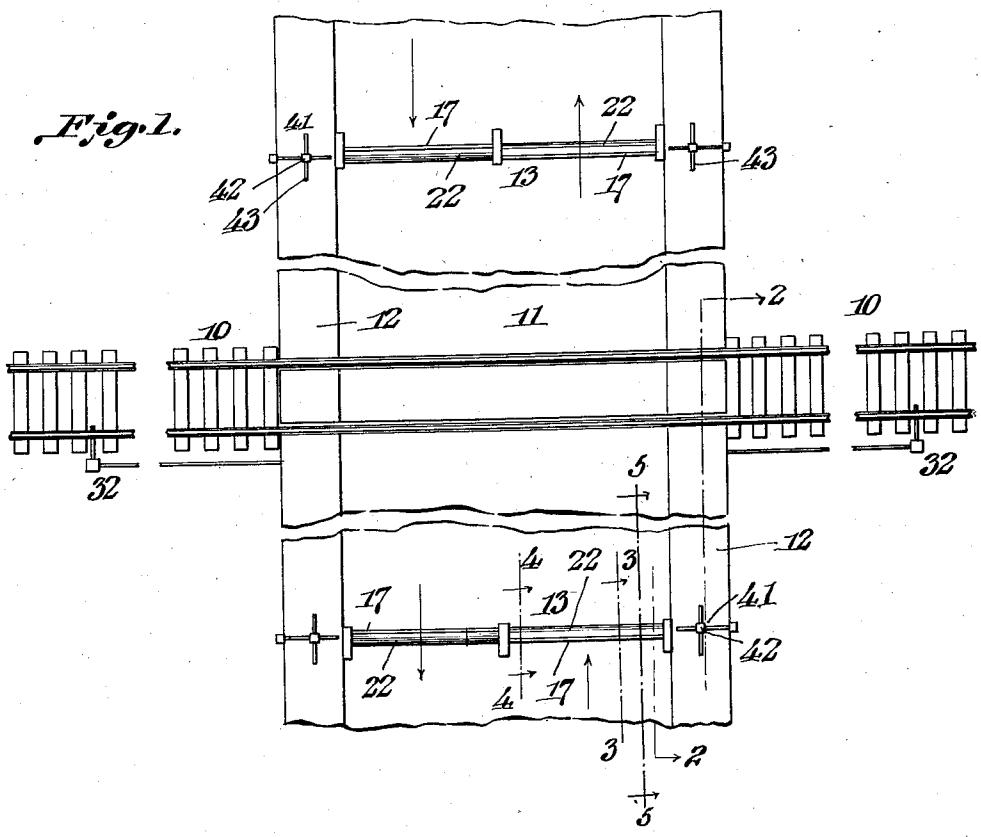
March 1, 1927. W. H. GOLDING 1,619,070

RAILWAY CROSSING GUARD

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Fig. 1.



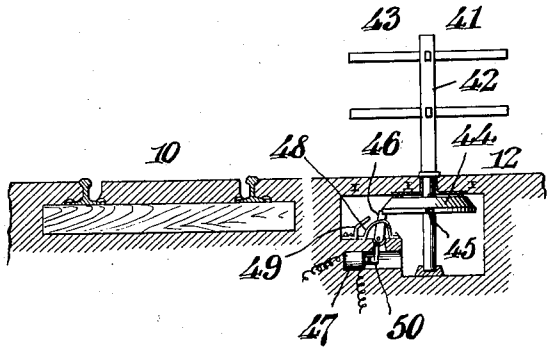


Fig. 2.

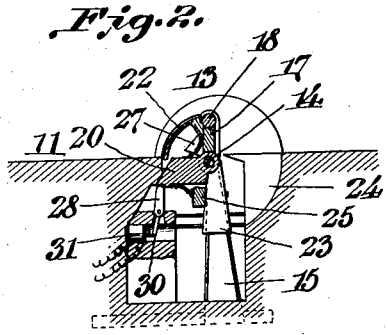
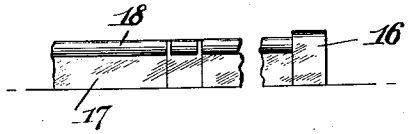


Fig. 7.



