Jan. 7, 1941. E. V. CAMP 2,227,958

TRAFFIC GUARD

Filed Sept. 29, 1936 2 Sheets-Sheet 1

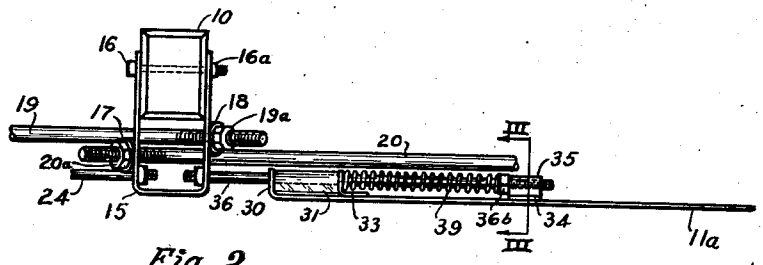


Fig. 2

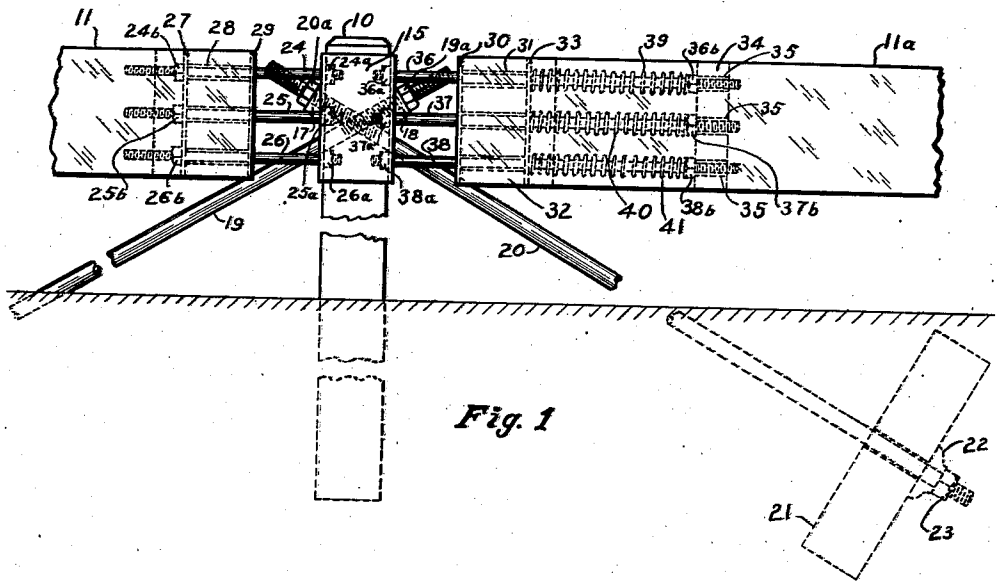


Fig. 1

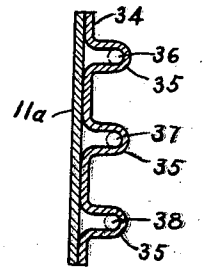


Fig. 3

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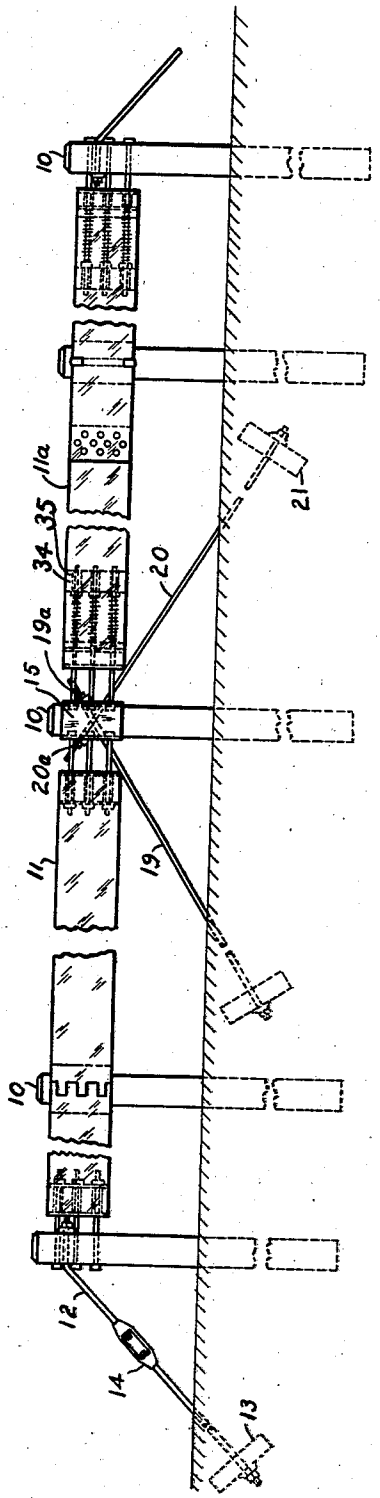


