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H. R. RICK

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GUARD RAIL CONSTRUCTION

Filed June 4, 1930

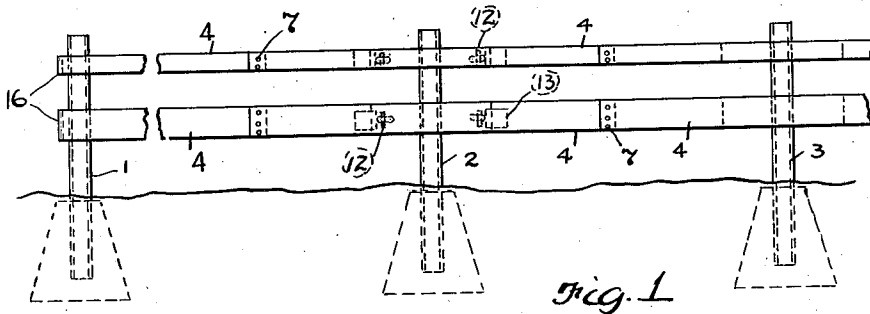


Fig. 1

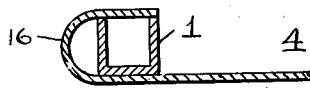


Fig. 3.

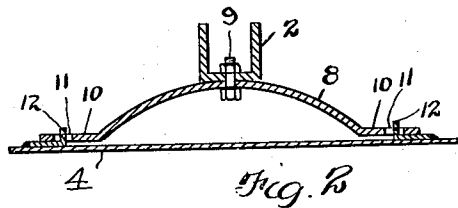


Fig. 2

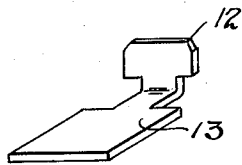


Fig. 4.

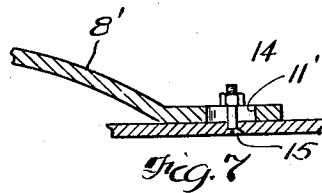


Fig. 7

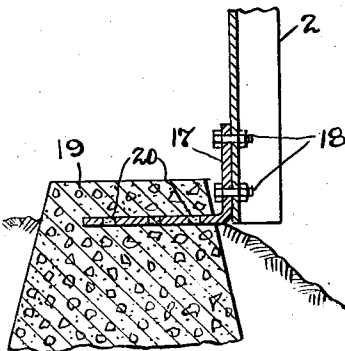


Fig. 5

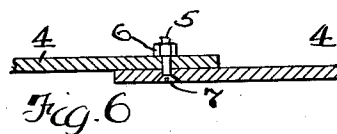


Fig. 6

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GUARD RAIL CONSTRUCTION

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In guard rail constructions, such as is commonly employed along highways, it has been customary heretofore to use wooden posts with wooden rails or chains or wire cables extending therebetween. Such type of construction however is open to many serious objections, especially being subject to demolition such as to require expensive replacement. Besides, such a structure lacks any capability of elastically taking up shocks, and the function is in general merely a curb or limit in so far as the structure holds, upon automobiles and the like which may come in collision therewith. A construction which will afford a measure of resilient takeup on shock, and which at the same time is capable of greater resistance against destruction is of fundamental importance accordingly, and highly desirable.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the features hereinafter fully described, and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain structures embodying the invention, such being illustrative however of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawings:

Fig. 1 is a front elevational view showing a portion of construction in accordance with the invention; Figs. 2 and 3 are sectional details; Fig. 4 is a perspective view of a further detail; Figs. 5 and 6 are sectional views of details of anchorage and connecting means; and Fig. 7 is a sectional detail of a modification.

Referring more particularly to the drawings, there is shown a series of posts 1, 2, 3, the number employed in any given case, and the spacing, depending upon the general necessities of any given situation. Extending between, and carried by such posts are guard rail sections. There may be one or more lines of railing; in the illustration in Fig. 1, two railings are shown. Desirably, the lower of these is wider, and may be placed at such a height above the ground line or roadway as

to align with the average hub-cap height of automobiles.