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RAILWAY CROSSING GUARD

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Fig. 3.

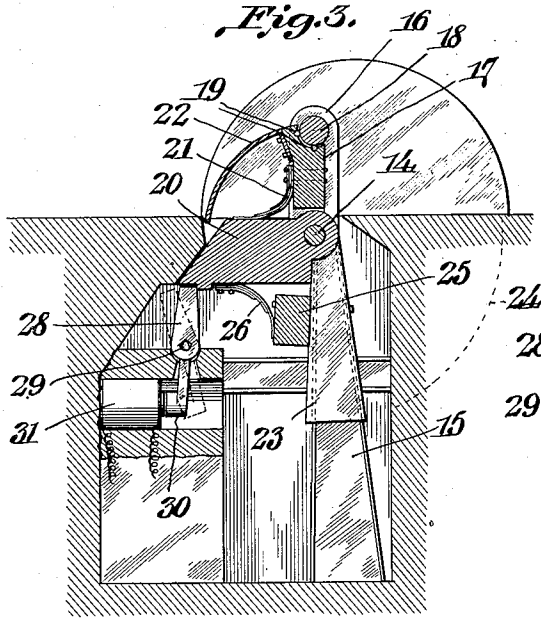


Fig. 4.

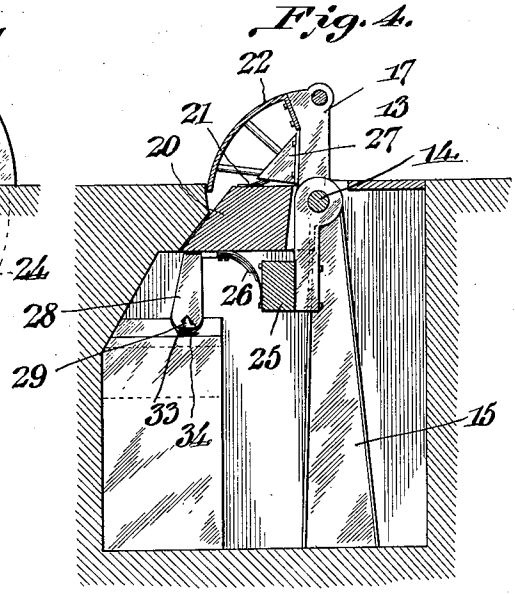
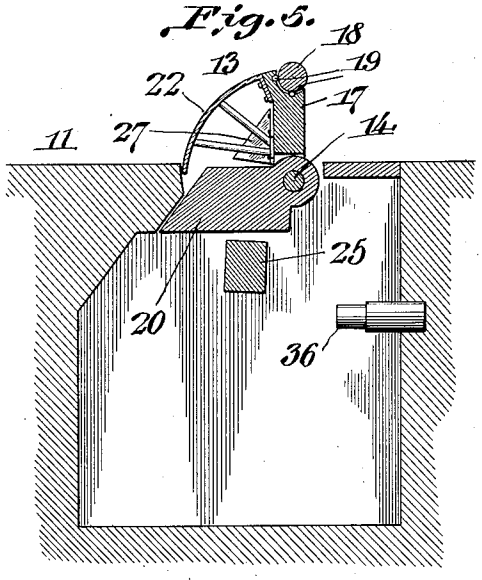


Fig. 5.



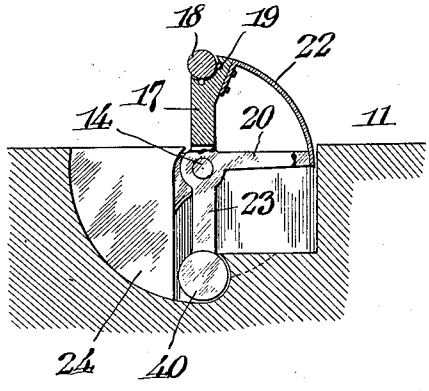


Fig. 6.

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Patented Mar. 1, 1927. 1,619,070

UNITED STATES PATENT OFFICE.

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RAILWAY-CROSSING GUARD.

Application filed February 28, 1924. Serial No. 695,769.

