E. M. JONES.

AUTOMATIC STOPPING DEVICE FOR VEHICLES.

APPLICATION FILED SEPT. 18, 1913.

1,142,885.

Patented June 15, 1915.

5 SHEETS—SHEET 1.

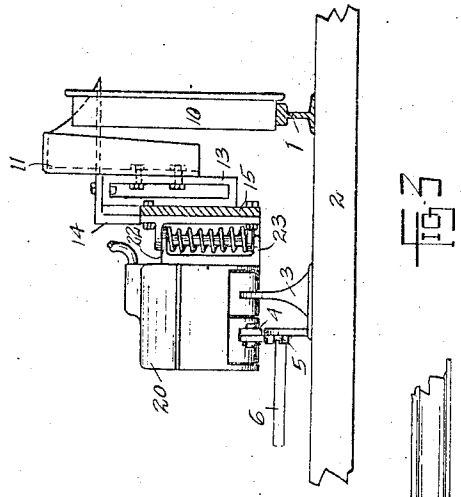

FIG. 3.

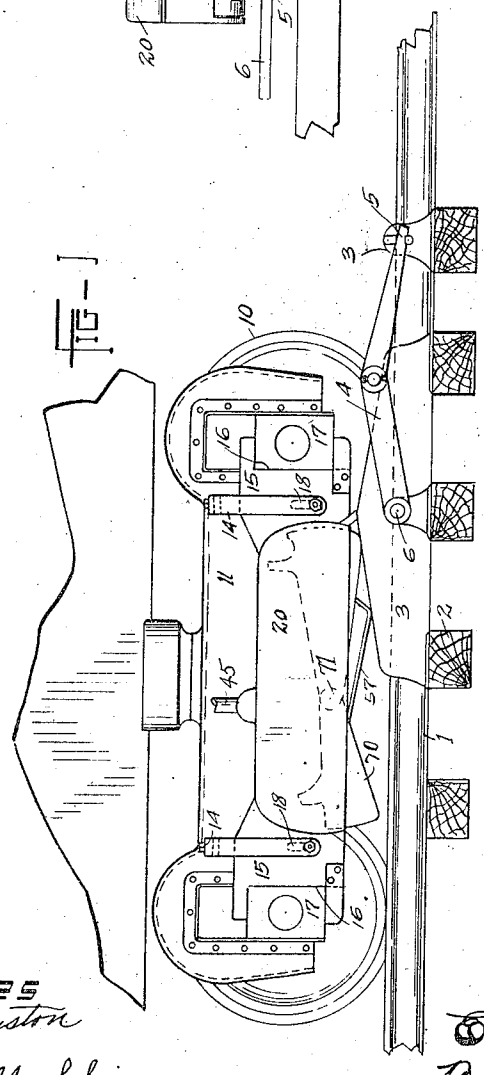

FIG. 1.

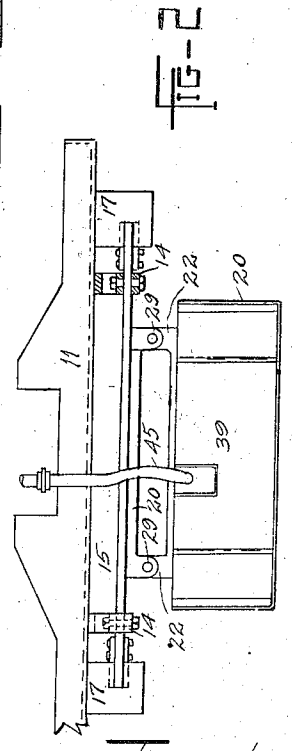

FIG. 2.

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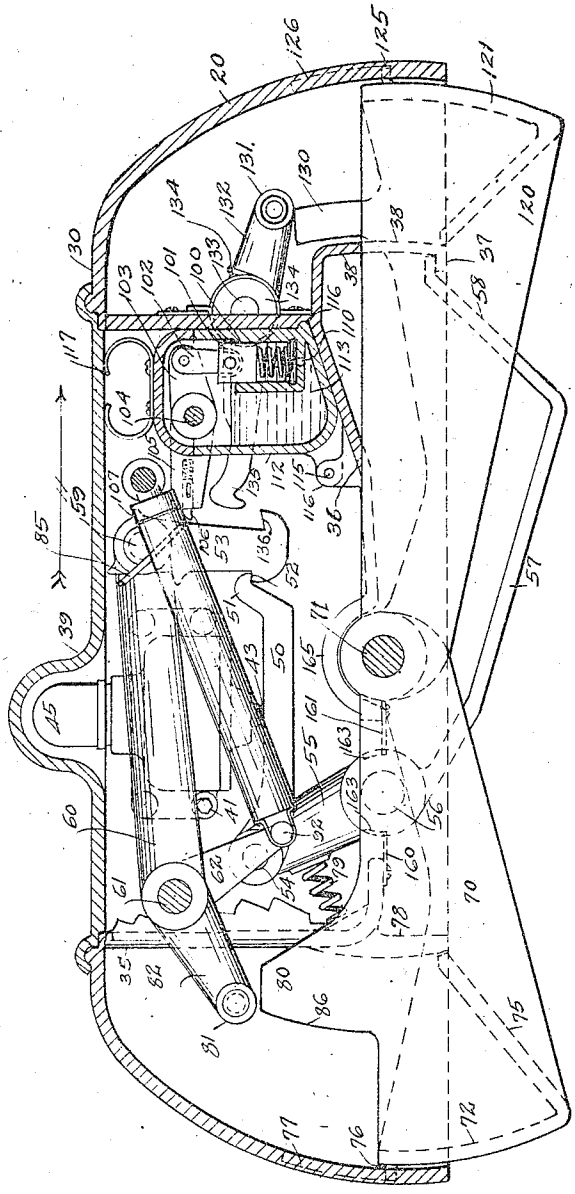

