April 20, 1943. A. E. BRICKMAN 2,317,248

COMBINATION CABLE AND PLATE HIGHWAY GUARD

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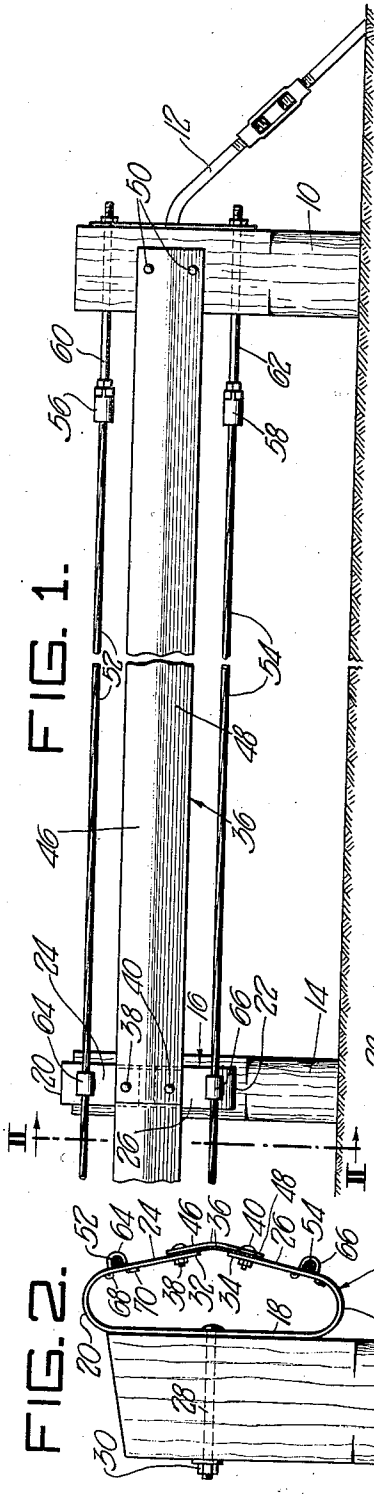


FIG. 1.

FIG. 2.

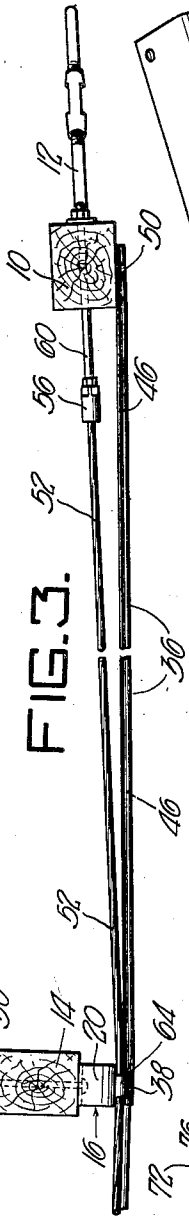


FIG. 3.

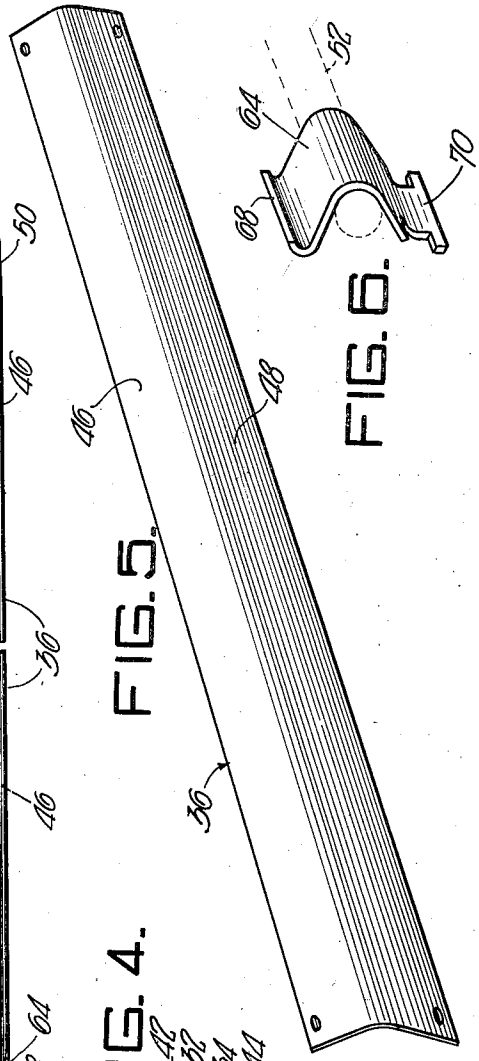


FIG. 5.

