corner or an end wall which abuts the fence line. In FIG. **4** for purposes of illustration a corner portion of a sidewalk S is shown to better illustrate how the anchor plate of this invention enables the post to be closely positioned to both sides of the sidewalk.

A further modification of the invention is shown in FIG. **6.** This modification relates to the U-shaped bracket **11** and comprises the formation of at least one circumferentially extending bead **25** at the approximate midpoint of the channel form bracket. This bead or rib **25** projects inwardly of the bracket **11** and thus reduces the open area or cross-sectional area of the bracket. The function of the rib **25** is to adapt a standard size bracket **11** to accommodate a smaller size post P. The illustrative bracket is provided with only one such rib but it will be readily apparent that a pair of these ribs may be formed in the bracket in relatively spaced relationship providing additional bearing surfaces that better resist tilting of the anchor plate relative to the post. Providing a common sized bracket **11** with various sizes or depths or ribs **25** enables substantially the same structure to be utilized with different sizes of posts P. It is contemplated that a stamping die for a standard size bracket may be selectively provided with rib forming inserts to minimize die costs.

Two additional modifications of the bracket are illustrated in FIGS. **7** and **8.** In each of these two figures, a plate **10** of the same construction as shown in FIG. **1** is provided with respective U-shaped brackets **26** and **27** having cross-sectional shapes specifically configured for use with T-posts T and H-posts H respectively. A T-post T is positioned with the flange thereof disposed against the surface of the plate and the web projecting laterally outward. This bracket **26** has a triangular cross-sectional shape with an apex **28** that receives the longitudinal edge of the post's web thereby effectively preventing rotational movement of the anchor plate relative to the post. Bracket **27** shown in FIG. **8** has a rectangular cross-sectional configuration that conforms to the shape of the H post. One flange of the post H is positioned against the surface of the plate **10** while the other flange is spaced outwardly therefrom. The bracket **27** has three walls which form the rectangular or square cross-sectional shape in cooperation with the plate **10** to receive the post and prevent relative rotational movement.

It will be readily apparent from the preceeding detailed description of embodiments of an anchor plate fabricated in accordance with this invention that a novel and advantageous structure is provided. Fabricating the anchor plate into components that readily interfit facilitates fabrication and substantially increases the versatility of the device. Forming the rigid sheet metal plate as an effectively planar structure with the laterally offset flanges enables the structure to be positioned in close proximity to obstructions. Formation of the vertical reinforcing beads enables the plate to be readily bent at that location for even closer positioning to an obstruction.

Having thus described this invention, what is claimed is:

1. An anchor plate for posts set in earth comprising

a rigid sheet metal plate adapted to be driven edgewise into the earth in a vertical plane adjacent a side of a post and including a central area having an aperture formed therein, said aperture having side edges spaced apart a distance commensurate with the diametrical dimension of a post disposed in longitudinal alignment therewith; and

a U-shaped bracket positionable in said aperture for encircling a post in cooperation with said plate, said bracket having spaced legs that extend through said aperture when said bracket is assembled with said plate and terminate in laterally outward projecting flanges which overlie respective surface portions of said plate adjacent said aperture side edges.

2. An anchor plate according to claim **1** wherein said sheet metal plate has longitudinally aligned channels formed therein at either end of said aperture intermediate said side edges, said channels configured to interfit with a post.

3. An anchor plate according to claim **1** wherein said sheet metal plate is formed with at least one elongated bead projecting a distance from the surface of said plate and is disposed transversely to said aperture.

4. An anchor plate acccording to claim **3** wherein said bead extends transversely across the central area

of said plate in spaced relationship to an end of said aperture.

5. An anchor plate according to claim **4** having at least one other of said beads formed therein at the opposite end of said aperture.

6. An anchor plate according to claim **1** wherein said plate is formed with at least one flange projecting out of the plane of said plate and disposed in laterally spaced relationship to a side edge of said aperture.

7. An anchor plate according to claim **6** wherein said plate is formed with a second flange at the opposite side of said aperture.

8. An anchor plate according to claim **7** wherein both of said flanges project out of the plane of said plate in the same direction.

9. An anchor plate according to claim **7** wherein said flanges project out of the plane of said plate in opposite directions.

10. An anchor plate according to claim **6** wherein said flange is integrally formed with said plate as a marginal edge portion thereof and said plate and flange are formed with reinforcing beads extending transversely across the juncture therebetween.

11. An anchor plate according to claim **1** wherein said plate is formed with a longitudinally disposed bead spaced laterally from a side edge of said aperture and extending completely across said plate.

12. An anchor plate according to claim **11** wherein said plate is formed with a second longitudinally disposed bead spaced laterally from the opposite side edge of said aperture and extending completely across said plate.

13. An anchor plate according to claim **1** wherein said U-shaped bracket is of elongated channel-form.

14. An anchor plate according to claim **13** wherein said bracket is formed with at least one bead on the internal surface thereof and projecting a distance inwardly to reduce the open cross-sectional area of the channel.

15. An anchor plate according to claim **13** wherein said U-shaped bracket has an arcuately curved base channel portion cooperatively interfitting with a circular cross-section post.

16. An anchor plate according to claim **13** wherein said U-shaped bracket is of triangular cross-section.

17. An anchor plate according to claim **13** wherein said U-shaped bracket is of rectangular cross-section.

* * * * *