Aug. 11, 1925. 1,549,014

W. T. MAXWELL

WARNING MEANS FOR GRADE CROSSINGS

Filed Sept. 20, 1924

Fig. 1.

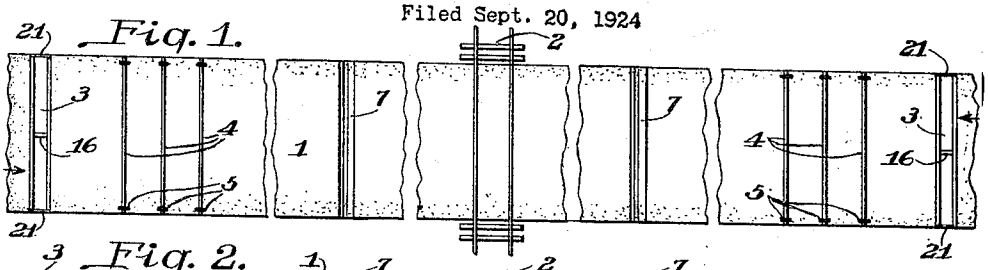


Fig. 2.

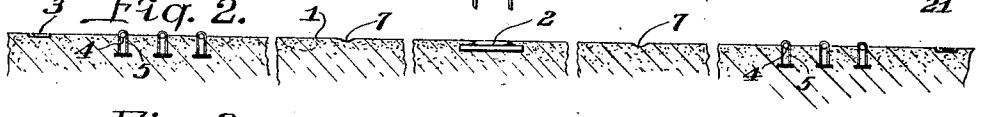


Fig. 3.

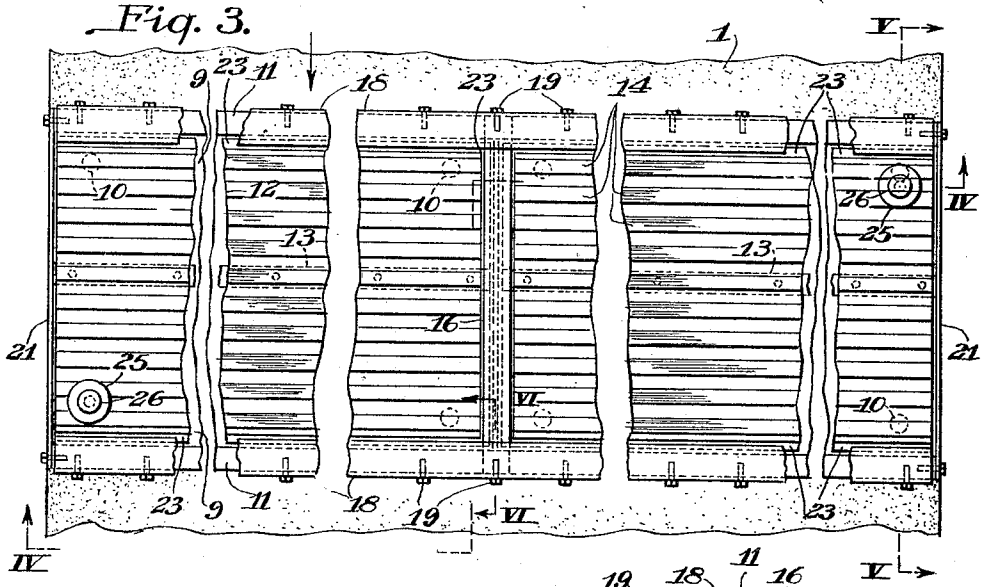


Fig. 6.

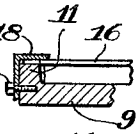


Fig. 4.