This invention relates to railroad crossing guards, the primary object of the same being to provide means of simplified and improved construction for detaining vehicles approaching a grade crossing at times when trains or cars are approaching the same.

A still further object of the invention is to provide a device of the character and for the purpose stated which is of comparatively simple construction, which employs but few operative parts, which parts are so arranged and assembled as to eliminate to a great degree the possibility of wear, breakage, or derangement, which requires little or no attention after once being properly installed, which is positive in all its operations, and which will prove highly practical and efficient in the accomplishment of the purposes for which it is designed.

With these and other objects in view, the invention consists of the features of construction, combination and arrangement of parts, hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:—

Figure 1 is a diagrammatical plan view illustrating a grade crossing and showing the application of my invention as applied thereto,

Figure 2 is a fragmentary sectional view taken substantially upon line 2—2 of Figure 1,

Figure 3 is a slightly enlarged sectional view taken substantially upon line 3—3 of Figure 1,

Figure 4 is a similar view taken upon line 4—4 of Figure 1,

Figure 5 is a sectional view taken upon line 5—5 of Figure 1,

Figure 6 illustrates the "exit" barrier, and

Figure 7 is a fragmentary front elevation of one of the roadway barriers.

In carrying out the invention, it is my purpose to provide barriers or obstructions in the roadway approaching a railroad crossing as well as in the path usually traversed by pedestrians, to halt the approach of traffic toward the railroad track at times when it would be dangerous to attempt a crossing. The invention further proposes means whereby traffic approaching railways will be at once warned or apprised of possible danger, to cause the traffic to slow down to a safe speed, whether or not trains or cars are approaching the crossing. To this end, I provide in the roadway at suitable distances on each side of the railroad and in the path of oncoming traffic barriers which constitute obstructions in the roadway to be encountered by vehicular traffic in its approach to the crossing. Under normal conditions, or when there is no train or car approaching the crossing, these barriers or obstructions will not hinder the passage of vehicles thereover, as they are capable of swinging to inoperative position immediately when such traffic is brought into contact with them. At other times, that is, when cars or trains are approaching the crossing, these barriers are maintained rigidly in upright position so as to present a fixed or solid obstruction to the passage of traffic.

Referring now more particularly to the drawings, 10 indicates generally a railroad track over which trains and cars are to pass, and 11 represents the roadway intersecting this track. The barriers for the roadway are indicated generally at 13, and are arranged transversely of the roadway from curb to curb at suitable distances each side of the railroad track and parallel therewith. In the present instance, the roadway 11 at the approach of the crossing is designed to accommodate two lines of vehicular traffic, one traveling in each direction, and the barrier portions at the "approach" sides of the roadway will now be described.

The roadway will be provided with a transverse chamber for the accommodation of the barrier mechanism, and above this channel or chamber and slightly below the street or pavement surface is disposed a bar or shaft 14 extending transversely of the roadway. This shaft may be suitably supported at its ends by the braces or standards indicated at 15. That portion of the shaft 14 which traverses the "approach" portion of the roadway has mounted thereon in spaced relation the upstanding arms 16, which are connected by a barrier plate 17. This barrier plate has journaled in its upper edge a roller member 18 which is coextensive with the barrier plate and which is suitably supported in the latter upon the roller or other anti-friction bearing members 19. The ends of this roller bar may be suitably journaled in the upstanding arms 16, and bear-

ings may be employed in this journal as well as at spaced intervals throughout the length of the barrier member 17.

Rotatably supported upon the shaft 14 and at right angles to the barrier bar 17 and arms 16 are buffer members 20. These buffer members may be arranged one at each end of bar 14, or one continuous buffer member may extend throughout the length of the said shaft. Leaf springs 21 secured to the rear face of the barrier bar 17 bear at their ends against the buffer members, and yieldably maintain the barrier bar and buffer members at substantially right angles to each other.

The barrier bar is provided upon its rear face with an arcuate follower plate 22 forming substantially a quadrant, and which covers the buffer members and the upper portion of the channel or recess in the roadway when the barrier is in upright position, thus preventing dirt, sand, snow and sleet from passing down to the interior of the chamber within which the mechanism hereinafter described is located.