FIG. 6.

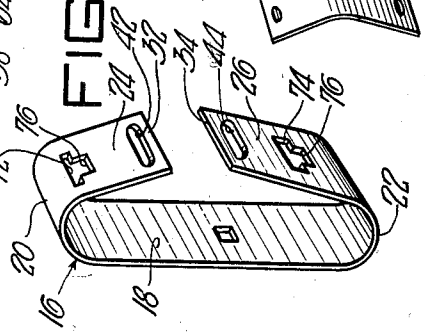


FIG. 4.

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COMBINATION CABLE AND PLATE HIGHWAY GUARD

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6 Claims. (Cl. 256—13.1)

The present invention relates to an improved type of highway guard rail adapted to deflect vehicles which accidently collide therewith. In its broadest aspects the invention aims to provide combined plate and cable guard rail elements with resilient supporting brackets secured to the customary supporting posts. The invention teaches the use of a plate highway guard element combined with a cable guard element in such manner that the smooth surface of the plate performs a deflecting function before the force of colliding impact is transmitted thereby through the resilient brackets to the cable guard rail elements.

In its more detailed aspects the invention teaches the use of a combined plate and cable guard rail wherein the plate element is located further from the plane of the supporting posts and the cable elements are located intermediate the plate element and the plane of the supporting posts. This arrangement has the advantage that the plate element provides a smooth yieldable contact surface which gives immediate warning to a driver whose car may graze the same. The plate also functions to deflect a car which may be riding hard against the cables so as to prevent the same from colliding with an end post.

A further feature of the invention is to crown or shape the plate element to a contour which will deflect an oncoming vehicle from direct collision with the supporting brackets.

A more detailed feature of the invention relates to the provision of a supporting bracket of yieldable spring metal having a relatively flat post contacting portion and spaced plate and cable supporting portions converging toward one another and away from the plane of the supporting post.

A further detail feature of the invention relates to the provision of a spring bracket of considerable vertical length which can be fabricated economically and yet provide effective and simple attaching means for the respective plate and cable rail elements.

The above and further features of the invention will be fully apparent from consideration of the following detail disclosure, the accompanying drawing and the appended claims.

In the drawing:

Figure 1 is a front elevation of an end portion of a highway guard embodying the invention, the parts being broken away to permit of illustration at a convenient scale;

Figure 2 is a section on line II—II of Figure 1;

Figure 3 is a plan view of Figure 1;

Figure 4 is a perspective view of one of the supporting brackets;

Figure 5 is a detail perspective view of a portion of the plate guard element; and

Figure 6 is a detail view of a cable retaining clip.

Referring in detail to the drawing, **10** represents an end post of a highway guard which is embedded in the ground and tied by a conventional anchor rod **12**. The guard includes a plurality of intermediate supporting posts **14**, each of which carries a resilient bracket indicated generally at **16**. Each bracket **16** includes a flat post engaging portion **18** formed of spring metal and having connected thereto by looped portions **20** and **22** oppositely inclined arms **24** and **26** which converge away from the supporting posts and therefore toward the highway.

Each bracket **16** is suitably secured to the post, for example, by means of through bolts **28** and nuts **30**. The resilient arms **24** and **26** terminate at **32** and **34**, thus leaving a space between them, as shown in Figure 2. These free ends are united by the plate guard element indicated as a whole at **36**, the same being secured thereto by bolts or other suitable fastening devices **38** and **40** which pass through elongated slots **42** and **44**. The plate guard element as shown is formed in sections each bent on a gentle curve along its median or longitudinal axis. Thus the upper and lower parts **46** and **48** thereof are inclined at an angle to suit the inclination of the inclined arms **24** and **26** of the spring bracket. At each end of the highway guard the plate is rigidly secured by through bolts **50** to the end posts **10**.

Upper and lower flexible cable guard rail elements **52** and **54** are secured at their extremities to anchorage fittings **56** and **58** which are connected to anchor bolts **60** and **62** which are in turn secured to the end post **10**. At a multiplicity of points intermediate the end posts the cables **52** and **54** are supported by the resilient brackets **16**. The connection of the cables to the brackets is effected by means of clips **64** and **66**, one of which is shown in detail in Figure 6. These clips are of substantially U-shape and each is provided with interlocking portions **68** and **70** for interengagement with the specially shaped notches **72** and **74** formed in the arms **24** and **26** of the spring bracket. The clip as shown in Figure 6 is of such design and construction that the portion **70** can be passed through the widest part of the slot **72** and then moved into the narrower

part 76. Thereupon the clip can be rocked so that the portion 68 thereof can be sprung into position and thus interlocked with the spring bracket as shown in Figure 2. Thus the cables 52 and 54 are supported by the spring brackets with freedom for movement relative thereto.