Fig. 4

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TRAFFIC GUARD

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Application September 29, 1936, Serial No. 103,076

16 Claims. (Cl. 256—13.1)

This invention relates to highway safety, and more particularly, to a new and improved guard rail construction for placing along the sides of public highways at danger points.

The modern flexible, resilient road guard must be maintained under longitudinal tension if it is to be effective for its intended purposes. In road guard constructed in accordance with the teachings of my Patent No. 1,793,676, issued February 24, 1931, tension is present at each support, and accordingly the problem of maintaining such is not as acute as in the case of a slightly different form of the same generic type of road guard, in which the tension is maintained primarily by coil springs at the extreme ends of each assembly. In short assemblies, this method of maintaining tension is found to be effective, but in very long installations, the need exists for intermediate tensioning, which is accomplished by the placing of intermediate take-up points in the guard, which points may be, in effect, separate end assemblies. Further, it may be found desirable to anchor and/or reinforce any road guard, at intervals, particularly in the case of long assemblies such as found in mountainous regions; and in some cases it has been found necessary to join together two different types or species of road guard, with a minimum interruption of the smooth gliding surface of the composite assembly, along which an impacting vehicle must be glided, slowed down, and returned to the highway with a minimum of damage to driver, vehicle, and guard.

An object of the present invention is to provide an intermediate take-up means for joining together end assemblies of road guard at points where said guards may be terminated for any of a number of reasons.

Another object is to provide a connecting and anchoring means which will present a minimum of obstruction to the gliding of a vehicle thereacross, as when the rail is under impact.

Another object is to provide cheapness and simplicity of construction in a device of the instant type.

Still another object is to provide increased efficiency, and elimination of working parts in an intermediate take-up for guard rail with anchorage means.

Another object is to provide a guide means for the bolts of end assemblies of road guards in which substantial tension is maintained at said ends.

Another object is to provide simplicity and efficiency in a guide member of the above-mentioned type.

These and other objects made apparent during the further progress of this specification, are accomplished by means of my invention, a full and complete understanding of which is facilitated by reference to the drawings herein, in which:

Fig. 1 is a fragmentary front elevational view of a portion of a guard rail assembly, showing in detail various features of the instant invention.

Fig. 2 is a top view of the structure illustrated in Fig. 1, the rail to the leg, however, being cut away.

Fig. 3 is an enlarged vertical cross-sectional view of the guide member herein, said view being taken along the line III—III of Fig. 2.

Fig. 4 is a front elevational view of a guard rail embodying my invention, said view illustrating the joining together of two different species of the same generic type of road guard.

Like numerals indicate corresponding parts throughout the various figures of the drawings.

Referring now to the drawings, my traffic guard consists essentially of supports 10 and impact members 11 and 11*a*, which are illustrated as being fabricated from flexible resilient sheet metal, said impact members being preferably associated with said supports through intermediate spring cushion members in a manner now well-known to the art. These spring members may perform a double function of maintaining under tension and connecting together rail sections as in the case of the guard marketed under the trademark "Resiliflex," as disclosed in United States Patent No. 1,793,673 or they may be primarily buffers, as in the case of guard rail sold under the trade-name "Glideplate," as disclosed for example in United States Patent No. 2,078,704. At its ends the guard rail assembly may be suitably anchored as by anchor rod 12 associated with a block 13, adjustability being provided by turnbuckle 14.