FIG. 4

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5 SHEETS—SHEET 3.

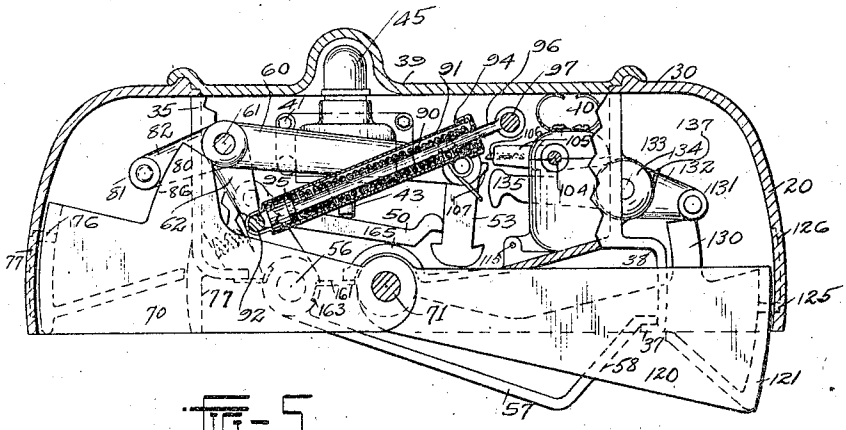

FIG-5

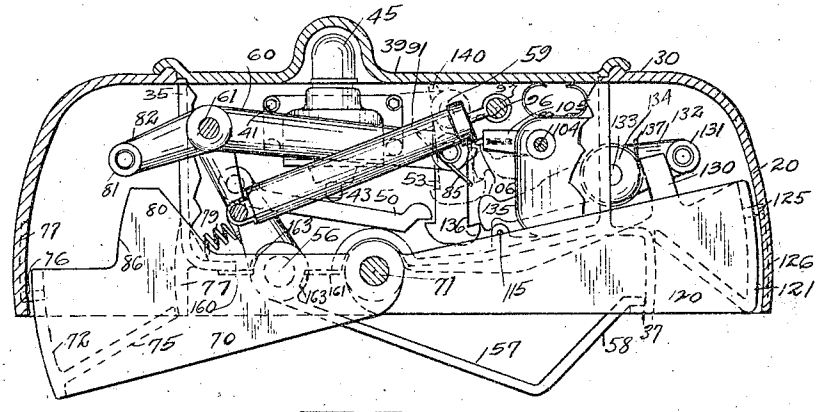

FIG-6

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5 SHEETS—SHEET 4.