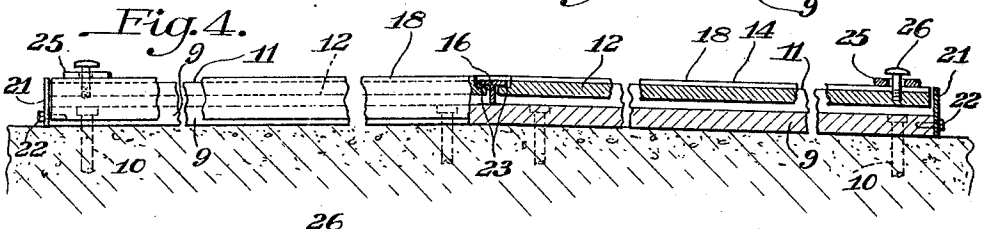
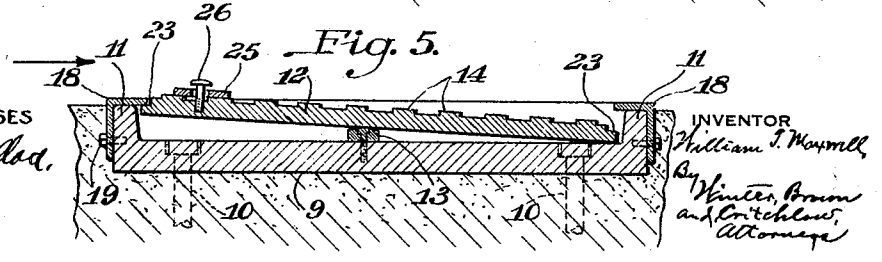


Fig. 5.



WITNESSES

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By Winter, Brown and Critchlow, Attorneys

Patented Aug. 11, 1925. 1,549,014

UNITED STATES PATENT OFFICE.

WILLIAM T. MAXWELL, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR OF SEVEN-SIXTEENTHS TO JOHN GASS, OF PITTSBURGH, PENNSYLVANIA.

WARNING MEANS FOR GRADE CROSSINGS.

Application filed September 20, 1924. Serial No. 738,830.

To all whom it may concern:

Be it known that I, WILLIAM T. MAXWELL, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Warning Means for Grade Crossings, of which the following is a specification.

This invention relates to means for warning the driver of a vehicle on a highway of his approach to a railroad crossing or other danger zone. The object is to provide means which will with certainty and definiteness advise every normal driver of a vehicle of the approach to a danger zone, by impressing three of his senses, to-wit, hearing, feeling and seeing, in succession; and to do this by the use of means which are practical to construct and install, strong and durable, and which will not easily get out of order.

More particularly the invention relates to the construction of the means for giving an audible signal, automatically, that is, by the passage of the vehicle over the roadway, and in such a characteristic manner as to definitely and certainly attract the attention of the driver.

In the accompanying drawings Fig. 1 is a diagrammatic plan view of a portion of a roadway which intersects a railroad crossing, and with the warning means installed therein; Fig. 2 is a diagrammatic view of the same taken as a section longitudinally of the roadway; Fig. 3 is a plan view, partly broken out, of the special means for giving an audible signal; Fig. 4 is in part a side view and in part a vertical section of the same, the section being taken on the line IV—IV, Fig. 3; Fig. 5 is a transverse section of the same taken on the line V—V, Fig. 3; and Fig. 6 is a detail sectional view on the line VI—VI, Fig. 3.

In their arrangement and purpose, the warning devices illustrated are the same as those illustrated and described in my application Serial No. 736,298, filed September 6, 1924. They comprise, in the roadway and at suitable distances in advance of the danger zone, first, means for attracting the driver's attention by an audible sound, second, means for imparting a jolting or vibratory motion to the vehicle, and, finally, means visible to the driver and which will naturally cause him to slacken his speed.

In the drawings 1 indicates the roadway which is shown as crossed by a railway track 2 as illustrative of the danger zone. On each side of the danger zone, and at a suitable distance therefrom, is located a device 3 for automatically producing an audible warning when the vehicle crosses the same. In advance of these audible devices, that is, closer to the danger zone, are means for causing a jolting or vibration of the machine, the same comprising a plurality of raised portions across the roadbed, shown as small tubes 4 which are partially embedded in the roadway surface so as to project above the same substantially half of their diameters, and spaced approximately six feet apart and suitably anchored to the roadway such as by means of U-shaped stirrups 5 embracing the tops of the tubes at the sides of the roadway and having nuts or heads at the lower ends for anchoring in the concrete or other material of the highway. Still further in advance, that is, closer to the danger zone, are means visible to the driver for causing him to arrest the speed of the vehicle, said means being shown in the form of a depression or gutter 7 (or equivalent raise) in the surface of the roadway and extending thereacross, either normal to the line of the roadway or at an angle thereto; and which depression (or raise) will be of such depth and width as to cause the normal careful driver to slacken speed in order to avoid the severe jolt which otherwise would be experienced.