Special attention is now directed to the manner in which intermediate take-up and/or joining together of guard rail assemblies is provided for in the instant invention. In accomplishing the foregoing, support or post 10 is provided with a substantially U-shaped plate 15 (Figs. 1 and 2), which U forms the anchorage head herein. 15 may be formed of metal, preferably of somewhat greater thickness than the impact members; and is securely attached to 10, the base of the U in spaced relationship thereto, as by means of two or more bolts 16 which are passed through the

plate and the support and secured by nuts 16a. On opposite sides of 15 are attached as by welding, angular shoulders 17 and 18, and at right angles to the plane established by the upper portions of said shoulders, apertures are provided in the sides of 15, through which apertures respectively are passed anchor bolts 19 and 20, which bolts may almost touch each other at the point where they cross to form an "X." The upper ends of 19 and 20 are threaded to receive nuts 19a and 20a, which nuts rest against angular shoulders 17 and 18 and provide for adjustability in the anchorage means. At their lower ends, rods 19 and 20 may be associated with a suitable anchor or "dead man" such as 21 as by being passed therethrough, a washer 22 placed over the threaded ends of said rods, and a nut 23 securing the rod to the anchor.

End assemblies of road guards of the "Resiliflex" type are associated with plate 15 as by passing bolts 24, 25, and 26 of said assemblies, through holes provided in an angle iron 27 associated with the rear face of said impact member, said holes registering with loops provided in a metal strap 28, likewise welded to 11; through said loops; through the end 29 of 11 which is turned at right angles to form a flange abutting the vertical faces of the loops, said end having holes registering with said loops; and through apertures provided in the side of plate 15 for such purpose, the bolts being anchored on the inside of said plate as by nuts 24a, 25a, 26a. Nuts 24b, 25b, and 26b associated with the opposite ends of said bolts make possible adjustment of the end assembly, it being apparent that the tension in rail 11 may be increased or decreased as desired by simply tightening or loosening said nuts. It will be further noted that some degree of adjustment may be effected by manipulation of nuts 24a, 25a, and 26a, within U-shaped member 15. The part of the above-described structure dealing with the association of the bolts with the impact member is substantially set forth in greater detail in my Patent No. 1,988,994, issued January 22, 1935.

Special attention is now directed to the manner in which the end of a guard rail of the "Glideplate" type is associated with the anchor beam of the instant invention. Such an assembly is illustrated to the right of element 15 in the drawings, the end of impact member 11a being turned at right angles to form a flange 30 (Fig. 2), which abuts the vertical faces of loops 31 formed in a metal strap 32, said strap being attached to 11a as by welding, flange 30 being provided with holes registering with said loops. An angle iron 33 is attached to the rear of 11a with its outstanding face abutting the rear edges of loops 31, said face being provided with holes registering with said loops. In spaced relationship to said angle member, and likewise attached to the rear face of the impact member, is a guide member comprising a strap of sheet metal 34 provided with a series of spaced loops or corrugations 35 extending transversely of the strap, the purpose and function of said guide member being explained more fully during the further progress of this specification.

Bolts 36, 37, and 38, secured on the inside of 15 by nuts 36a, 37a, and 38a, are passed through suitable apertures in the side of 15 provided for such purpose; through 30, loops 31 and angle iron 33; through helical springs 39, 40, and 41, which springs now stand over said bolts; and into sliding engagement with the loops 35 of strap 34 in such a manner that said bolts are held substantially parallel to the face of the rail plate, said guides serving to hold the bolts and springs in their proper alignment at all times. Nuts 36b, 37b, and 38b positioned on the bolts between the springs and loops 35 of strap 34 provide a means for varying the tension under which 11a is attached to the anchor head, a tightening of said nuts serving to increase said tension, and a loosening thereof to decrease such; which result may also be effected to a lesser degree by adjustment of nuts 36a, 37a, and 38a, previously referred to herein.

It will be noted that in the drawings, the distances between the ends of 11 and 11a and U-shaped plate head 15, are somewhat greater than may be in the case of actual field installations in which a relatively small gap is generally left at these points in order that a minimum of obstruction upon which to "hang" an impacting vehicle is provided; the drawings being made as they are to better show certain details of construction.