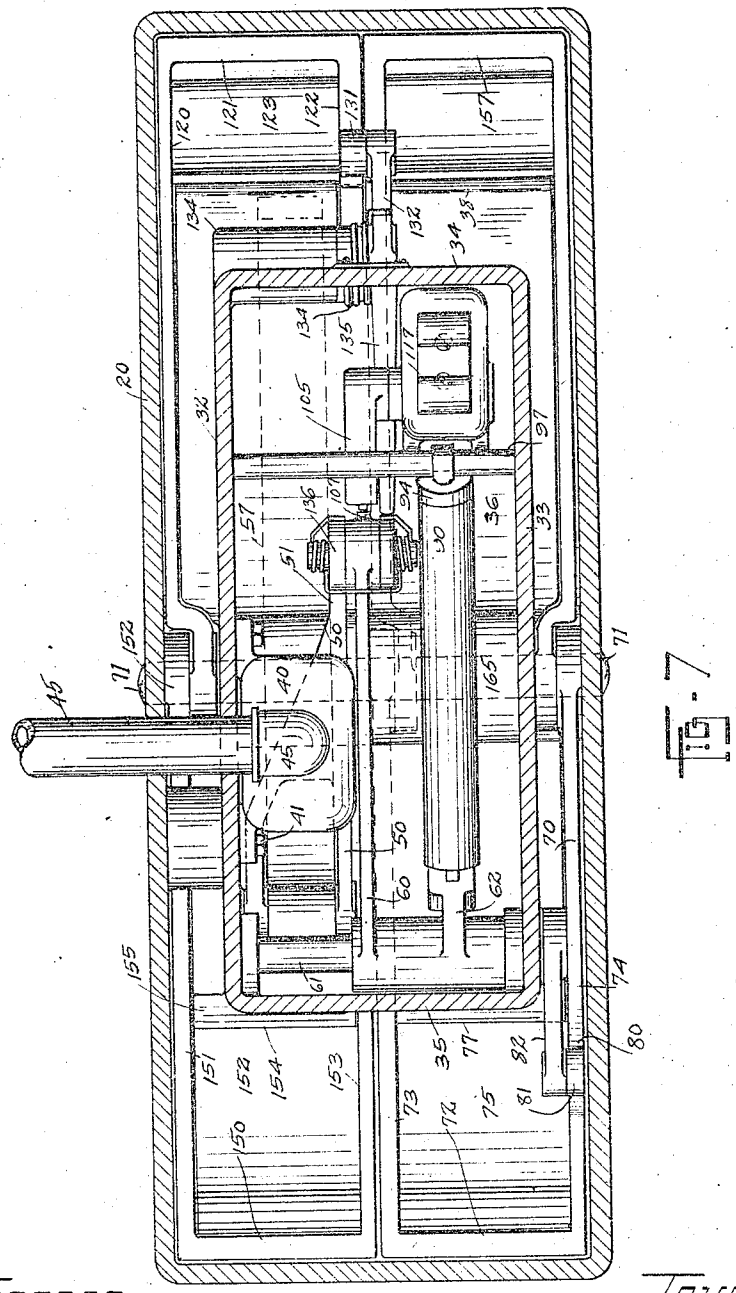

Fig. 7

Witnesses
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5 SHEETS—SHEET 5.

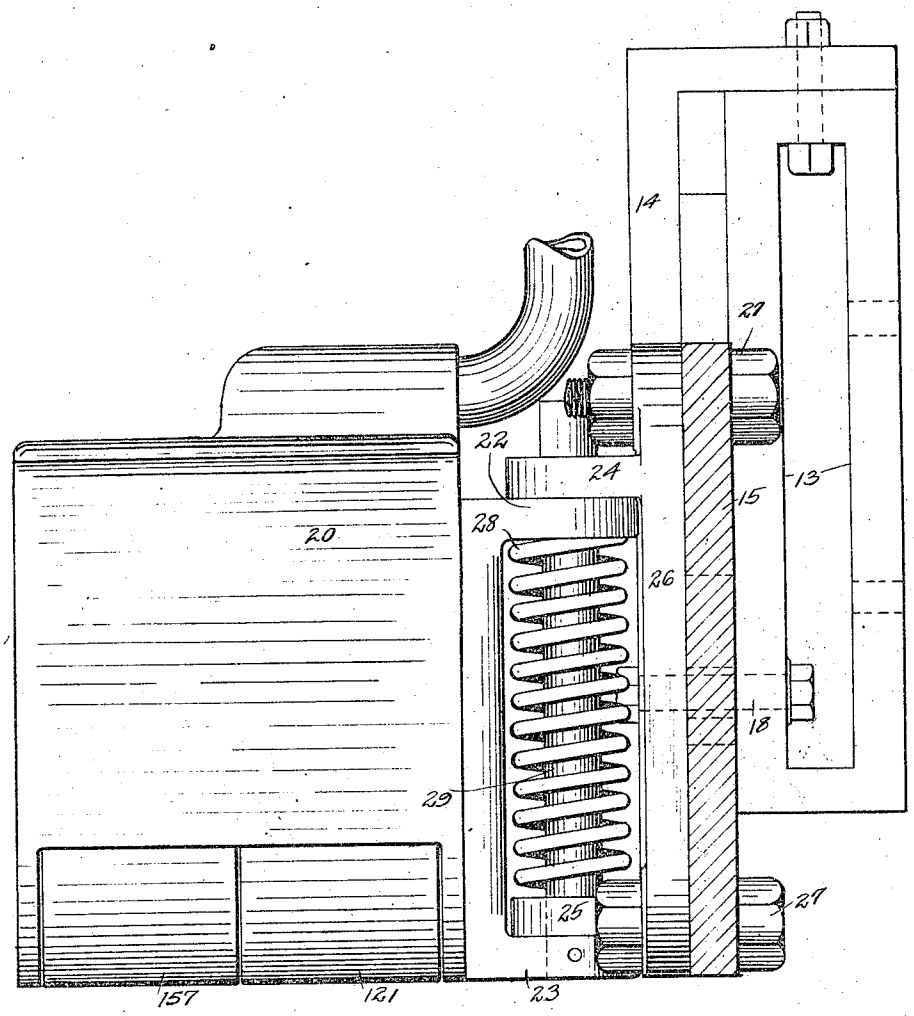

FIG. 8

Witnesses
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UNITED STATES PATENT OFFICE.

