

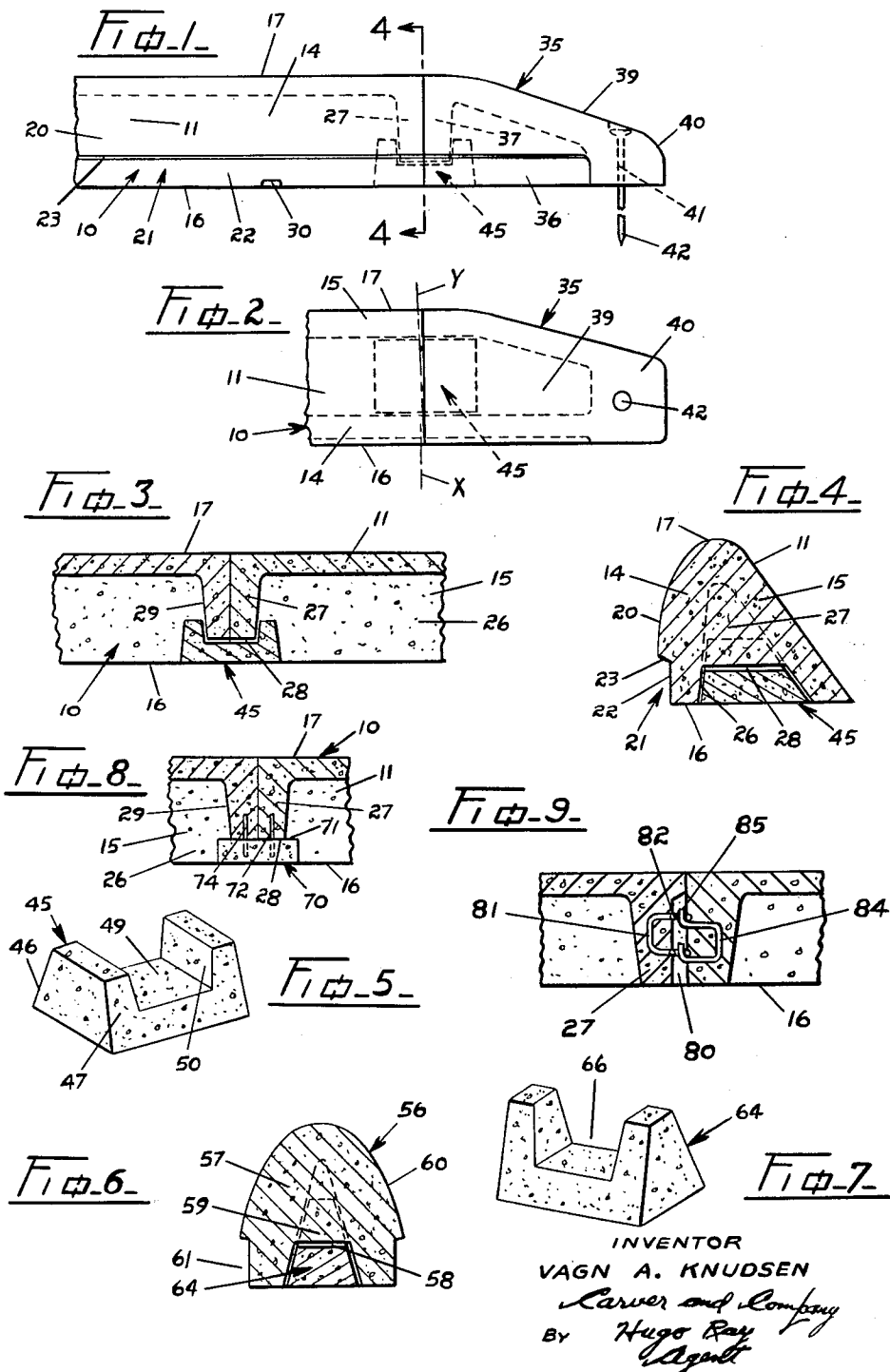
June 4, 1963

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3,092,371

HIGHWAY SAFETY GUARD RAIL

Filed Dec. 27, 1960



1

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HIGHWAY SAFETY GUARD RAIL

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Filed Dec. 27, 1960, Ser. No. 78,439

3 Claims. (Cl. 256—13.1)

My invention relates to improvements in highway safety guard rail.