Fig. 3 is an enlarged cross-sectional view of the guide means described above, showing the manner in which the bolts are held in proper alignment thereby, it being apparent that such arrangement insures that the bolts and their associated springs are held in substantially parallel relationship to the face of the rail, which position is deemed desirable in most instances, to a proper functioning of the guard rail, and which position would not necessarily result if said guide member were not present.

It may be noted that anchor beams of the type disclosed herein may, if desired, be used as end assemblies per se, as for instance may be visualized in Fig. 1 by eliminating 11a and associated bolts, as well as anchor rod 19, the resulting structure representing an efficient and economical end assembly, capable of ready adjustment and with the further cost advantage of the elimination of a turn-buckle such as 14 (Fig. 4).

It will likewise be apparent that while I have described my invention primarily in connection with the flexible resilient road guard maintained under longitudinal tension, that my device, and particularly the anchorage features thereof, may be used in connection with other kinds of guard rail, such as cable and rigid or semi-rigid plate for example.

From the foregoing, it is apparent that I have disclosed a new and useful road guard construction. That my intermediate take-up for guard rail with anchorage means represents a practical, economical, and highly desirable method of absorbing slack in such devices, connecting sections of guard rail in a manner calculated to least disrupt the normal functioning of the apparatus, anchoring and reinforcing the supports of road guards and thereby strengthening the entire device, and serving as an end anchorage for an entire guard rail assembly when so desired. It is likewise apparent that I have disclosed a guide means to be employed with certain types of guard rail, which means increases the efficiency thereof, and insures its correct operation.

While I have described certain elements and structure herein in considerable detail, it is not my intention to be limited thereby, but, on the contrary, I intend that the appended claims shall be liberally construed in keeping with my contribution to the instant art.

I claim:

1. A highway guard rail construction including a support, a U-shaped metal plate attached to the said support with its base in spaced rela-

tionship thereto, shoulders on opposite sides of said plate, a pair of anchor rods passed downwardly through said plate from opposite sides thereof, adjusting nuts on the upper ends of said rods and adjacent said shoulders, anchor blocks mounted on opposite ends of said rods; resilient impact members with ends disposed adjacent said plate and means for adjustably attaching said impact members to opposite sides of said plate.

2. A highway guard rail construction including a support, a U-shaped plate bolted to said support with its base in spaced relationship thereto, shoulders attached to opposite sides of said plate, anchor rods passed downwardly through said plate from opposite sides thereof, adjusting nuts on the upper ends of said rods adjacent said shoulders, anchor blocks attached to the opposite ends of said rods, resilient impact members with ends disposed adjacent said plate and means for adjustably attaching said impact members to opposite sides of said plate at points therein in front of said anchoring rods.

3. A highway guard rail construction including a support, a metal plate attached to said support, anchor rods passed downwardly through said plate from opposite sides thereof, adjusting means on the upper ends of said rods, anchors associated with the opposite ends of said rods, impact members with ends disposed adjacent said plate and means for attaching said impact members to said plate.

4. A highway guard rail construction including a support, a U-shaped metal plate attached thereto in spaced relationship to the front thereof, an anchoring rod passed diagonally downward through the walls of said plate, an adjusting nut on the upper end of said rod, a guard rail impact member with its end disposed adjacent said plate and means for attaching said member to said plate.

5. A highway guard rail contruction including a support, a substantially U-shaped plate bolted thereto, an anchoring rod passed diagonally downward through the walls of said plate, adjusting means on the upper end of said rod, an impact member with its end disposed adjacent said plate and means for attaching said end of said member to said plate.

6. A highway guard rail construction including a support, a U-shaped plate attached thereto, anchor rods passed downward through the walls of said plate from opposite sides thereof, adjusting means on the upper ends of said rods, anchors associated with the opposite ends thereof, impact members with ends disposed adjacent said plate and means for attaching said members to said plate.

7. A highway guard rail construction including a support, a U-shaped metal plate attached to said support, anchor rods passed diagonally downward through said plate from opposite sides thereof, adjusting means on the upper ends of said rods, anchor means associated with the opposite ends of said rods, guard rail impact members with ends disposed adjacent said plate and means for adjustably attaching said members to said plate under longitudinal tension.

