Nov. 23, 1943. A. E. BRICKMAN 2,334,989

METAL HIGHWAY GUARD SUPPORT

Filed April 29, 1941

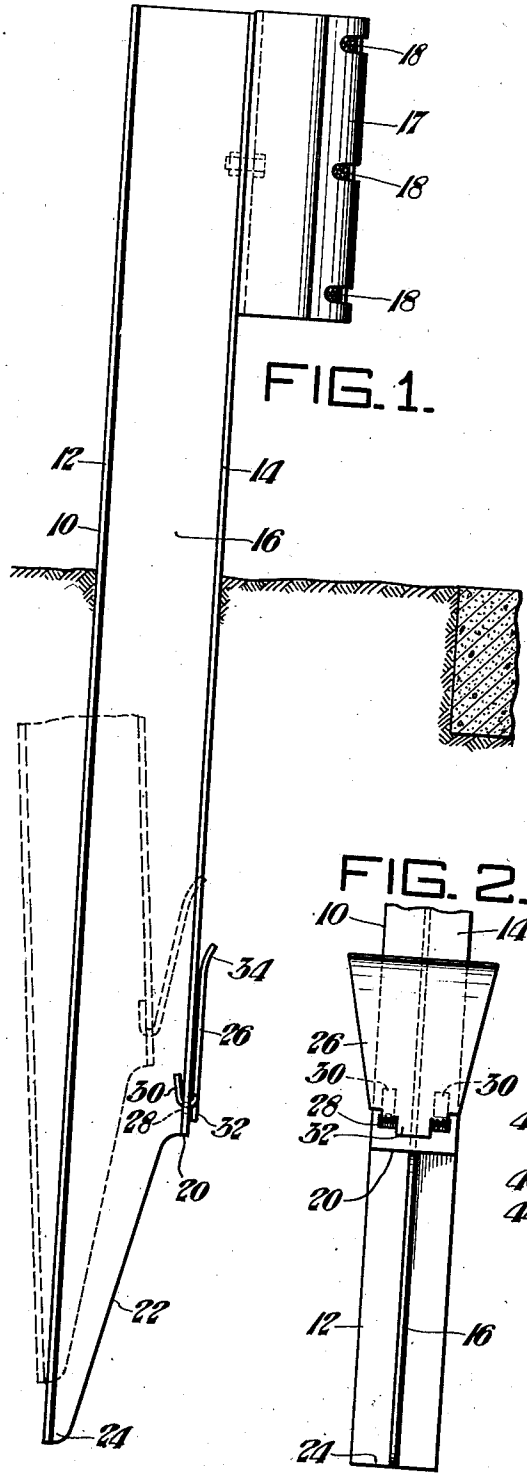


FIG. 1.

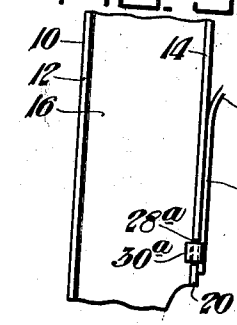


FIG. 3.

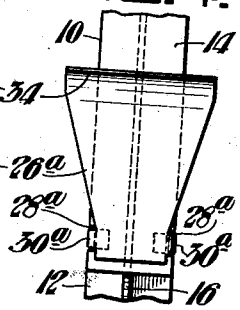


FIG. 4.

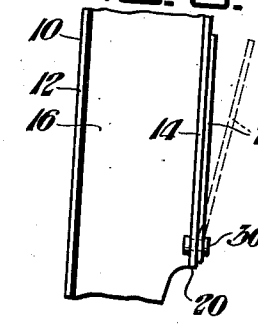


FIG. 5.

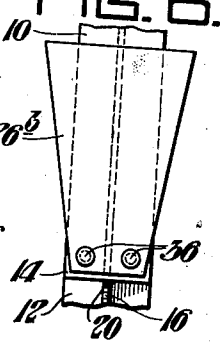


FIG. 6.

FIG. 2.

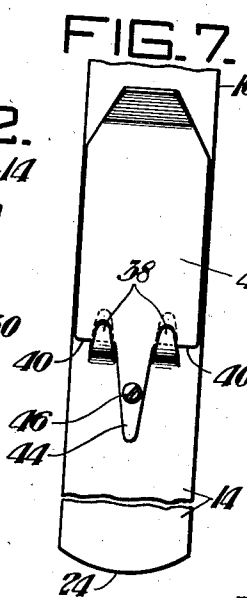


FIG. 7.