This invention relates to a guard rail or fence of the type normally provided along a stretch of highway to prevent vehicles from accidentally leaving the road surface.

The objects of the invention are to provide a guard rail having a surface which when struck by a vehicle wheel will tend to swing said wheel parallel thereto and simultaneously apply a braking or retarding force which will assist in bringing the vehicle to a stop.

Further objects are to provide a guard rail which does not require the use of posts to support it in position and anchor it to the roadbed, and to provide means for locking the rail sections together in end to end relation, so that they cannot become separated even under heavy impact.

Referring to the accompanying drawings:

FIGURE 1 is an elevation of one end of the guard rail.

FIGURE 2 is a plan of the same.

FIGURE 3 is a longitudinal sectional view of the abutting ends of two rail sections connected together by a locking block.

FIGURE 4 is an enlarged transverse section taken on the line 4—4 of FIGURE 1.

FIGURE 5 is a perspective view of the locking block.

FIGURE 6 is a transverse section of a modified form of the invention.

FIGURE 7 is a perspective view of a locking block used with the modified guard of FIGURE 6.

FIGURE 8 is a longitudinal section showing a modification of the locking block.

FIGURE 9 is a modified form of locking means for the blocks.

In the drawings like characters of reference indicate corresponding parts in each figure.

The guard rail, generally indicated by the numeral 10, is made of concrete which is suitably reinforced with steel bars, not shown, to provide an extremely rugged structure capable of withstanding heavy impact. The guard is precast prior to shipment to the road site and for convenience in handling etc. it is made in sections 11 which may vary in length for different installations.

Each section 11 is substantially triangular in cross section and has an inner wall 14 and an outer wall 15. The wall 15 is disposed at a greater angle to the vertical axis of the section than the wall 14, thus providing a broad base 16 and the upper edge of the section is rounded as at 17. The wall 14 has a curved inner or traffic face 20 which merges into the rounded edge 17 and terminates at a tire groove 21. The groove 21 is formed in the lower edge of the wall 14 and has a vertical inner face 22 and an upwardly inclined top face 23. Defined between the walls 14 and 15 is a channel 26 which is partly closed off by transverse end walls 27. The lower edge 28 of each end wall 27 is spaced above the base 16 of the section and the inner face of said end wall is inclined inwardly as at 29. Adjacent the ends of each section 11 the walls 14 and 15 are provided with drain slots 30 which permit moisture to discharge from the channel 26.

The guard rail has end members 35 which are constructed of the same material as the sections 11 and are provided with a similar tire groove 36 and an end wall 37. The rounded upper edge 39 of each end member 35 slopes down to a bull-nosed end 40, as shown in FIG-

2

URE 1, and said end is provided with a vertical opening 41 to receive an anchor pin 42. In FIGURE 2 it will be seen that the member 35 is also tapered towards the end 40.

In order to fasten the sections 11 together and to the end members 35, precast reinforced concrete locking blocks 45 are used. The blocks 45 have side faces 46 and 47 which are inclined from the vertical to the same extent as the walls 14 and 15 respectively of the sections 11. A groove 49 extends transversely across each locking block 45 and said groove has opposing side faces 50 which are inclined to the same degree as the inner faces 29 of the end walls 27 on the sections 11.

The modified form of the guard rail shown in FIGURE 6 is made up of sections 56 having inclined side walls 57, a channel 58 and end walls 59. Each side wall 57 of a section 56 has a curved traffic face 60 and said wall is provided with a tire groove 61. The locking blocks 64 used to connect the sections 56 are designed to be loosely housed within the channel 58 and are provided with a groove 66 in which the end walls 59 are received.

