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HIGHWAY GUARD RAIL STRUCTURES

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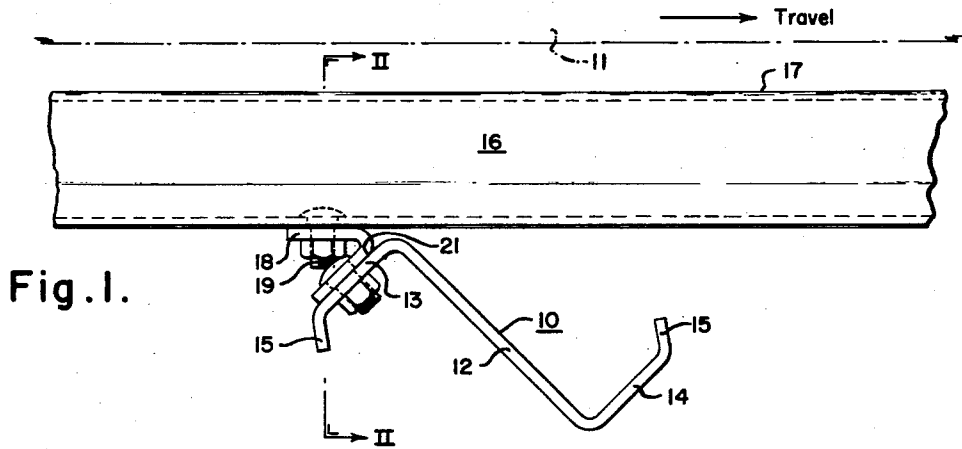
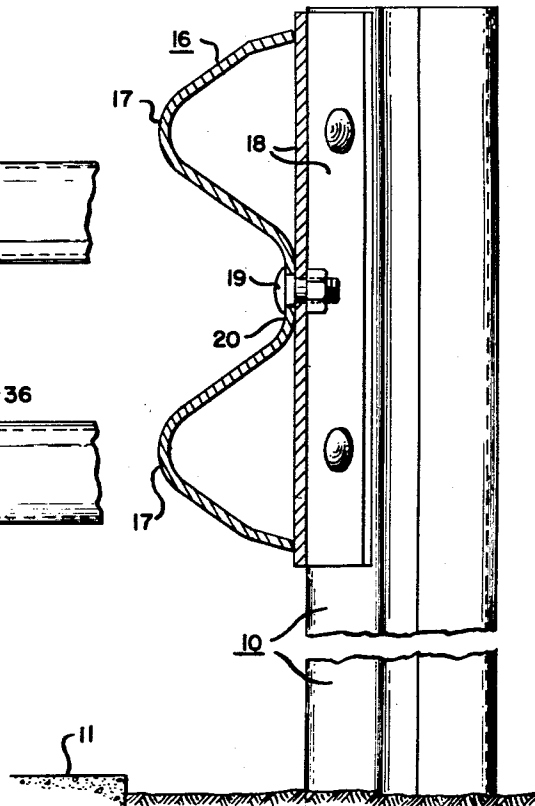
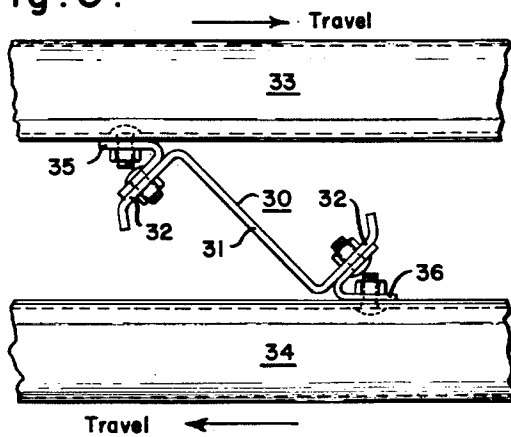


Fig. 2.

Fig. 3.



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HIGHWAY GUARD RAIL STRUCTURES

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9 Claims. (Cl. 256—13.1)

This invention relates to improvements in highway guard rail structures and particularly to improvements in the holding and supporting structures for highway guard rails.