These several means extend entirely across the roadway at each side of the danger zone, and are located in the surface of the roadway so that they will necessarily be traversed by a vehicle approaching the danger zone from either direction; and, acting successively and in characteristic ways, will be sufficient to advise the driver of something unusual, even though he is not aware that special warning means have been installed, and certainly will advise the driver who has been informed that special warning devices have been installed in roadways at danger zones. All of these means, in their form transversely of the roadway, will conform to the crown of said roadway, if the same be crowned.

The speed-arresting means 7 can be formed by properly shaping the surface of the roadway, without any auxiliary means, although if desired a gutter shaped plate or the like may be used. The jolt-producing means 4 are of very simple construction and simply

anchored to the roadway. The audible warning means 3 are, however, of special construction and need more extended description.

As shown in Figs. 3, 4, 5 and 6, the audible warning device comprises a base formed of a metal channel member 9 extending transversely of the roadway and anchored therein as by means of the anchor bolts 10, with its side flanges 11 extending upwardly. Situated in this channel member are plates 12 each of such width as to fit between the flanges of the channel members with sufficient clearance to permit them to rock. In its simplest form there are two such plates, each extending from the center of the roadway out to one edge, as indicated in Fig. 1, although the number may be greater than two, and in case the road has a decided crown it is desirable to have a plurality of such plates on each half of the roadway. These plates rest upon rocker or fulcrum projections or bars 13 formed on or secured to the base 9, and slightly to one side of the central line of said base in order that said plates will normally assume an inclined position, as shown in Fig. 5. The fulcrum projections or bars 13 of the warning devices on opposite sides of the danger zone will be located, one on one side of the central line and the other on the opposite side of the central line of their respective bases, in order that the plates of the two devices will normally slope in such direction that their elevated edges will be toward the normal approach of vehicles. Preferably the top surfaces of these plates will be roughened, as shown at 14, in order to prevent horses and other animals from slipping on them.

In the space between the ends of the adjacent plates 12 is a transverse bar 16 in the form of a T-bar positioned with its leg projecting downwardly and resting on the base 9, said leg at the ends of said bar being coped off so as to leave only flat portions which are located in notches cut in the flanges of the base, as shown in Figs. 4 and 6. In the event that a plurality of plates are used at each side of the center of the roadway, a similar bar will be located between each pair of adjacent plates. The horizontal flanges of the bar 16 overlap the ends of the adjacent plates and thus prevent the hoofs of animals catching in the space between the said plates. The plates 12 are retained in position by means of the horizontal flanges of the bar 16 overlapping their end edges, and by the similar means overlapping their side edges. The latter means are shown as angle bars 18 having one leg lying at the sides of the base 9 and secured thereto, such as by tap bolts 19, and having their other legs projecting over the tops of the flanges of the base 9 and inwardly sufficiently to extend over the side edges of the plates 12. These overlapping ledges 16 and 18 will prevent the plates from bouncing up out of place. In order to keep them from displacement endwise, there is provided at each end of the base, at the side of the roadway, a plate or bar 21 suitably secured to the base, such as by means of tap bolts 22, and projecting upwardly sufficiently far to be engaged by the plates 12 in any vertical position which said plates can assume due to the overlapping ledges 16 and 18. To permit ample rocking movement of the plates 12, their side and inner end edges are suitably cut away, as shown at 23, at the points where they would otherwise strike the ledges 16 and 18.

In installing the device described the base 9 will have secured to it the fulcrum bars 13, T-bar 16, and angle bars 18, and will then be anchored in the roadway. The plates 12 can then be inserted from the ends of the base, after which the end retaining means or bars 22 will be attached.