8. A highway guard rail construction including a support, a substantially U-shaped plate attached to said support in spaced relationship to the front thereof, anchor rods passed diagonally downward through said plate from opposite sides thereof, adjusting means engaging the upper ends of said rods, anchor means associated with the opposite ends thereof, resilient guard rail impact members with ends disposed adjacent said plate and means for attaching said members to said plate, said means consisting of a plurality of bolts secured at one end within said plate, and engaging at their opposite ends, flanges formed in the ends of said impact members, loops in metal straps secured to said members, angle plates likewise secured thereto, and guide members comprising loops formed in metal straps in spaced relationship to said impact members in spaced relationship to said first-mentioned loops.

9. A highway guard rail construction including a support, a substantially U-shaped plate attached to said support in spaced relationship to the front thereof, anchor rods passed diagonally downward through said plate from opposite sides thereof, adjusting means engaging the upper ends of said rods, anchors united with the opposite ends thereof, resilient guard rail impact members with ends disposed adjacent said plate and means for adjustably attaching said impact elements to said plate, said means consisting of a plurality of bolts secured at one end within said plate, and engaging at their opposite ends, flanges formed in the ends of said impact members, loops in metal straps secured to said members, angle plates welded to said impact members, springs adjustably disposed on said bolts, and guide members comprising loops formed in metal straps attached to said impact members in spaced relationship to said first-mentioned loops.

10. A highway guard rail construction including separate strips of resilient material arranged in longitudinal series, means for connecting the strips, comprising flanges on the ends of said strips having openings therein, reinforcing means associated with said flanges, bolts engaging said flanges and reinforcing means, springs mounted on said bolts, said bolts and springs forming a tensioning attachment for said strips, guide members associated with said strips, said guide members comprising metal straps formed with loops for engaging the end of said bolts; and an anchor head adjacent the ends of said strips, said bolts being secured to said anchor head on opposite sides thereof.

11. A connector for resilient strip road guard, comprising a reinforced flange on the end of the strip having an opening therein, a bolt engaging the opening, a spring mounted on the bolt and engaging the reinforced flange, a guide attached to the rear of said strip in spaced relationship to said reinforced flange, said guide slidingly engaging the end of said bolt; and an anchor head fixedly engaging the opposite end of said bolt.

12. A connector for resilient strip road guards, comprising an orificed reinforcing member on the end of the strip, a bolt engaging the orifice, a spring on the bolt engaging the reinforcing member and adapted to apply tension to the strip, and a guide member on said strip in spaced relationship to said reinforcing member, said guide member engaging the end of said bolt and tending to retain such in parallel relationship to the rear face of said strip.

13. A connector for resilient strip road guard, comprising an angular flange on the end of the strip, said flange having an opening therein, a bolt engaging the opening, a spring mounted on the bolt and adapted to apply tension to the strip, and a guide on the rear of said strip in spaced relationship to said flange, said guide engaging the end of said bolt in sliding relationship therewith and tending to retain said bolt parallel to the rear face of said strip.

14. A connector for resilient strip road guard, comprising a reinforced flange on the end of the strip having an opening therein, a bolt engaging the opening, a spring mounted on the bolt and engaging the reinforced flange, and a guide loop attached to the rear of said strip in spaced relationship to said reinforced flange, said loop engaging the end of said bolt and retaining said member generally parallel to the rear face of said strip.

15. The combination with a strip of a road guard having its end bent to form an angular flange, of reinforcing means associated with said flange, said flange and reinforcing means having registering openings therein, bolts engaging the openings, springs mounted on said bolts, nuts on said bolts adjacent said springs, and guide means on said strip in spaced relationship to said reinforcing means, said guide means slidingly engaging the ends of said bolts.

16. A highway guard rail construction comprising a supporting post, anchoring means therefor, separate strips of resilient material arranged in longitudinal series to one side of said support, means for connecting said strips to the support under tension, said means comprising helical springs positioned on bolts intermediate sections of which are slidably fastened to adjacent ends of the strips, and means associated with said strips for supporting and guiding the ends of said bolts, thereby insuring the proper functioning of said springs.

EUGENE V. CAMP.