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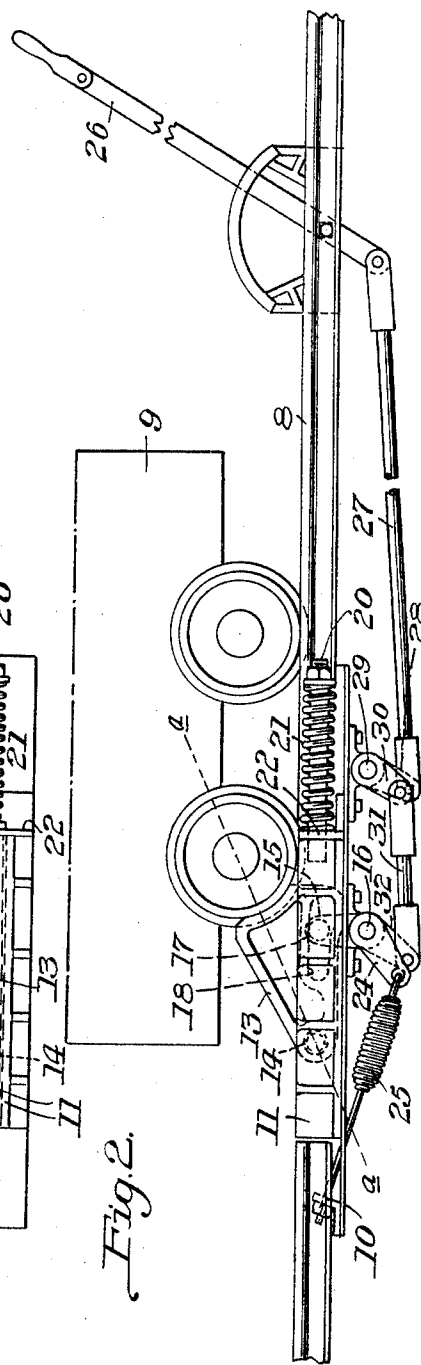
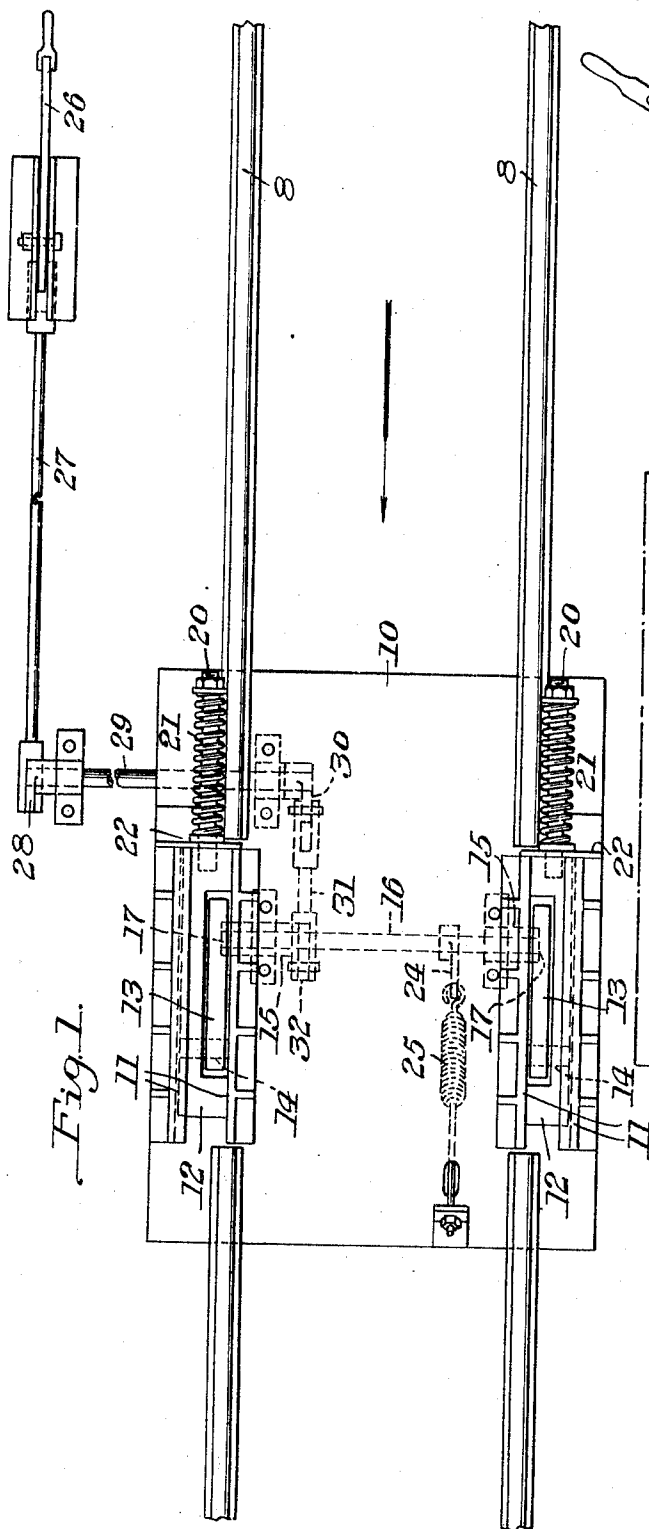
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1,738,008