The operation of this device is as follows: The plates 12 normally lie in tilted position, as shown in Fig. 5, the plates on one side of the danger zone being tilted in one direction and those on the other side of the danger zone being tilted in the opposite direction. The vehicle is supposed to be traveling in the direction of the arrow shown on the drawings. As the front wheels pass onto the plate, it will be rocked in one direction and when they pass off the plate the plate will automatically rock in the opposite direction. This double rocking will also be produced by the rear wheels of the vehicle, thus producing four sharp metallic sounds, when the edges of the plate strike the base four times as they necessarily do on each traverse of the vehicle. These sounds will be distinctive and come in spaced order and will almost surely attract the attention of the driver. Should he, however, fail to heed these sounds, he next experiences a jolting or vibration of the vehicle by the obstructions 4, said jolts coming in quite regular succession. Should he fail to heed this, he will next see in the roadway, at night as well as by day, because of his headlights, the gutter (or elevation) 7 of such dimensions that he will know he will get a severe shock if he crosses the same at high speed. All normal drivers will seek to avoid such shock and therefore will slow down.

The combination of these three devices is believed to be ample to insure the slowing down of a vehicle sufficient to enable it to be stopped in case a train should approach on the track 2, and certainly as drivers become educated to such warning devices they will know what these things mean and will slow down and therefore approach the danger zone with caution.

As an auxiliary means for causing noise, there is shown arranged on the plates 12, at

their ends adjacent to the sides of the roadway and at their elevated edges, a device which will produce a ringing or rattling sound, the same comprising a metal washer 25 secured to the plate by means of tap bolt 26 which passes so loosely through the washer that the latter when said plate is suddenly oscillated or rocked will be moved violently and thus cause a rattling or ringing sound.

I claim:

1. A device for warning vehicle drivers of approach to a danger zone, comprising a support located in the roadway and extending transversely thereof, and a plate mounted on said support to have a rocking movement when a vehicle passes over the same and mounted to normally have the edge toward the approaching vehicle elevated above its opposite edge, whereby said plate will be given a double rocking movement on traverse of a vehicle wheel, the edges of said plate being arranged in such proximity to the support as to contact with the latter when rocked and thus cause two audible sounds on the traverse of a vehicle wheel thereover.

2. A device for warning vehicle drivers of approach to a danger zone, comprising a base located in the roadway and extending transversely thereof, a plate mounted in said base to have a rocking movement therein, and means secured to the base and extending over the edges of the plate to retain the same from displacement.

3. A device for warning vehicle drivers of approach to a danger zone, comprising a channel-shaped base located in the roadway and extending transversely thereof and having its flanges projecting upwardly, a fulcrum projection along the bottom of said base, a plate located in said channel base and resting on said fulcrum projection and mounted to have one edge normally elevated, a member secured to the sides of the base and projecting over the side edges of the plate, and bars secured to the ends of the base and arranged to be engaged by the ends of the plates and prevent their endwise displacement.

4. A device for warning vehicle drivers of approach to a danger zone, comprising a base located in the roadway and extending transversely thereof, a pair of plates located in said base, one on each side of the center of the roadway, and mounted therein to have rocking movement, and means on said base for preventing displacement of said plates.

5. A device for warning vehicle drivers of approach to a danger zone, comprising a channel-shaped base located in the roadway and extending transversely thereof, a pair of plates located in said base and mounted to have rocking movement transversely of the base, one of said plates being on each side of the center of the roadway, a flanged bar extending transversely of the base between said plates and overlapping the end edges thereof, and means secured to the sides of the base and overlapping the side edges of said plates.

6. A device for warning vehicle drivers of approach to a danger zone, comprising a channel-shaped base located in the roadway and extending transversely thereof, a pair of plates located in said base and mounted to have rocking movement transversely of the base, one of said plates being on each side of the center of the roadway, a flanged bar extending transversely of the base between said plates and overlapping the end edges thereof, means secured to the sides of the base and overlapping the side edges of said plates, and bars secured to the ends of the base and arranged to be engaged by the ends of said plates and prevent endwise displacement thereof.

In testimony whereof, I sign my name.

WILLIAM T. MAXWELL.

Witness:

EDWIN O. JOHNS.