Highway guard rails have been used for many years at dangerous sections of highways where a vehicle leaving the highway might be severely damaged by upsetting or some similar hazard. Guard rails which have heretofore been proposed have usually taken the form of cables or flat strips fixed directly to spaced posts by passing bolts through the guard rail into the supporting structure as, for example, passing the bolt directly around a cable or through a flat strip of steel and through a supporting wooden post. Such practice has not been entirely satisfactory. A vehicle running off the highway and into such a guard rail frequently will cause the supporting structure to shear or be severely bent and the vehicle to strike the base of successive of the supporting posts to the damage of the vehicle as well as the guard rail. This problem has long been recognized and the difficulties pointed out above are well known. In an effort to solve these problems, it has been suggested that cylindrical spring members be provided between the rail and the post in order to space the rail away from the post and absorb a portion of the shock. It has also been proposed to use corrugated guard rails to absorb a portion of the shock by depressing the corrugations. In addition, wide flange steel beams have been used as the posts to provide strength and resistance to breaking and bending. All of these proposals increase the cost of guard rails and have not been the entire answer to the problem.

The present invention provides, in a highway guard rail having an elongated deflecting member extending generally parallel to the roadway, a post having its major axis lying at an oblique angle to the direction of traffic movement on the highway. Preferably the post is positioned so that a face of the post faces obliquely to the line of travel and carries a bracket having one face fixed to the face portion of the post and an adjacent face fixed to the elongated deflecting member whereby to hold said deflecting member spaced from the post. Preferably the bracket is angular in form with the faces of said bracket forming an angle between them substantially equal to the angle of the face of the post to the deflecting member. Preferably, the major axis of the post lies at an oblique angle less than 150° but more than 120° to the direction of vehicular travel. On high speed highways, the angle should approach 150° whereas on normal speed highways the angle is preferably about 135°. Preferably, the angular bracket is in the form of two diverging resilient arms lying at an angle to each other equal to the angle between the face of the post and the deflecting member. The supporting post is preferably made up of a web portion having disposed on opposite sides thereof a lateral flange, the flanges disposed so that the one adjacent the deflecting members extends away from the deflecting members at an angle of substantially 45°.

I have set out certain advantages, objects and purposes

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of this invention in the foregoing general description. Other objects, advantages and purposes will be apparent from the following description of the preferred embodiment of this invention together with the accompanying drawings in which,

Figure 1 is a top plan view of a highway guard rail structure according to this invention;

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

Figure 3 is a top plan view of a second embodiment of the invention drawn to reduced scale.

Referring to the drawings, I have illustrated a post 10 placed vertically in the ground alongside a highway 11. The post 10 is made up of a web 12 having opposed lateral flanges 13 and 14 on opposite edges thereof. The outward extremity of each of the flanges 13 and 14 is bent inwardly to form a bracing or stiffening flange or rib 15. A deflecting member 16 in the form of a strip of steel bent longitudinally to form alternate corrugations 17 is fastened to a resilient bracket 18 by means of a bolt 19 passing through a trough 20 of the deflecting member 16. The bracket 18 is in the form of a V having legs diverging from a vertex, the leg opposite the attachment to the deflecting member 16 is attached to a face 21 of one lateral flange 13. The bracket 18 is arranged so that the angle between its two arms is equal to the angle between the supporting face 21 and the deflecting member 16. This angle is preferably 45°. This arrangement of deflecting members and supporting posts provides a structure which will more completely deflect a vehicle striking the deflecting members. The face 21 lying as it does facing obliquely toward the direction of travel on the highway 11 gives greater support to the deflecting member 16 than is the case in conventional supporting members such as wooden posts or small H-beams set with the web normal to the deflecting member, since the thrust of a vehicle striking the deflecting member is substantially directly in line with the web of the supporting member.

In Figure 3 I have shown a post 30 having a web 31, and lateral flanges 32. The post 30 is placed in the medial strip between opposing lines of traffic. Deflecting members 33 and 34 are attached to brackets 35 and 36 on the two lateral faces in exactly the same fashion as members 16 on bracket 18 of Figures 1 and 2.