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AUTOMATIC STOPPING DEVICE FOR VEHICLES.

1,142,885. Specification of Letters Patent. Patented June 15, 1915.

Application filed September 18, 1913. Serial No. 790,392.

To all whom it may concern:

Be it known that I, ELMER M. JONES, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented a certain new and useful Improvement in Automatic Stopping Devices for Vehicles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to a system for automatically controlling and stopping cars, trains, etc., running on a trackway. The system, broadly considered, may be in accordance with that shown, described and claimed in my prior Patent No. 1,129,201. In such system there are located along the trackway at intervals pairs of ramps, one normally stationary and active, the other normally idle but movable when desired to active position; to coöperate with these ramps the vehicle is provided with mechanism to engage the stationary ramp and move thereby to initiate the application of a brake. the vehicle having mechanism for preventing the brake application by engaging the movable ramp if it is in clearing position and counteracting such initiation; if the movable ramp is not in clearing position, the initiation of the brake automatically becomes effective in stopping the vehicle. The present invention is concerned with the vehicle mechanism designed to cooperate with such a track device, this vehicle mechanism being in the nature of an improvement on that shown in said prior application, though the claims of said prior application dominate the present invention.

The invention is hereinafter more fully described and its essential characteristics are set out in the claims.

In the drawing, Figure 1 is a side elevation of my vehicle attachment and one of the track devices with which it coacts; Fig. 2 is a plan of the vehicle attachment; Fig. 3 is an end view thereof, partly sectional; Fig. 4 is a longitudinal, vertical section of the vehicle attachment; Figs. 5 and 6 are similar views with the parts in different positions,—Fig. 4 showing it in normal position, Fig. 5 in resetting position, the resetting mechanism being supposed to be in engagement with the movable ramp, Fig. 6 showing the parts in backward resetting position, the backward resetter being supposed to be in engagement with the stationary ramp; Fig. 7 is a sectional plan of the vehicle device on an enlarged scale; Fig. 8 is an end view of the device.

Referring first to Figs. 1 and 3, 1 indicates the rail of the track, 2 the ties thereof, 3 the stationary brake-applying device or ramp located parallel with the track and supported by projecting ends of ties, and 4 the movable ramp, which consists of two members hinged together, one having a guided free end 5 and the other being rigidly secured on an operating rock shaft 6. The turning of the rock shaft by suitable mechanism (not shown) may raise the ramp into clearing position, shown in Fig. 1. Normally the ramp is down in horizontal position, and thus idle.

Referring to Figs. 1, 3 and 8, 10 indicates the wheels of a vehicle truck, and 11 a longitudinal member of such truck, which is shown as a pressed steel beam mounted on the journal boxes. It is to be understood that this member 11 is of different forms in different trucks. I prefer to mount the mechanism of the present invention (which I call the vehicle mechanism) elastically to save wear on the journal boxes. As shown, I have provided an intermediate spacing casting in a hollow box-like form 13 which is bolted to the truck member 11. Guided between the outer side of this casting and overhanging straps 14, secured to it and extending downward parallel with it, is a plate 15 which is shown as connected with the journal boxes and as elastically carrying the vehicle mechanism. This plate is shown in Fig. 1 as notched at its ends 16 to engage the respective journal boxes 17 of the truck and the straps 14 are secured to the plate 15 by bolt and slot connections, as shown at 18.

The tripping and resetting mechanism in the present invention is carried within a box or casing 20 having an open bottom and mounted on the plate 15. As shown, I have formed on the rear face of the casting 20 pairs of ears 22 and 23 (shown best in Fig. 8). These pairs of ears extend below pairs of ears 24 and 25 projecting from a plate 26 bolted to the plate 15 by bolts 27. A stiff compression spring 28 is placed between each of the ears 25 and 22. This spring is centered by a rod 29 secured to the ear 23 and projecting loosely through the other

ears and through the spring. This construction allows the casing and the parts it carries to play downwardly, if necessary, and puts cushions between it and the journals of the axles, but holds the casing rigidly against upward movement. The ends of the casing 20 are rounded over into top portions 30, and from these depend vertical side walls 32 and 33, and end walls 34 and 35, all spaced from the walls of the casing 20, making an internal rectangular frame. This internal frame has a bottom 36 which has an opening through it for the passage of the tripping lever, to be hereinafter described. Within the internal frame and carried by the rear wall 32 thereof is an air valve. The casing of this valve shows in the drawings at 40; it is secured by bolts 41 to the wall 32. The stem of the valve also shows in the drawings at 43 projecting downwardly from the valve casing. From the top of the casing extends an air pipe 45.

In an indirect air system, such as is usually used on trains, the pipe 45 may be simply a vent pipe from the train pipe, the vent pipe being normally closed by the upwardly held valve stem 43, so that, when this stem is released and the valve dropped, the air is vented, enabling a brake application. For a direct air system, which is usually employed, for example, on interurban electric cars, the dropping of the valve would couple the brake cylinder with the air reservoir. In either case, when the valve is held up, as shown in these drawings, the brake is off, so far as this mechanism is concerned, while, when the valve drops, the conditions become established for a brake application.