As shown in FIGURE 8 only, a modified locking block 70 may be used to connect the sections 11. The block 70 is a precast reinforced concrete structure having a flat top face 71 and extending above said top face are longitudinally spaced vertical dowels 72. The end wall 27 would be provided with corresponding openings 74 to receive the dowels 72 as the sections 11 are placed together in end to end relation. Obviously the sections 56 could also be connected together by use of the modified block 70.

In the modification of FIGURE 9 the end walls 27 of the sections 11 extend down to the plane of the base 16 and one of the end walls is provided with a recess 80. Embedded in the end wall is a U-shaped bar 81 and the ends of said bar are formed into eyes 82 which project into the recess 80. The opposite end wall of the section has a U-shaped bar 84, the ends of which project beyond the outer face of the wall and are upwardly turned to form hooks 85. When the sections are abutted in end to end relation the hooks 85 of one section are received in the eyes 82 of an adjoining section so as to lock the several sections together as a guard rail.

The safety guard rail 10 is erected at the roadside by assembling the sections 11 in end to end relation with a locking block 45 disposed between the abutting ends of the sections. As an end of a section is lowered on to a locking block the inclined faces on the section engage the corresponding inclined faces of the block and the several faces coact or provide a wedging section which ensures that the two members are properly aligned and interlocked. The end walls 27 are housed within the grooves 49 and the ends of the blocks 45 are enclosed within the channels 26. In this position the sections cannot be moved relative to one another to any appreciable extent either laterally or longitudinally and can only be disconnected from the block by being lifted vertically.

It will be noticed, particularly in FIGURES 3 and 4, that a very slight clearance is provided between the adjoining faces of the blocks and the sections. In addition the end faces of the sections are beveled as at X and Y, see FIGURE 2 only. Thus the sections may be laid down slightly disaligned from one another as would be necessary to form an arcuate guard rail extending parallel along either an inside or an outside curve on the highway.

To complete the rail 10 the end members 35 are added to the ends thereof as shown in FIGURES 1 and 2. The end wall 37 is butted against an adjoining wall 27 and is lodged in the groove 49 of a block 45 to connect the two parts together. An anchor pin 42 is then driven through each opening 41 to secure the member 35 to the roadbed.

Where a center or dividing strip is required for the road,

3

the modified form of the rail of FIGURE 6 is used. The sections 56 are laid down end to end and are connected together by the locking blocks 64 in the manner previously described. Suitably shaped end members, not shown, would be added to the sections forming the center strip and these members would be secured to the roadbed in the same manner as the members 35.

An out of control car normally strikes the guard rail 10 at a fairly acute angle rather than head on and the front wheel of the vehicle in engaging the traffic face of said rail is swung parallel thereto so that the car tends to straighten out and continue along the road surface. At this time the outside wheels of the car are scraping along the curved faces 20 of the sections and the lower portions of the tires are partially entered into the grooves 21. The inclined top face 23 of the groove 21 applies a braking force to the tires which eventually will bring the car to a halt or at least enable the driver to regain control. The sections 56 forming the center strip will similarly prevent the car from leaving its own lane and will assist in straightening out and stopping a car striking any portion of its length.

What I claim as my invention is:

1. A highway safety guard rail comprising a plurality of sections disposed in end to end relation upon a road surface, each section having sloping side walls which diverge downwardly to a broad road engaging base, said side walls of each section defining a substantially inverted

4

V-shaped channel, a transverse wall at each end of each section having its lower edge spaced above the base and having an inwardly inclined inner face, locking blocks supported upon the road surface and connecting the adjoining ends of the sections, each of the locking blocks being partly housed within the inverted V-shaped channels of adjoining sections and having a groove in which the adjoining transverse walls of the sections are received said locking blocks each having inclined side and grooves faces which coact with the abutting inclined faces on adjoining sections to align said sections and wedge them together against longitudinal lateral displacement.

2. A highway safety guard rail as claimed in claim 1, one of said side walls of each section having a curved traffic face and a tire groove, said tire groove of each section being disposed adjacent the base of the section.

3. A highway safety guard rail as claimed in claim 1, one of said side walls of each section having a curved traffic face and a tire groove, said tire groove of each section being disposed adjacent the base of the section and having a vertical inner face and an upwardly inclined top face.

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