

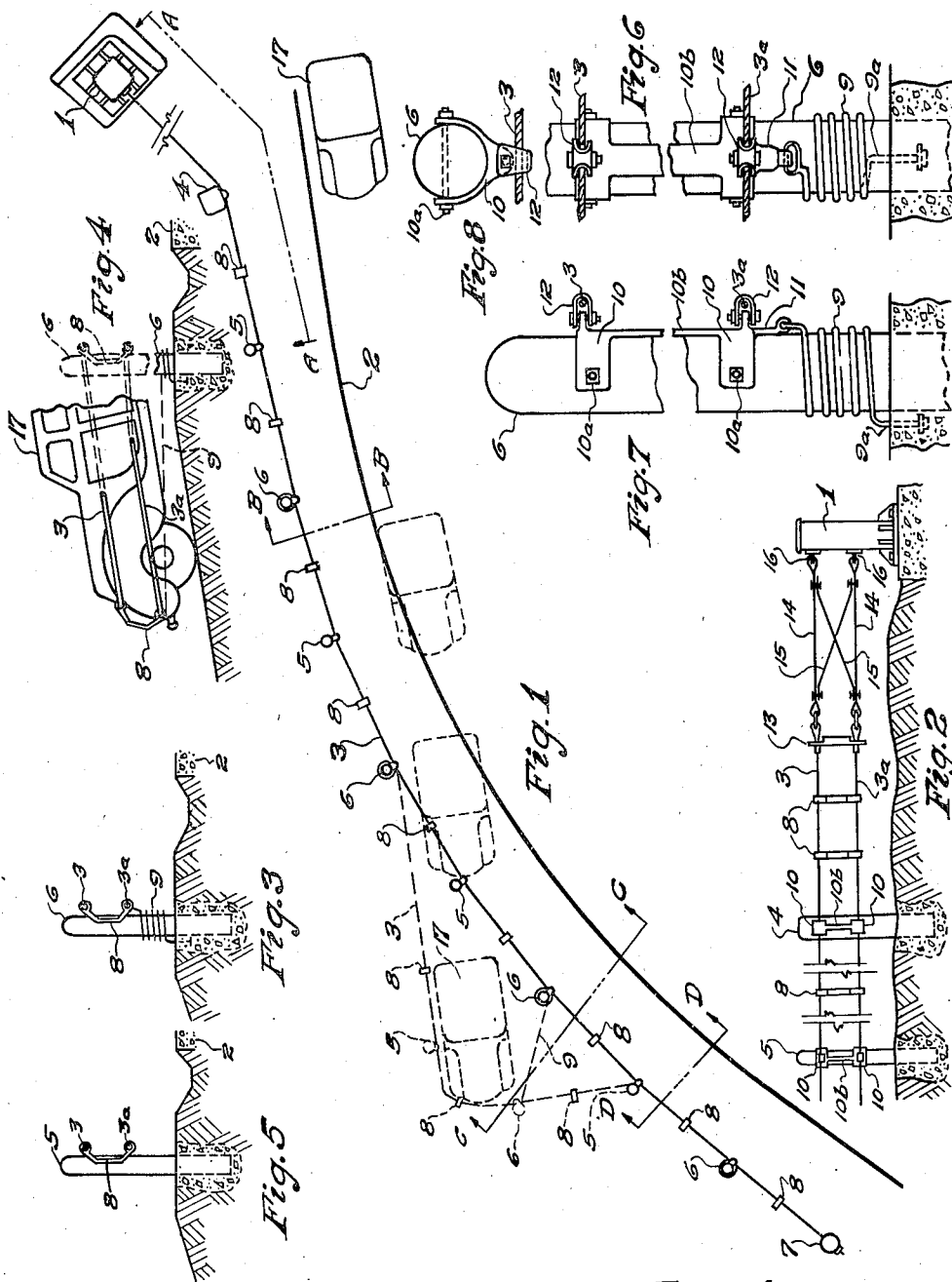
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E. D. SAWYER

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ROADWAY GUARD RAIL

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Inventor

Emerson D. Sawyer

By *Brayton Richards*
Attorney

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ROADWAY GUARD RAIL

Emerson D. Sawyer, Chicago, Ill.

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4 Claims. (Cl. 256-13.1)

This invention relates to improvements in yieldable highway guard rails, especially adapted for use on dangerous roadway curves and adjacent highway embankments, the present application being a continuation-in-part of my co-pending application filed April 4, 1938, Serial No. 199,933, on which Letters Patent No. 2,263,649 issued on November 25, 1941.

The primary object of this invention is the provision of a guard rail which will offer substantial resistance to the impact of an automobile, or the like, through a considerable distance, and thus effect a gradual stopping of the same without undue jar or shock.

Heretofore rigid, semi-rigid and slightly flexible guard rails have been used, but these offer substantial resistance when deflected only a slight distance, and offer practically no retardation pull after a vehicle has broken through any part of the guard rail structure.

A further object of the invention is the provision of a safety guard rail which can be constructed of rigid posts, sufficiently fragile, to prevent catapulting the occupants of the vehicle or upsetting the same on impact, and at the same time has sufficient retarding pull to bring the vehicle to a stop gradually.