CAR STOP DEVICE

Filed Sept. 14, 1927

4 Sheets-Sheet 1



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Fig. 4.

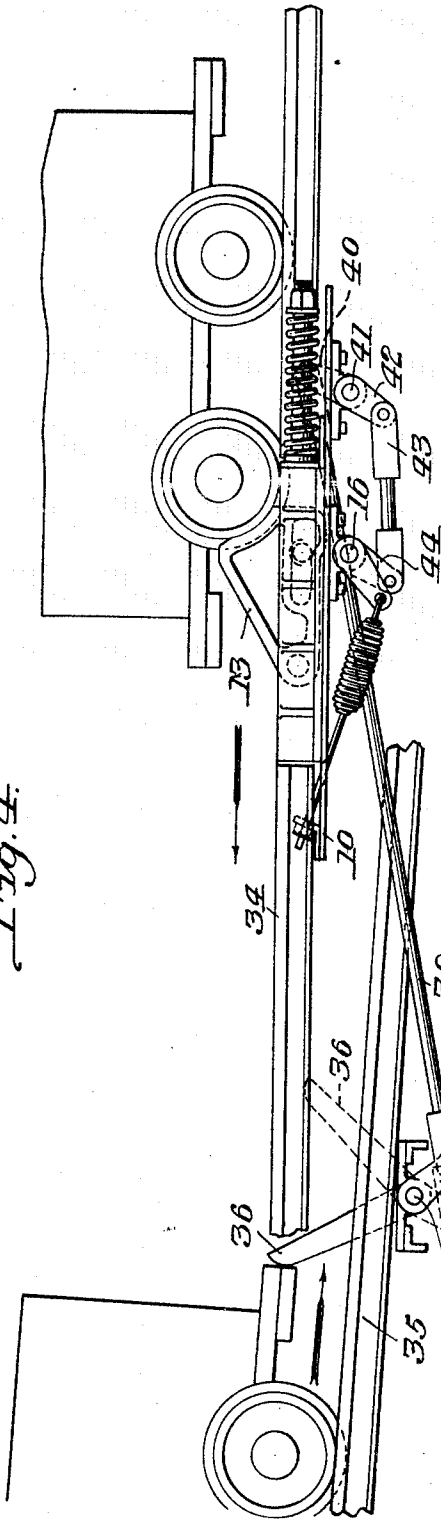


Fig. 6

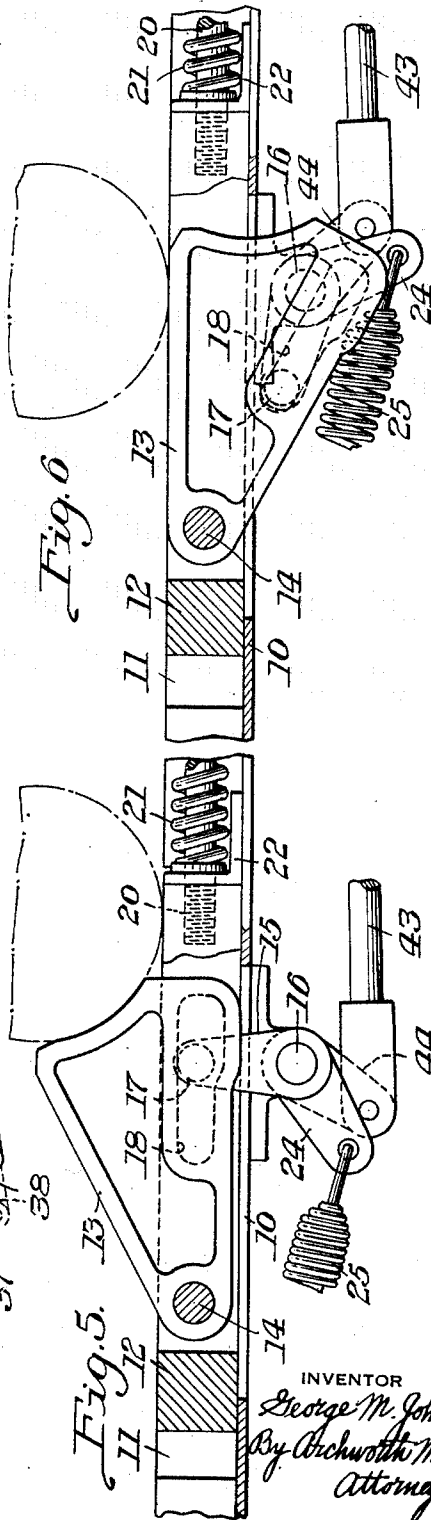


Fig. 5.