The valve is normally held in its normal seated position by a bar 50, which intermediately engages the valve stem and, at one end, has a toe 51 hooking over an ear 52 on a latch arm 53, and, at the other end, is pivoted at 54 to an arm 55. This arm 55 is pivoted at 56, and below this, an arm 57 extends from the hub of the arm 55, the two arms constituting the tripping lever. The latch arm 53 is supported by being pivoted at its upper end at 59 to the resetting lever 60, which is pivoted at 61 and has a downwardly extending arm 62, which is engaged and pulled to the right by the spring. The arm 57 is supported in its down or normal position by having an upwardly inclined end 58 overhanging a flanged ledge 37 carried by a depending portion 38 of the corresponding end wall 34 of the inner casing.

Normally, the parts are as shown in Fig. 4. Now, if the tripping lever 57 rides over one of the stationary ramps 3, it will be raised and thus move the arm 55 to the left, pulling the bar 50 off of the hook 52. The bar then drops into the position shown in Fig. 5, releasing the stem 43 of the air valve, so that there may be a brake application, and there is such application unless other means act to immediately restore the bar 50 to lift the valve stem and reseat the valve.

The resetting lever 60 is operated by a yoke member 70 consisting of arms 73 and 74 connected by an intermediate segmental portion 72 and pivoted on a cross rod 71 carried by the frame. Connecting the segmental portion and the two arms is a web 75. This structure makes an end gate normally preventing anything which may be lodged along the trackway from engaging depending mechanism of the casing, the path of which may coincide therewith. The bottom position of the yoke member 70 is dependent on a pin 76 projecting from the end thereof into a slot 77 in the end wall of the casing 20. The floor 75 of the resetting gate makes a comparatively close connection with a concentrically curved wall 78 of the casing to prevent cinders or dirt working up into the casing at this point.

As soon as the tripping lever 57 has cleared the stationary ramp, the spring 79 restores this lever to its normal position, but the bar 50 will now be down in the position shown in Fig. 5. If the resetting ramp is down in its normal and danger position, then the brake initiated by the dropping of the valve 43 continues and becomes effective. If, however, the movable ramp is up, as shown in Fig. 1, then the sector-shaped end 72 of the member 70 rides upwardly across this ramp and the lug 80, projecting upwardly from the arm 74, engages the roller 81 on an arm 82 connected with the resetting lever 60. This lug 80 shoves upwardly on this roller, which swings the other end of the resetting lever downwardly to bring the latch arm 53 beneath the hooked end 51 of the bar 50. The latch arm is caused to swing into this position by a spring 85 connected to it and to the resetting lever.

The position of the parts as the resetting gate rides over the resetting ramp is shown in Fig. 5. It is seen that, after the lug 80 has depressed the latch bar the desired distance, this lug slides out from under the roller 81 and the curved edge 86 of the lug holds the parts in that position, irrespective of additional raising of the gate 72. This obviates the necessity of accuracy in the amount of raising of this resetting gate by the movable ramp and holds the resetting lever and associated parts in the position shown in Fig. 5 for a short period of time which tends to insure the relatching. When the resetting gate clears the resetting ramp, a spring acting on the arm 62 returns the parts to the normal position shown in Fig. 4, the hook 52 picking up the bar 50 and raising the valve. I provide a retarding latch, hereinafter described, to slightly delay this operation for reasons which will be herein-

after explained. The spring which acts on the arm 62 to return the resetting ramp is shown as a compression spring 90 mounted in a suitable casing 91, which casing is pivoted at 92 to the arm 62. The spring rests between the head end 94 of the casing and a head 95 on an internal rod 96 which is pivotally mounted on a stationary cross rod 97. The head 94 may conveniently be a cap screwing onto the casing.

The parts described are sufficient to provide an effective tripping and resetting mechanism for ordinary conditions. To further insure effective operation at all times, I add the retarding latch referred to which prevents the resetting lever swinging back to normal position instantly when the gate member 70 clears the clearing ramp. Without this it might be possible, if the parts arranged as shown were operated very rapidly, for the latch arm 53 to be depressed and raised before the spring 79 returns the bar 50 into engaging position. In this case, the bar 50 would not be engaged, and there would be undesirable application of the brake.