While I have shown certain preferred embodiments of this invention, it will be understood that the invention may be otherwise embodied within the scope of the following claims.

I claim:

1. In a highway guard rail having elongated deflecting members extending generally parallel to the roadway, a post having a face portion lying at an acute angle to the deflecting members and facing obliquely toward the line of traffic on the roadway and an angular bracket having one face fixed to the face portion of the post and an adjacent face fixed to the elongated deflecting member whereby to hold said deflecting member, said faces of the angular bracket forming an angle between them substantially equal to the angle of the face of the post to the deflecting members.

2. In a highway guard rail having elongated deflecting members extending generally parallel to the roadway, a post having a face portion lying at an angle of less than 60° but more than 45° to the deflecting members and facing obliquely toward the line of traffic on the roadway and an angular bracket having one face fixed to the face portion of the post and the adjacent face fixed to the elongated deflecting member whereby to hold said deflecting member, said faces of the angular bracket forming an angle between them substantially equal to the angle of the face of the post to the deflecting members.

3. In a highway guard rail having elongated deflecting

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members extending generally parallel to the roadway, a post having a face portion lying at an acute angle to the deflecting members and facing obliquely toward the line of traffic on the roadway and an angular resilient bracket having one arm fixed to the face portion of the post and the other arm fixed to the elongated deflecting member whereby to hold said deflecting member, said arms of the angular bracket forming an angle between them substantially equal to the angle of the face of the post to the deflecting members.

4. In a highway guard rail having elongated deflecting members extending generally parallel to the roadway, a post having a face portion lying at an angle of 45° to the deflecting members and facing obliquely toward the line of traffic on the roadway and an angular resilient bracket having one arm fixed to the face portion of the post and the other arm fixed to the elongated deflecting member whereby to hold said deflecting member, said arms of the angular bracket forming an angle between them substantially equal to the angle of the face of the post to the deflecting members.

5. In a highway guard rail having elongated deflecting members extending generally parallel to the roadway, a post having a web portion spaced from the deflecting members, a lateral flange on each edge of the web disposed on opposite sides thereof, the flange adjacent the deflecting members extending away from said members at an angle less than 60° but more than 45° and facing obliquely toward the line of traffic on the roadway, and an angular bracket having one face fixed to the flange adjacent the deflecting member and the adjacent face fixed to the deflecting member, said faces lying at an angle to each other substantially equal to the angle between the deflecting member and the flange.

6. In a highway guard rail having elongated deflecting members extending generally parallel to the roadway, a post having a web portion spaced from the deflecting members, a lateral flange on each edge of the web disposed on opposite sides thereof, the flange adjacent the deflecting members extending away from said members at an angle of substantially 45° and facing obliquely toward the line of traffic on the roadway, and an angular

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resilient bracket having one arm fixed to the flange adjacent the deflecting member and the other arm fixed to the deflecting member, said arms lying at an angle of about 45° to each other.

7. In a highway guard rail having elongated deflecting members extending generally parallel to the roadway, a post having a web portion spaced from the deflecting members, a lateral flange on each edge of the web disposed on opposite sides thereof, a bracing rib on each lateral flange remote from the web, the flange adjacent the deflecting members extending away from said members at an angle of substantially 45° and facing obliquely toward the line of traffic on the roadway, and an angular resilient bracket having one arm fixed to the flange adjacent the deflecting member and the other arm fixed to the deflecting member, said arms lying at an angle of about 45° to each other.

8. A highway guard rail structure as claimed in claim 3 wherein the bracing rib is a narrow flange on the edge of the lateral flange remote from the web.

9. In a highway medial guard rail having spaced apart elongated generally parallel deflecting members extending generally parallel to two spaced parallel roadways, a post having spaced face portions each lying at an acute angle to and between the spaced deflecting members and facing obliquely toward two opposite lines of traffic on the spaced adjacent roadways and an angular bracket on each face of the post having one face fixed to the face portion of the post and the adjacent face fixed to the adjacent elongated deflecting member whereby to hold said deflecting member, said faces of the angular brackets forming an angle between them substantially equal to the angle of the face of the post to each deflecting member.

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