Previous and present constructions of this character have utilized the breaking or uprooting strength of the guard rail posts to withstand the impact of a vehicle as a suddenly applied resisting force, whereas in my present construction the force of the impact is resisted by a gradual pull on the posts and if one or more of the posts are thus broken off, then the adjacent posts are used as gradual snubbing reactions instead of sudden shock resistors.

A further object of the invention is to eliminate the use of the straight-line suspension principle which is the cause of frequent uprooting of the main end anchor posts of the existing types of guard rail. As is well known, the nearer straight a suspension cable is stretched between two supporting points, the smaller the impact load on the suspension cable required to produce a rupturing reaction at the supports, or a rupture in the suspension member itself, which, in this case, is the horizontal cable of the guard rail. My improvement provides a pay-out reaction support at the end posts which eliminates breakage in the horizontal cables and also permits the reaction support to operate for an effective period of time when snubbing the vehicle to a stop.

Other objects will appear hereinafter.

The invention consists in the combinations and arrangements of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawing forming a part of this specification and in which—

Figure 1 is a plan view of the edge of a roadway slab at a curve with the guard rail shown parallel thereto;

Fig. 2 is a view taken substantially on line A—A of Fig. 1;

Fig. 3 is a sectional view on line B—B of Fig. 1;

Fig. 4 is a sectional view on line C—C of Fig. 1;

Fig. 5 is a sectional view on line D—D of Fig. 1;

Fig. 6 is a front or roadway view of one of the guard rail posts;

Fig. 7 is a side view of the post shown in Fig. 6; and

Fig. 8 is a top view of the post shown in Fig. 6.

The embodiment of the invention illustrated in the drawing comprises an end post 1 located as indicated at the side edge of the roadway pavement, said post being the same post as disclosed more fully in my said co-pending application, Serial No. 199,933. Horizontal cables 3 and 3a are slidably mounted as shown on the combined guide and supporting posts 4, 5, 6 and 7 arranged as indicated in line parallel with the edge of the roadway. The cables 3 and 3a are spaced apart by means of outwardly arched spreaders 8 which are slidably connected thereto to cause said cables to function practically in unison. Auxiliary snubbers 9, in the form of flexible cables, are coiled or wound around the bases of the posts 6 and have their ends connected as shown to brackets 11 secured to the lower of clamping members 10 secured by bolts 10a to posts 6 and connected by tie bars 10b as shown. The other ends of the cables 9 are anchored in the ground at 9a at the bases of the posts 6. The clamping members 10 carry U-clips or guides 12 through which the cables 3 and 3a slide.

An additional spreader bar 13 is rigidly attached to the ends of cables 3 and 3a, adjacent the post 1, and bridle cables 14 and 15 connect the ends of cables 3 and 3a with the ends of the extensible and retrievable pay-out cables 16 mounted in the post 1, as is more fully shown and described in my co-pending application, Serial No. 199,933, said cables 14 and 15 serving to bridle

or equalize the pull or impact on the pay-out cables 16 as will be readily understood.

In use, when an automobile 17 moving along the roadway departs therefrom and strikes one or more of the posts 5 and 6, said posts will be sheared or broken off and the cables 3 and 3a deflected, as indicated by the dotted line in Fig. 1. When said posts are thus sheared or broken off, they are carried along with the cables 3 and 3a as indicated, and at the same time the cables 3 and 3a slide through the fastenings on the remaining posts, thus drawing the cables 16 from the post 1 against heavy resistance. When one of the posts 6 is thus broken or sheared off, it is carried along with the vehicle, but the anchored end of the snubbing cable 9 causes rotation of said post, thus effecting a further snubbing reaction tending to gradually stop the impact vehicle. The outwardly arched spacer bars 8 will arch over the end of an impacting vehicle and thus prevent the cables from passing over or under the vehicle. In this way the impact vehicle will be gradually brought to a stop without undue injury either to it or its occupants.

When the run-away vehicle has been removed, cables 3 and 3a may be drawn back to original positions by retrieving cables 16 into the post 1, this effectively restoring the guard rails sufficiently until the broken posts 5 and 6 are replaced. In extreme cases, the fixed spreader 13 will be drawn against the first post 4 which is made somewhat heavier than posts 5 and 6, thus exerting at this point a further and extraordinary retarding pull on the impact vehicle.

While I have illustrated and described the preferred form of construction for carrying the in-

vention into effect, this is capable of variation and modification without departing from the spirit of the invention. I therefore do not wish to be limited to the precise details disclosed, but desire to avail myself of such variations and modifications as fall within the scope of the appended claims.

I claim:

1. A roadway guard rail comprising a plurality of posts arranged along the edge of a roadway; a flexible vehicle stop-member slidably mounted on said posts; flexible yieldable retrievable pay-out means connected with said stop-member and adapted and arranged to yieldingly permit material but resisted movement of any part of said stop-member away from said roadway; and means for manually retrieving said pay-out means when extended by contact of a vehicle.

2. The construction specified in claim 1 in which the stop-member consists of two parallel flexible cables having spacer bars slidably mounted thereon.

3. The construction specified in claim 1 in which the stop-member consists of two parallel flexible cables having one or more outwardly arched spacer bars slidably mounted thereon; and a spacer bar rigidly secured thereto adjacent their ends.

4. The construction specified in claim 1 in which one or more of said posts are provided with flexible snubbers secured thereto at one end well above the bottom thereof, coiled thereon, and having their other ends anchored adjacent said post bases.

EMERSON D. SAWYER.