A highway guard constructed and arranged as above set forth, it will be noted, includes a series of spaced posts with resilient brackets secured to the roadside faces thereof and having respective cable and plate guard rail elements jointly supported in spaced relation to the posts. Since the plate guard rail element is spaced a greater distance from the roadside face of the posts than are the cable guard elements, said plate element is effective to function as an advance guard so as to deflect colliding vehicles away from the cable elements, yet the plate element cooperates with the other elements to transmit part of the collision impact to the cable elements through the resilient brackets to which both plate and cable elements are operatively connected. Thus it is apparent that the combined elements cooperate in an interdependent manner to cushion the forces of collision in separate stages or gradient increments.

The plate guard element shown and described, it will be noted, is approximately V-shaped in cross section with a rounded nose portion coincident with its medial or longitudinal axis. This sectional contour is deemed advantageous since it endows the plate element with stiffness characteristics so that it acts somewhat in the nature of a beam in resisting the impact of colliding vehicles and yet it is constructed of steel of such gauge that it flexes to a limited extent. When a vehicle leaves the highway at an excessive rate of speed and strikes the guard of the present invention, it will be understood that first contact will be made by the rounded nose of the substantially V-shaped plate guard element. This will tend to deflect the vehicle away from the cable elements which are in a plane between that of the plate element and the supporting post, yet part of the impact forces will be transmitted and distributed over a plurality of the intermediate posts and to the end posts by reason of the fact that the arms 24 and 26 will yield to a limited extent upon impact of a colliding vehicle and exert a tension on the cable elements.

While I have described quite precisely certain detail features of the embodiment of the invention herein illustrated, it is to be understood that the drawing and descriptive matter are to be interpreted in an illustrative rather than a limiting sense.

I claim:

1. A highway guard comprising a series of spaced posts, resilient brackets secured to the roadside faces thereof, a plate guard rail element secured to said brackets in a plane spaced outwardly from the posts, and a cable guard rail element positioned by said brackets in a plane intermediate the respective roadside faces of said posts and said plate guard rail element.

2. A highway guard comprising a series of spaced posts, resilient brackets secured to the roadside faces thereof jointly supporting in spaced relation to the posts respective cable and plate guard rail elements, the plate guard rail element being spaced a greater distance from the roadside face of said posts than said cable elements, said plate element being effective to function as an advance guard to deflect colliding vehicles away from said cable elements and to transmit part of the collision impact thereto through the resilient brackets to which both said plate and cable elements are connected.

3. A highway guard comprising a series of spaced posts, spring metal brackets each having a rigid portion firmly secured to the posts and deflectable portions spaced outwardly therefrom, respective plate and cable guard rail elements supported by said brackets, and means connecting the plate and cable elements to the brackets, the latter being of such contour that the plate guard element is positioned forward of the cable guard element so as to serve as an advance contact shield to deflect colliding vehicles away from said cable elements and at the same time to transmit part of the colliding forces to the cables through said brackets.

4. A highway guard comprising a series of spaced posts, spring metal brackets secured thereto, each consisting of a post engaging portion secured to the post and a pair of yielding arms terminating in a plane spaced from the roadside face of the posts, a beam-like plate guard rail secured to and connecting the ends of said arms, respective flexible cables spaced above and below said plate guard rail, and means secured to said arms for supporting said cables.

5. A highway guard comprising a series of spaced posts, spring metal brackets secured thereto, each consisting of a post engaging portion rigidly secured to the post and a pair of yielding arms terminating in a plane spaced from the roadside face of the posts and inclined with respect to one another so as to converge toward the highway, a plate guard rail bent transversely at the median longitudinal axis thereof to form upper and lower portions inclined to suit the respective inclinations of said converging arms, fastening means securing said plate to said arms, respective cables above and below said plate rail disposed in an intermediate plane between the roadside faces of the posts and the plate rail, and means carried by said arms supporting said cables in said intermediate plane.

6. A highway guard comprising a series of spaced posts, resilient brackets secured to the roadside faces thereof, a beam-like guard element secured to said brackets in a plane spaced outwardly from the posts, and a cable guard rail element positioned by said brackets in a plane intermediate the respective roadside faces of said posts and said beam-like guard element.

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