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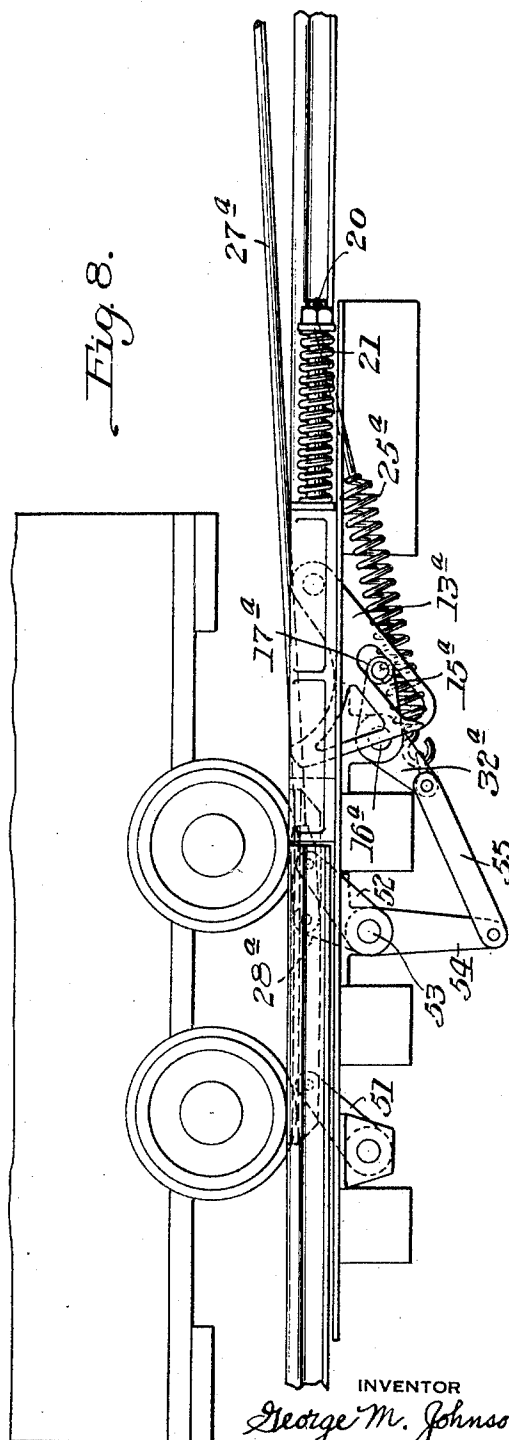
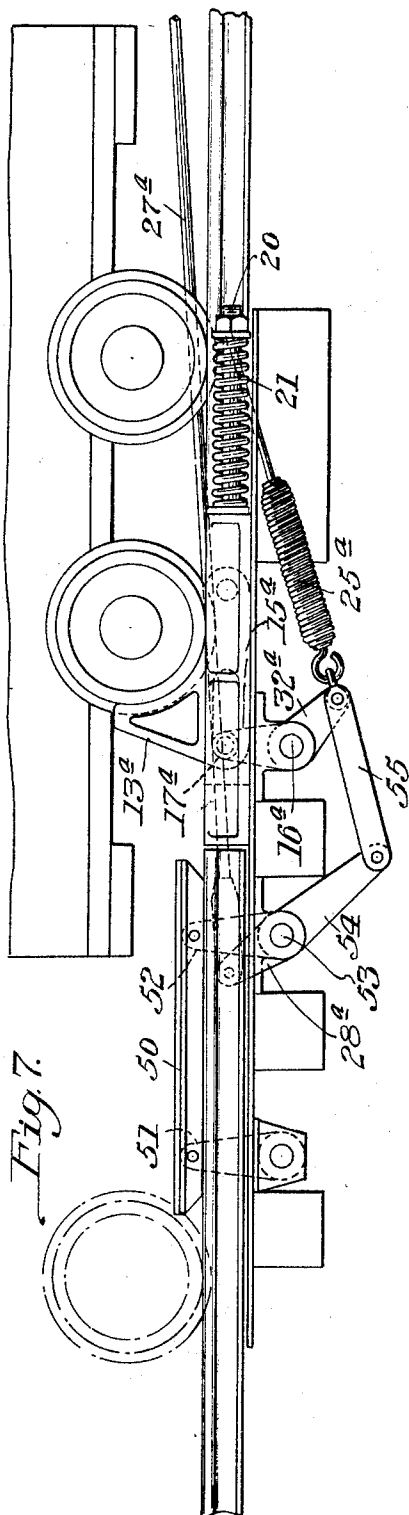
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UNITED STATES PATENT OFFICE

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CAR-STOP DEVICE

Application filed September 14, 1927. Serial No. 219,433.

My invention relates to car stop devices, and particularly to those employed in connection with systems wherein car stops are employed for stopping advance movement of cars, which stops are movable to release the cars, as desired.

One object of my invention is to provide an improved form of stop device that may be readily moved out of operative position with respect to a car wheel, and still function effectively to prevent advancing movement of the car.

Another object of my invention is to provide a vertically movable horn in combination with cushioning means therefor to absorb the impact of cars.

A further object of my invention is to provide a car stop of such form that it will, when moved to car-releasing position, permit cars and locomotives with low frame clearances above the track rails to freely pass the stop.

Another object of my invention is to provide an improved form of mechanism operated by a car when running in the reverse of its normal direction of movement for actuating a stop horn to move it to inoperative position.

Still another object of my invention is to simplify and improve generally the structure and operation of stop horn devices and operating mechanisms therefor.