The retarding latch is best shown in Fig. 4. It comprises a dash pot cylinder 100, which has a plunger 101 connected by a link 102 with a rock arm 103, this arm being rigid on a rock shaft 104, from which projects a rock arm 105 carrying a spring-pressed dog 106 adapted to be engaged by a lug 107 on the latch arm 53. When the latch arm is depressed, the lug 107 slides past the dog 106 (forcing it inwardly against its spring), and the dog returning latches over the lug 107 so that the returning operation of the latch arm is delayed until the plunger 101 can be depressed by the action of the spring 90. This depression is retarded by oil in the cylinder which must pass out through a small opening 110 at the base thereof. When the lug 107 clears the dog 106 a spring (as, for example, the spring 109 in the dash pot cylinder) restores the dog. The dash pot, the arm 103 and the connecting mechanism is shown as mounted in a casing 112, which is adapted to contain oil indicated by 113. In the normal position of the parts this oil is both inside and outside of the dash pot cylinder. Now, when the resetting ramp forces down the latch arm 53, it hooks beneath the dog 106 and the spring 90, pulling the latch arm upwardly, overcomes the spring 109 of the latch. It necessarily does it comparatively slowly on account of the oil, which must be forced out through the small opening 110. When this oil is forced out, the arm 53 clears the dog 106 and the resetting mechanism returns to reset position, as shown in Fig. 4. Fig. 5 shows the parts just before the latch arm 53 rises and engages the dog 106. The casing 112 is preferably locked by a bolt 115 and a lug 116, and prevented from chattering by a spring 117 secured to the top of the casing and bearing against the under side of the main top 39.

When the vehicle is running backward it is desirable not to apply the brake when it passes over the ramp. Accordingly, I supply mechanism adapted to immediately reset the valve when it is operated by the lever 57 on reverse movement. The actuating member of this backing resetter is a yoke arm 120 pivoted on the shaft 71 and extending forwardly from the tripping device and having an end portion 121 in segmental form, making an end gate at the front end. This gate has a bracing web 122, the inner end of which makes a comparatively close connection with a concentrically curved outer face of the casing wall 38. This operating member is normally held in the position shown in Fig. 4 by a pin 125 projecting from it to a slot 126 in the end wall of the casing 20. Extending upwardly from the arm 120 described is a lug 130 which stands beneath and normally engages a roller 131 on a rock arm 132. This rock arm is connected with a rock shaft 133, which is journaled in a boss 134 carried by the end wall 34. From this rock shaft extends an arm 135 having a hooked end adapted to overhang the hook 136 of the arm 53.

When the tripping lever 57 acts to withdraw the bar 50, the latter assumes the position shown in Fig. 6, while the latch arm 53 comes into the position shown in dotted lines in that view. That is to say, as soon as the latch arm is freed from the arm 50 it swings upwardly slightly by reason of the tension on the spring 90, and thereupon a lug 140 projecting upwardly from the arm at the left hand side of the pivot thereof engages the top 39 of the casing and swings the arm positively into the position shown in dotted lines. In this position, the arm is beneath the hooked end of the lever 135, so that, as the gate 121 engages the stationary ramp, immediately following the engagement of the tripping lever, the lug 130 thereof shoving upwardly on the roller 131 depresses the arm 135 to bring downwardly the latch arm 53. In such downward movement, the spring 85 withdraws the latch arm 53 from the arm 135, this movement being insured by the angle of the upper face of the hook 136. As soon as the arm 53 clears this hook the continued movement of the arm 135 causes its rounded end to engage and positively shove the arm 53 to the left so that the hook 52 is passed beneath the hook 51 of the bar 50. Then, as the gate 121 clears the stationary ramp and drops back to normal position, the spring 90 restores the resetting arm and lifts the bar 50 and the valve to normal position. Accordingly, the valve is restored before the brake initia-

tion becomes effective, and thus, there is no brake application on rearward movement of the vehicle.

To prevent the necessity of accurately sustaining the backward resetter with reference to the stationary ramp, I make the lug 130 act on the roller 131 similarly to the lug of the resetting arm 70 heretofore described. That is to say, the lug 130 is curved concentrically about the pivot, and, after the gate has raised the roller 131 the desired amount, the lug slides out from under the roller, and the curved edge thereof continues the parts in the same position, irrespective of additional raising of the gate.

On the forward running of the vehicle, the gate 121 engages the stationary ramp and raises the lug 130, the same as on backward movement, but, in this case, the latch arm 53 is in the position shown in Fig. 5 when the arm 135 comes down, so that the movement of that arm clears the hook 136, and thus the movement is entirely idle. A spring 137 engaging the lever 132 and the wall 34 returns the lever 135 to normal position. For the forward movement therefor the arm 120 acts simply as a gate, preventing any obstruction engaging the releasing arm 57.

To complete the protection from obstruction on the trackway which might accidentally be engaged by depending vehicle members, I provide two other gates alongside of the two gates heretofore described. These additional gates are idle so far as operating anything is concerned and simply are protective. One of these gates is shown at 150. It has arms 151 and 153 pivoted on the shaft 71; it has a segmental end and a bottom web 152 coacting with the curved wall 154 of the casing end 34, being thus similar to the gate 70. 157 indicates a corresponding protecting gate at the opposite end of the device located alongside of the gate 121.