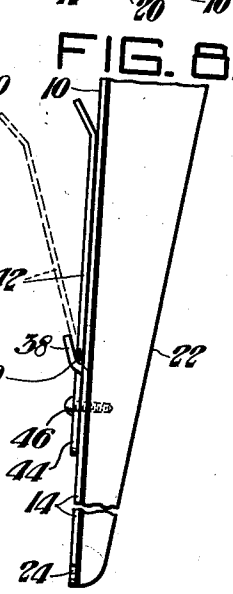


FIG. 8.

Inventor:
ALAN E. BRICKMAN,
by: John E. Jackson
his Attorney.

Patented Nov. 23, 1943 2,334,989

UNITED STATES PATENT OFFICE

2,334,989

METAL HIGHWAY GUARD SUPPORT

Alan E. Brickman, Monongahela, Pa., assignor to The American Steel and Wire Company of New Jersey, a corporation of New Jersey

Application April 29, 1941, Serial No. 390,977

2 Claims. (Cl. 189—29)

The present invention relates to specific features of improvement in metal posts adapted to support highway guard rail elements. While not limited thereto, the post of the present invention is preferably made of a hot-rolled steel H-section for supporting resilient steel brackets which in turn support a conventional type of cable or plate guard rail element.

Recent trends in highway guard rail construction look with favor upon supporting the guard rail elements by means of steel posts instead of wooden posts heretofore commonly used. The advantage of being able to drive such steel posts over the old practice of digging holes as required in the case of wooden posts more than offsets the added cost of the post. However, a problem arises in connection with steel posts in that an ordinary post formed of the usual commercial shapes, such as angles, channels or H-sections, has a smooth surface which provides little or no bond to the soil for the reason that in driving the post the soil adjacent thereto is displaced or out of contact therewith.

My invention provides a wing extension in the nature of an anchor plate which is movably associated with the post arranged to move outwardly and thus resist the upward movement or uprooting of the post under impact. Although known types of fence posts have heretofore been provided with rigid wing extensions, such posts are inadequate for use in supporting highway guard rail elements for the reason that under force of impact of a colliding vehicle there is insufficient bearing to prevent the post being uplifted or pulled entirely free of the ground. The present invention aims to provide a steel or other metal post of the type which is to be driven into the ground without first digging a hole therefor, the post being equipped with a novel type of wing-like anchor plate yieldingly secured thereto in such a way that after the post is driven home and the soil packed therearound, the wing plate will swing outwardly to a limited extent. And the arrangement is such that upon the impact of a colliding vehicle with either the post or the guard rail element the anchor plate will swing outwardly to such an extent as to offer resistance designedly intended to be sufficient to materially resist or prevent the uprooting or upward movement of the post under such colliding impact.

An embodiment of the invention is illustrated in the accompanying drawing, wherein

Figure 1 is a cross section illustrating a highway guard rail supported by a post having my novel improvements incorporated therein;

Figure 2 is a view of the lower extremity of the post of Figure 1;

Figure 3 is a detail illustrating a slight modification of the wing anchor plate and its connection with the post;

Figure 4 is a view at right angles to Figure 3;

Figures 5 and 6 are a side elevation and end view, respectively, illustrating a further modification; and

Figures 7 and 8 illustrate a face view and side elevation of a further modification.

Referring in detail first to Figures 1 and 2 of the drawing, the numeral 10 represents a flanged metal post preferably, although not necessarily, of H-shape in cross section. Such a post may conveniently comprise parallel flanges 12 and 14 connected by a median web 16. To the roadside flange 14 of the post there is supported a suitable resilient steel bracket 17 which in turn carries a plurality of cables 18 which jointly form a guard rail element. The bracket 17 and guard rail element form no part of the present invention and may take various forms familiar to those skilled in the art.

The particular feature of novelty of the present invention relates to the design and arrangement of the lower end of the post. For example, as shown in Figures 1 and 2, the roadside flange 14 terminates at the point 20 and it is thus materially shorter than the opposite flange 12. The web of the post is cut away on the inclined line 22 so as to form a relatively sharp driving point 24. This design and arrangement permits of an easy starting operation in initially driving the post in the ground since the shortened roadside flange lessens the initial driving resistance. However, after the driving of the post has been initially started and the same has been plumbed up during the driving, continued driving force will cause the flange 14 to enter the soil.