Some of the forms which my invention may take are shown in the accompanying drawing, wherein Figure 1 is a plan view of apparatus embodying my invention; Fig. 2 is a side elevational view of the apparatus of Fig. 1; Fig. 3 is a plan view of a portion of a system constituting a modification of the system of Figs. 1 and 2; Fig. 4 is a side elevational view of a portion of the apparatus of Fig. 3; Fig. 5 is a view on an enlarged scale of a portion of the apparatus of Fig. 4; Fig. 6 is a view of the structure of Fig. 4, showing the horn and associated parts in position to permit passage of a car wheel; Fig. 7 is a view similar to Fig. 2, but showing means actuated by a backwardly travelling car for moving the stop horns to depressed or inoperative position, and Fig. 8 is a view showing the positions assumed by the various

parts of the mechanism when a car travels backwardly.

Referring more particularly to Figs. 1 and 2, I show tracks 8 provided for mine cars or the like 9. The tracks 8 are inclined downwardly in the direction indicated by the arrow, so that the cars 9 tend to advance under the action of gravity.

From the tracks 8, the cars may pass to a dump, a cage, or elsewhere. A train of cars may be brought over the tracks 8 and stopped by mechanism which will be hereinafter described, so that they can be released, one by one, if desired.

The stop horn structure is shown as mounted upon a base plate 10. Slide ways 11 are provided for slide blocks 12 in which the stop horns are pivotally mounted as will be hereinafter explained. The inner members of the slide ways 11 serve as rail sections over which the car wheels may pass when released by the stop horns. Stop horns 13 are pivotally mounted in cut-out portions of the slide blocks 12, upon pins 14.

The stop horns 13 are normally held in upright position, as shown more clearly in Fig. 5, by a crank arm 15, that is secured to a shaft 16 which is journaled in the base 10. The upper arm of the crank 15 has a lateral extension 17 that extends into the slot 18 of the stop horn 13. When the crank 15 is in the position shown in Figs. 2 and 5, the horn 13 is held in its upper or operative position to engage a car wheel.

The wheel-contacting surface of the horn is of segmental form, with its major portion lying below the dotted line *a-a* of Fig. 2, that passes through the axes of the stop horn and car wheel. The contacting surface of the horn, while of sufficient area to afford ample support for the car, still is so arranged that the portion which extends above the line *a-a* is of small area relative to the portion below such line, so that the horn can be readily moved out of engagement with the car wheel, even when under compression.

Another feature which facilitates the movement of the horn to depressed or released position arises out of the fact that the radius of the horn with respect to its pivot 14 is

much greater than the radius of curvature of the car wheel. It will be seen that if the distance between the pivot 14 and the line of engagement with the car wheel were shortened to a considerable extent, an appreciable backward movement would have to be given to the car in order to permit movement of the horn to depressed position. As shown more clearly in Fig. 5, it will be seen that the slot 18 is of considerably greater width at its rear end than the diameter of the extension 17 of the crank. This arrangement permits a slight upward movement of the car and the horn when the car is brought against the horn with some force, thus relieving the horn-operating parts of strain. In some cases, the impact of a car against a horn will cause the car and horn to rise for a distance of perhaps an inch, and the enlarged slot permits of such movement independently of the horn-operating mechanism.

An important feature of my invention resides in the provision of a shock-absorbing or cushioning device for the stop horns. I am aware that cushioning devices have heretofore been employed in connection with horns that are laterally and horizontally movable with respect to the track rails, but I believe it to be new to provide an arrangement wherein vertically movable horns are cushioned. The cushioning device consists of a bolt 20, that is threaded into the slide block 12 which carries the stop horn, and a compression spring 21 that is interposed between the head of the bolt and a fixed stop 22 on the base 10. It will be seen that when the wheels engage the stop horns 13, such horns will be thrust forwardly and the springs 21 placed under compression, thereby functioning as cushioning elements.

A crank arm 24 is secured to the shaft 16 and has connection with a tension spring 25 whose forward end is anchored to the base plate 10. The spring 25 serves to yieldably hold the cranks, and consequently the horns 13, in the position shown in Figs. 2 and 5.