In its detail, the rails are preferably made up of heavy sheet or plate steel, in sections 4, which may be connected end to end, either by backing plates or fish plates, or as shown by a simple overlap, the end exposed in such joint desirably being the far end of the section, as referred to the "going" side of the roadway. Bolts 5 with nuts 6, and preferably countersunk heads 7, see Fig. 6, serve to make a convenient connecting means on such joint.

At the back of each section 4 is a supporting member of resilient metal. Preferably this may take the form of a bowed resilient plate 8, the convexity of which is secured to the posts, as by rivets or bolts 9, and the ends extend in parallelism with the section 4, and have a lost motion connection therewith. For this, the plate ends 10 may have slots 11 through which project lugs having retaining heads 12. Such lugs may be in the form of pieces with extending bases 13 fastened to the plate member 4 by any suitable means, for instance by welding.

In some instances, instead of a headed lug of plate form, I may employ headed studs or bolts 14 set into the plate 4 fixedly, as by welding, and having a countersunk head 15 so as to present no obstruction on the face of the rail. In such case likewise, the bowed resilient support member 8' rides with the studs 14 projecting through the slots 11', as noted foregoing.

At the ends of the structure, it is desirable to round the plates, as at 16, Fig. 3, and if preferred, the back may also be secured to the posts.

Where the posts have to be set in locations lacking sufficient space for adequate backing, as is frequently the case on curves and culvert locations, instead of direct setting into the earth or pavement, I prefer to secure the posts, which desirably are of channel-section structural steel, to anchorage pieces 17, which may be of L-shape, fastened to the post by rivets or bolts 18, and thence extending generally right-angularly to be embedded in the concrete 19. By means of holes 20 in the

embedded arm of such plate, highly effective bonding and anchorage may be had.

With a construction along the lines indicated, in the event of an automobile or the like crashing against the guard, the sections 4 will slightly resiliently yield, and the bowed resilient supports 8 particularly act as take-up buffers between such plates and the posts 2, etc. Furthermore, since a blow from a crashing automobile or the like generally is of a glancing or angular character, the lost motion connection between the bowed resilient supports 8 and the sections 4 occasions a passing along of the shock and distribution and diminution thereof by take-up in successive sections. The proportioning of the slots 11 with respect to the lugs 12 is desirably such that when the lug 12 at the near side engages against the end of its slot, there is still an amount of play left in the slot of the lug at the far side of the bowed support 8. An effective passing along and distribution of the shock may thus readily be had. Correspondingly, the posts 2, etc., are enabled to successfully withstand blows which would otherwise result in complete disruption. In some cases, wooden posts may in fact be efficiently used with this type of guard rail assembly.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the means stated in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. A guard-rail construction, comprising metal plate sections connected at their ends, a series of posts for carrying said sections, bowed resilient supports securable at their convex portions to respective posts and having their ends extending into general parallelism with said plates and provided with slots, and members projecting rearwardly from said plates and through each such slot and being headed to prevent separation of the plates and supports.

2. A guard-rail construction, comprising a flexible metal member extending alongside a high-way, a series of posts therefor, and bowed resilient supports connecting said members to the posts with a slip-joint providing longitudinal movement of said member relative to said supports in event of impact.

3. A guard-rail construction, comprising flexible plate sections connected end to end and extending alongside a high-way, a series of posts for carrying the respective sections, resilient means connecting said guard rail with said posts, and means providing longitudinal slippage between said guard rail relative to the resilient post-connecting means.

4. A guard-rail construction, comprising flexible metal plate sections connected end to

end, a series of posts carrying such sections, a bowed resilient support securable to each post and having its ends extending in general parallelism with said plate sections, and headed pin-and-slot engaging members connecting said sections and said support ends allowing movement of the plate sections relative to the supports in general longitudinal direction.

Signed by me this 31st day of May, 1930.
HERBERT R. RICK.

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