As heretofore stated, the tripping, resetting and operating mechanism generally is contained within the inner box of the casing. The box is normally closed at the top by the cover 39 and the only admissions to it are the openings through which the various levers project. The lever 135 extends through the end of this box, but the clearance necessary for its movement is small, as it is pivoted adjacent the wall 34. Moreover, the space opposite the ends of the box is protected by the end gates. Where the trip lever passes through the bottom of the box I prefer to provide devices to prevent cinders or dirt passing up into the box. Such devices consist of a pair of plates 160 and 161 secured to the bottom 36 and extending into notches 163 in the hub of the lever. The bottom 36 is shown as arching up at 165 over the through rod 71. Thus, a substantially closed bottom is provided for the inner box.

In operation, the various parts are, as above explained, thoroughly protected from dirt and dust and are protected from injury by obstructions along the trackway. At the same time, the parts are readily accessible for inspection, cleaning, etc. The removal of the top plate 39 allows access to the valve its casing, and the valve holding and operating parts. When this cover is removed, the removal of the pin 115 of the retarding latch allows the casing 112 of that latch to be removed as a unit, and the removal of the cover portion of this casing from the body thereof allows access to the interior of this latch. This cover is preferably removable on a plane passing through the axis of the shaft 104, so that, when the cover is removed, all the mechanism of the latch is free. The cover may be held to the body 112 by suitable screws, not shown.

Having thus described my invention, what I claim is:

1. In a device of the character described, the combination of a valve, a bar for holding it, a pivoted tripping lever connected with said bar, a latch arm connectible with said bar, and a resetting arm connected with the latch arm, and adapted to be engaged by means along the trackway.

2. The combination of a valve, a tripping lever, a bar pivoted to the lever, at one side of the valve stem, a valve stem bearing against the bar intermediately, a latch lever adapted to engage the bar on the other side of the valve stem, and an automatic resetting arm connected with the latch arm, and adapted to be operated by means along the trackway.

3. The combination of a tripping lever, a bar pivoted thereto, a pivoted resetting arm, a latch arm carried by the free end of the resetting arm and having a hook adapted to engage the bar, a valve, the stem of which bears against the bar intermediately, and means adapted to be engaged and operated by a track device for moving the resetting arm to move the valve.

4. The combination of a casing, an intermediately pivoted lever mounted therein, a bar pivoted at one end to the lever, a resetting lever pivoted within the casing, a latch arm pivoted at the free end of the resetting lever and adapted to engage the other end of the bar, and a valve adapted to be held seated by the bar, and an operating device adapted to engage a projection on the trackway and operate said resetting lever.

5. The combination, with a valve, of a bar for holding it seated, a pivoted lever, a hook on the end of the lever adapted to catch and engage the bar, a spring acting on the lever to hold the valve seated, and means adapted to be engaged and operated by a projection

on the trackway for moving the lever in the opposite direction.

6. The combination of a valve, a bar with which the stem of the valve engages, a movable support for one end of the bar, an arm for engaging or latching or releasing the other end of the bar, an arm to which the latch arm is pivoted, and means for moving the last mentioned arm.

7. The combination of a valve, a bar with which the stem of the valve engages, a movable support for one end of the bar, an arm for engaging or latching or releasing the other end of the bar, an arm to which the latch arm is pivoted, a spring acting on the last mentioned arm and tending to maintain the valve seated, an arm projecting from said last mentioned arm, and means for engaging and moving said projecting arm.

8. The combination of a lever, a bar pivoted thereto, a valve bearing intermediately against the bar, a latch arm adapted to engage the free end of the bar, a resetting arm to which the latch arm is pivoted, two rock arms connected with the resetting arm, a spring connected to one of said rock arms, and an operating member adapted to bear against the other rock arm.

9. The combination of a valve, a bar for holding it seated, a tripping lever connected with one end of the bar, a latch arm for holding the other end, a resetting lever supporting the latch arm, and an operating lever out of alinement with the tripping lever and adapted to operate the resetting arm.

10. The combination of a tripping lever, a bar pivoted thereto, a latch arm coacting with the free end of the bar, a valve bearing intermediately against the bar, a resetting lever to which the latch arm is pivoted, a spring tending to swing the latch arm in the direction of the bar, and a spring tending to swing the resetting lever in a direction to seat the bar.

11. The combination of a valve, a bar adapted to hold the valve seated, a tripping lever to which the bar is connected, a resetting lever, latching mechanism adapted to connect the resetting lever with the bar, and means for retarding the resetting movement.

12. The combination of a pivoted tripping lever, a bar pivoted thereto, a resetting arm, a latch arm carried thereby and adapted to engage the bar, a valve adapted to be held seated by said bar, and a time latch adapted to retard the movement of the latch arm in resetting direction.

13. The combination, with a valve, of a bar for holding it seated, a tripping lever connected with said bar, a resetting arm connected with the latch arm, a retarding latch consisting of a dash pot and lever mechanism, which latter is adapted to coact with the resetting mechanism.