In the arrangement shown in Figs. 1 and 2, the stop horns are manually operated through a lever 26 whose lower end is connected to a link 27 that has connection with a crank arm 28 which is secured to a shaft 29. The shaft 29 extends beneath one of the track rails 8 and carries at its inner end a crank 30 which is connected, through a link 31, with a crank 32 that is secured to the shaft 16. When the lever 26 is swung in a counter-clockwise direction, from the position shown in Fig. 2, the shaft 16 is also caused to turn in a counter-clockwise direction, carrying the upper end of the crank 15 downward to the position shown in Fig. 6, thus moving the horn 13 to retracted position. Upon release of the operating lever 26, the spring 25 will return the horns 13 to set position.

In Figs. 3 and 4, I have shown an arrange-

ment whereby the stop horns may be automatically operated, as when the cars move over the tracks 34 to a dumping station (not shown) and return from the dumping station, under the action of gravity, along tracks 35. As an empty car moves along the track 35, in the direction indicated by the arrow in Fig. 3, it will engage a trip lever 36 that is secured to a rocker shaft 37 to whose outer end a crank 38 is connected. The crank 38 has connection, through a link 39, with a crank 40 that is secured to a shaft 41. A crank 42 is secured to the inner end of the shaft 41 and has connection, through a link 43, with a crank 44, that is secured to the shaft 16, the connections between the shaft 16 and the stop horns being shown in Figs. 1, 2 and 5. By the arrangement shown in Figs. 3 and 4, it will be seen that a train of cars can be advanced against the stop horns and after the first car is released and dumped, the other cars will be automatically released, one by one, through the movement of the empty cars along the return tracks 35, the returning cars holding the lever 36 depressed for a sufficient length of time to permit the wheels of the foremost car of the train to pass the horns 13. It will also be seen that the invention is capable of operation in various other ways, as by positioning the lever 36 in the path of an elevator cage, in such manner that the cage will trip the stop horns and permit a car to advance.

Referring now to Figs. 7 and 8, I show a treadle 50, it being understood that one of these treadles will ordinarily be mounted in each of a pair of track rails. The treadles are in the form of rail sections and are supported upon links 51 and 52 that are operable about fixed axes at their lower ends. The link 52 is rigidly secured to a shaft 53 and a crank 54 is also secured to the shaft 53 and is connected by a link 55 to a crank arm 32^a that is secured to a shaft 16^a. A crank arm 15^a is also secured to the shaft 16^a and has a lateral extension 17^a that extends into a slot in the stop horn 13^a.

A spring 25^a serves to normally hold the horn in its upper or operative position, as in the case of the spring 25 and horns 13 of Figs. 1 and 2.

The horn 13 is normally operated by a link or pull rod 27^a that corresponds to the member 27 of Fig. 2, and which has connection with a crank arm 28^a that is secured to the shaft 53. When the link 27^a is pulled to the right from the position shown in Fig. 7, the shaft 53 is rotated in a clockwise direction, thus lowering the treadle 50 and exerting a pull upon the link 55 to effect lowering movement of the stop horn 13^a, to permit a car to travel past the stop horn from right to left. This step of operation is similar to that described in connection with various of the other figures.

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In case it should be desired to move a car, locomotive or the like from left to right past the stop horns, the treadles 50 will serve as actuating elements to depress the stop horns without the car wheels being brought directly in contact with the horns. By reason of the link or pivotal mounting of the treadles, a car moving from left to right will engage the end of the treadle and depress the same to the position shown in Fig. 8. By reason of the fact that the link 52 is rigidly connected to the shaft 53, the crank 54 will pull the link 55 to the left, thus rocking the crank arms 32^a and 15^a to depress the horn 13^a, and provide unobstructed passage for the car.

It will be understood that since the pull rod 27^a is ordinarily connected to a hand lever such as 26 of Fig. 2 it is not locked against movement, and owing to the fact that the treadle and such lever are interconnected through the shaft 53 and its cranks, each of the members 50 and 27^a may freely be operated notwithstanding its connection to the other.