A feature of novelty of the post claimed herein relates to the provision of the wing-like anchor plate, such as shown at 26, which is yieldingly or pivotally connected or associated with the shortened roadside flange 14. As shown in Figures 1 and 2, the flange 14 has a pair of apertures 28—28 formed therein to receive the hook-like extensions 30—30 which are bent from the body portion of the anchor plate. Intermediate these extensions the anchor plate is formed with a depending tongue 32, which forms a stop to limit the pivotal movement of the plate. The described construction is one which can be readily formed by simple slotting and stamping oper-

ations and thus provides for inexpensive initial production, assemblage and maintenance.

The anchor plate, as clearly shown in Figure 2, at its base is approximately the same width as the flange 14, but at its upper end it is materially wider. This gives an increased upper soil bearing area. When a vehicle strikes either the post or the guard rail element the post may be deflected, for example, to the position shown in broken lines in Figure 1. At such time the anchor plate 26 will yield or partake of a limited amount of pivotal movement, as determined somewhat by the relative position of the extension 30 and the tongue 32. It will be understood that when the plate swings to the dotted position of Figure 1 it will function very effectively as an anchor and will materially resist the upward movement of the post under force of a colliding vehicle.

In the modification of Figures 3 and 4 the principle of the operation of the wing anchor 26^a is precisely the same as that described in connection with Figures 1 and 2. The only difference in this modification is that instead of forming holes or apertures through intermediate portions of the flange 14 the edges thereof are notched, as indicated at 28^a, and the mating pivoted extensions 30^a are bent from the side edges of the anchor plate. I consider it advantageous to bend or flare the upper extremity of the anchor plate outwardly, as indicated at 34 in Figures 1 through 4. However, in some cases it may be perfectly straight at its upper extremity, as suggested in Figures 5 and 6. In the modification of Figures 5 and 6 the lower extremity of the anchor plate 26^b is loosely riveted by means of rivets 36, or the rivets may make a fairly tight fit and the plate may be of such character or of such thin gage that it can readily bend outwardly, as suggested by the dotted lines in Figure 5 when the guard rail element or post is struck by a colliding vehicle.

In the modification of Figures 7 and 8, another form of pivotal connection between the post and anchor plate is illustrated. This comprises a series of ears 38—38 struck outwardly from the flange of the post so as to form a fulcrum or seat for the shoulder portions 40 of this modified anchor plate 42. In this embodiment of the invention the plate is provided at its lower extremity with a depending tongue 44 and a small screw 46 is utilized to connect the plate to the post in such a way that the plate can yield or be bent outwardly as suggested by the dotted lines in Figure 8 under force of a colliding vehicle with either the guard rail element or the post. The tapering form and the slenderness of the tongue 44 as illustrated in Figure 7 favors the flexing of the anchor plate at the time of impact.

Ordinarily a pointed H-section steel support, when driven in yieldable soil, will bend inwardly under influence of collision impact with the guard rail and fail at its weakest section, which is at the point beyond the flange extremity 20 shown in Figure 1. Under my invention the provision of anchorage means sets up a resistance at the end of the roadside flange 14 which is the tension flange. Thus relief is advantageously provided at the point which is normally the weak or pointed end of the post. Therefore under my invention a longer pointed end can be maintained because of the anchorage resistance provided at the lower end of the tension or roadside flange of the post.

While I have described quite precisely certain specific embodiments of the invention herein illustrated, it is to be understood that various modifications may be made by skilled artisans without departure from the invention as defined in the appended claims.

I claim:

1. A metal supporting post adapted to support a guard rail element, the post having an integral web and flange, the web being cut away below the flange on an incline to form a driving point for the post, the flange being apertured on opposite sides of the web near its lower extremity, an anchor plate having bent portions making a pivotal connection with the apertured portions of the flange, whereby the anchor plate is hingedly connected to the post so as to thus permit the plate to move outwardly to resist upward movement of the post, said anchor plate having a depending tongue for coaction with the flange so as to serve as a stop to limit the pivotal movement of the plate.

2. A metal supporting post adapted to support a guide rail element, the post having a web and parallel flanges constituting an H-section, the roadside flanges being shorter than the other flange and the web being cut away therebelow on an inclined line to form a driving point for the post, and an anchor plate pivotally mounted adjacent the lower extremity of said shorter flange, said plate having a depending tongue below the pivot point thereof for coaction with said shorter flange so as to serve as a stop to limit the pivotal movement of the plate.

ALAN E. BRICKMAN.