The shaft 14 has affixed thereto near its ends weights 23 of sufficient size to normally maintain the barrier bar and associated parts in upright position. These weights may be arranged at any suitable intervals, however, in the present instance, they are located at the ends of the bars and travel within suitable housings or channels indicated at 24 when the bar or shaft 14 is rotated. The spaced weights 23 may be connected by a connector bar or plate 25, and against which leaf springs 26 secured to the buffer members 20 bear. This spring and connector plate arrangement maintains a yieldable angular relation between the buffer members and the weights 23.

Each of the arms 16 has secured to its rear edge or face an angle member or plate 27 which abut with the buffer members after the said arms have passed through a certain number of degrees of movement in a rearward direction. The lower faces of the angle members 27 are cut angularly as shown in Figure 4, permitting the said arms to move rearwardly upon shaft 14 opposed by springs 21 before the lower edges of the angle members contact with the upper surfaces of buffer members 20. When this contact is made, however, through rearward swinging movement of the arms 16 and the mechanism carried thereby the buffer members will be caused to rotate in the same direction upon shaft 14, and eventually a driving connection will be established between the buffer members and the connector bar 25 through the medium of springs 26, whereupon the weights 23 will be caused to swing into the arcuate channels or housings 24. When pressure upon the barrier plate 17 is released, the weights 23 will immediately swing back to normal vertical position, whereupon the parts above described will again assume normal position, such as shown in Figures 3 and 4.

The mechanism employed in connection with the entrance barriers for maintaining the same in rigid upright position at the approach of a train or car upon the track, includes a latch member 28 rotatably mounted as at 29 upon suitable bearings beneath the roadway and movable into or out of the path of travel of the buffer members 20. The latch member is provided with a depending arm 30 to be actuated by the electro-magnet 31 suitably housed in the chamber beneath the roadway, and this electro-magnet is connected with detent mechanism represented generally at 32 to be operated by approaching trains. This magnet may be operatively connected with the well known signal bell circuits used at railway crossings to serve as warnings to oncoming pedestrians and traffic, so that the mechanism will be rendered active immediately the warning bells are brought into operation, and, similarly, the electro-magnets are rendered inactive after the train or cars has moved out of the "bell block". The depending arm 30 of the latch member may be so arranged as normally to maintain the latch out of the path of downward swinging movement of the buffer member 20, or other suitable mechanism may be coupled for the accomplishment of the same result, however, the arm 30 will immediately be attracted and drawn to the electro-magnet 31 when the latter becomes energized. When so positioned, any tendency of the buffer members 20 and the associated mechanism will be resisted by the latch members 28, so that vehicular traffic engaging the barriers will be caused to ride over the same.

There may be provided a magnet 31 at each end of the barrier channel for operation with each of the buffer members located therein, or a single electro-magnet may be utilized to operate two or more of such latch members. The latch members are supported upon a rod 33 suitably mounted within the chamber beneath the roadway. This rod, in the present instance, is yieldably supported at each end by a spring 34 upon a bearing block as shown in Figure 4, and to minimize friction between the bar and latch members 28, a knife edge bearing may be employed as shown.

It will be observed by referring to Figs. 3 and 4 that the lower ends of the latch members are disposed above arcuate recesses in their supporting beds, and are adapted to engage in said recesses when downward pressure is applied by buffer member 20. By supporting the bar or rod 33 upon springs, the initial shock due to any downward movement of the buffer will be

absorbed by said springs, and subsequent downward movement of the buffer will cause the lower ends of said latches to engage with the arcuate recesses above mentioned, whereby the rod is relieved of all strains.

In order that downward swinging movements of the barrier member when engaged and depressed by a moving vehicle will not be so violent as to break or derange any of the parts of the mechanism, I provide a pneumatic or hydraulic check 36 to arrest the movements of the parts just prior to the time they reach their full depressed position. This check 36 is in the path of movement of the buffer member 20, as shown.