Further with respect to Figs. 7 and 8, the horn 13^a is pivoted rearwardly of its wheel-engaging surface, so that there is less tendency for said surface to bind against the wheel tread when the horn is being moved to release position, since it will drop away from the wheel tread when being lowered.

I claim as my invention:—

1. Car stop structure comprising a horn for co-operating with car wheels, yieldably actuated means for releasably holding said horn in elevated operative position, an operating lever for moving the horn to inoperative position, and a lost motion connection between said lever and said horn.

2. Car stop apparatus comprising a pivotally mounted stop having a wheel-engaging surface concentric to the wheels with which it is adapted to co-operate, the radial dimension of the stop being greater than the radius of said wheels, and the pivotal point of the stop being disposed at a point forwardly of said surface.

3. Car stop apparatus comprising a pivoted horn having a wheel-engaging surface concentric to a wheel with which the horn is adapted to co-operate, the major portion of said surface being disposed below a line drawn through the axes of the horn and the wheel when they are in operative position.

4. Car stop apparatus comprising a pivoted horn having a wheel-engaging surface concentric to a wheel with which the horn is adapted to co-operate, the major portion of said surface being disposed below a line drawn through the axes of the horn and wheel when they are in operative position, and the radial dimension of the horn being greater than the radius of the wheel.

5. Car stop apparatus comprising a stop horn, means for moving said stop horn to per-

mit passage of cars in one direction, means for yieldably holding the horn against movement in said direction, and means operated by movement of cars in the opposite direction for moving said stop horn to released position, to permit passage of said cars.

6. The combination with a car stop member, of means for lowering said member to permit passage of cars, means for cushioning the member against movement in the direction of normal travel of cars, and other means actuated by cars, moving in a direction the reverse of that of normal travel, for lowering said member.

7. Car stop apparatus comprising a pivoted horn for co-operating with car wheels, an arm for releasably supporting said horn in elevated position to engage a car wheel, and a lost motion connection between the arm and the horn, to permit slight upward movement of the horn about its pivot, independently of said arm.

8. Car stop apparatus comprising a pivoted horn for co-operating with car wheels, an arm for releasably supporting said horn in elevated position to engage a car wheel, and means for moving said arm to and from upright position, the arm when in upright position serving to positively support the horn in elevated position.

9. Car stop apparatus comprising a pivoted horn, and a pivoted arm for supporting said horn in operative position, the longitudinal axis of said arm, when in position to support said horn, being disposed at substantially right angles to a radial line of the horn adjacent to the point at which the said arm engages the horn.

10. Car stop apparatus comprising a movably-mounted stop horn, and a pivoted arm having one end movable into engagement with said horn to support it in operative position, the pivotal point of the arm and its said end, when in position to support said horn, being disposed on a line extending substantially parallel to the direction of thrust on said arm.

11. The combination with a car stop member, of means for lowering said member to permit passage of said car, and other means actuated by cars moving in a direction reverse to that of normal travel for lowering said member.

12. Car stop apparatus comprising a stop horn, means for moving said stop horn to permit passage of cars in one direction, means for yieldably holding the horn in car-engaging position, and means operated by movement of cars in the opposite direction for moving said horn to release position, to permit the passage of said cars.

13. Car stop apparatus comprising a pivoted horn having a concave wheel-engaging surface, and means for moving said horn about its pivot to inoperative position, the

said surface being so arranged that the distance thereof from the axis of the wheel increases upon commencement of said movement.

5 14. Car stop apparatus comprising a pivoted horn having a concave wheel-engaging surface, and means for moving said horn about its pivot to inoperative position, the said pivot point being so positioned that the
10 distance between said surface and the axis of the wheel increases upon commencement of said movement.

In testimony whereof I, the said GEORGE M. JOHNSON, have hereunto set my hand.

15 GEORGE M. JOHNSON.

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