In Figure 6 of the drawings there is illustrated the exit barrier member, and wherein the barrier bar, buffer members and weight arms are formed in one piece. In this modification, the members 17 and 23 are alined with each other and a weight 40 is secured to the lower end of the member 23, while the arm 20 is disposed at right angles to these portions and receives the lower end of the follower plate 22.

In operation, under normal conditions or when no train or car is within the bell block, the barrier mechanism will be inactive. When in such condition the barrier 17 will be upright in the positions shown in the drawings, and the engagement of wheels of oncoming traffic therewith will cause the same to swing down the horizontal position to permit of such traffic moving on unrestricted. At all times the exit barriers are free to so move. Upon the approach of a train or car on the track 10 and the closing of the circuit through the electro-magnet 31, the arm 30 is attracted thereby and the latch 28 is caused to move into operative position beneath the buffer members 20. Should vehicular traffic encounter the barrier when so locked, the front wheels thereof, in the event the vehicle is traveling at sufficient speed, will ride up over the barrier thus serving to severely jar the vehicle and warn the occupants thereof of impending danger. Should the vehicle not be stopped before the rear or drive wheels thereof encounters the barrier, the latter will offer resistance thereto and when such drive wheels contact with the roller 18 the latter will be caused to spin and thus not offer sufficient resistance to enable the drive wheels to climb the barrier. The motor vehicle will thus be held against further travel toward the crossing, and can not pass over the barrier until after the latch mechanism has been released.

From the above it is apparent that I have provided a grade crossing guard which is of comparatively simple construction and which will capably perform the intended purposes. The various parts of the mechanism may be so constructed and assembled at proper positions upon the roadway as to require little or no attention after once being properly installed and are proof against accidental breakage or derangement.

The mechanism herein disclosed is believed to be the most practical in carrying out this inventive idea, however, it will be understood that various changes in the mechanical details may be resorted to liberally without departing from the spirit of the invention, and the right is reserved to make such alteration, changes and reassemblages as may be deemed necessary or more practical without departing from the invention as defined by the claims.

Having thus fully described my invention, I claim:—

1. In a device of the class described, a barrier member mounted for oscillation upon a roadway, means normally and yieldably maintaining said barrier in obstructing position, a latch member for holding said barrier so positioned, and an electro-magnet for operating said latch member.

2. In a device of the class described, a shaft mounted horizontally upon a roadway, a barrier member swingingly carried by said shaft, a buffer member on said shaft, a weight for normally maintaining said barrier in raised position, means normally separating the buffer and barrier members in angular relation about the shaft, means interposed between the buffer member and the weight for normally separating the same in angular relation about the shaft, and a latch for said buffer member.

3. In a device of the class described, a shaft mounted upon a roadway, a barrier bar supported by said shaft, a roller mounted upon the outer end of said barrier, means normally holding said barrier in upright position upon the roadway, and a latch member governing the movements of said barrier.

4. In a device of the class described, a shaft mounted transversely of a roadway, arms carried by said shaft, a barrier bar secured to said arms and disposed parallel with said shaft, a follower plate carried by said barrier bar, a buffer member carried by said shaft and disposed at substantially right angles to said barrier bar, a spring normally separating said barrier bar and buffer bar, an angle plate to establish a driving connection between said buffer member and barrier bar when the latter is moved a predetermined distance in one direction, a weight for normally maintaining said barrier bar in upright position upon the roadway, a spring between said buffer member and said weight, a latch member adapted to move beneath said buffer member, and an electro-magnet governing the movements of said latch.

5. In a device of the class described, a tiltable barrier arranged upon a roadway, a buffer member operable by said barrier, a rod beneath said buffer, springs supporting said rod, a latch supported by said rod and adapted to lie in the path of downward movement of said buffer, and a support beneath said latch having a recess therein conforming to the shape of the lower end of said latch and adapted to receive and support the same after said springs have been compressed.

6. In a device of the class described, a barrier arranged in and movable above or below the surface of a roadway and normally projecting above the same, a buffer below said barrier, means for transmitting motion from said barrier to said buffer when the former is moved a predetermined distance in one direction, a latch member cooperating with said buffer to hold or release the same, and an electromagnet controlling the said latch.

In testimony whereof I affix my signature.

WILLIAM H. GOLDING.