14. The combination of a valve, mechanism for seating the same including a resetting arm, a latch arm connected with the free end of the resetting arm, a bar normally held by the latch arm, a dash pot, a movable arm connected therewith and retarded by it, means for withdrawing the bar from the latch arm, and means for thereafter moving the resetting arm to engage the bar and the resetting mechanism to engage the dash pot arm.

15. The combination, with a valve, of means for normally holding it seated, means for releasing it when desired and means for resetting it when released, of a retarding latch adapted to delay the resetting, said latch comprising a casing containing a dash pot cylinder, a plunger in the cylinder, lever mechanism connected with the plunger and extending outside of the casing, said casing with the dash pot parts described being removable as a unit.

16. The combination of a valve, a bar for holding it seated, a resetting arm, a latch arm carried thereby and adapted to engage the bar, means for withdrawing the bar from the latch arm, a normally idle device for forcing the arm into position to engage the bar after being released, and means whereby the release of the bar causes the latch arm to swing into position for engagement by said device.

17. The combination of a valve, a bar for holding it seated, a tripping lever to which the bar is pivoted, a resetting lever, a latch arm carried thereby and adapted to hook across the bar, a second hook carried by the latch arm, a lever, and means for moving the second hook into the path of the last mentioned lever.

18. The combination with ramps along a trackway, of mechanism on a vehicle comprising a valve, a tripping lever, a bar pivoted to the lever, a latch hook for the opposite end of the bar, the valve engaging the bar intermediately, a resetting arm connected with the latch hook, a movable member alined with the resetting arm and adapted to engage the same ramp it engages, and mechanism operated by said member for engaging the latch arm and resetting the device.

19. The combination of a valve, a tripping lever, a resetting lever, a latch arm connected with the resetting lever, a bar connected with the tripping lever and adapted to be engaged by the latch arm or released therefrom when the tripping lever is moved, an arm out of alinement with the tripping lever and adapted to operate the resetting lever to cause the latch arm to reëngage the bar, an arm in alinement with the tripping lever, and mechanism operated by the last mentioned arm to engage the released latch arm and restore it.

20. In a device of the character described,

the combination of an external casing, an internal casing spaced from the external casing, a valve tripping mechanism and a resetting mechanism contained within the internal casing, said tripping and resetting mechanism projecting outwardly through openings in the internal casing, and projecting gates operating in the space between the internal and external casing.

21. In a device of the character described, the combination of an external casing, an internal casing spaced from the external casing, a valve tripping mechanism and a resetting mechanism contained within the internal casing, said tripping and resetting mechanism projecting outwardly through openings in the internal casing, and two pairs of projecting gates at the front and rear ends of the main casing respectively and operating within said casing and outside of the internal casing.

22. In a device of the character described, the combination of an external casing, an internal casing spaced from the external casing, a valve tripping mechanism and a resetting mechanism contained within the internal casing, said tripping and resetting mechanism projecting outwardly through openings in the internal casing, and projecting gates at opposite ends of the device operating in the spaces between the casings, said gates having arms mounted on a cross rod carried by the external casing and projecting beneath the internal casing.

23. The combination, with valve opening and resetting mechanism, of a casing containing the same, a plate connected with a vehicle truck, and a spring connection between the casing and plate allowing the casing to descend elastically but positively limiting its upward movement.

24. The combination, with a vehicle truck, of a plate connected with the journal boxes, and slidably connected with the truck, of a valve, tripping and resetting mechanism therefor, a casing carrying such parts, and an elastic connection between the same and said plate.

25. The combination, with a vehicle truck, of a plate connected with the journal boxes thereof, slidable guides between said plate and the truck, a pair of ears projecting from the plate, a casing, a pair of ears projecting from it, a rod slidably connecting the ears mentioned, a spring surrounding said rod, an air valve, and tripping and resetting mechanism carried by the casing.

26. The combination, with an air valve on a vehicle, of means for holding the valve closed, means for releasing the holding means, a device operable from the trackway independently of the releasing means for resetting the holding means, and a device acting on said last named means providing a time interval after the releasing and before all of the parts resume their normal position.

27. The combination, with an air valve on a vehicle, of means for holding the valve closed, means for latching the holding means, means for releasing the latch allowing the valve to open, trackway-controllable means for automatically resetting the holding means, and means for retarding the relatching.

28. The combination, with an air valve on a vehicle, of latching means holding the valve closed, means for releasing the latch to open the valve, a device operable from the trackway independently of the releasing means for closing the valve, and a retarding device acting on the closing means to provide a time interval insuring the operation of the latch.

29. The combination, with means on a moving vehicle for applying a brake, of means on the vehicle for preventing such application becoming effective, and means for retarding for a time interval the action of the preventing means.

30. The combination, with an air valve on a vehicle, of means for opening the valve, means for closing the valve, a movable device on the trackway adapted to operate the closing means after the valve has opened or leave the valve open according to the position of said device, and a retarding device acting on the closing means to provide a time interval before the valve is closed.

31. The combination, with a valve, of a means for holding it seated, a tripping lever connected with said means and operable from the trackway, a resetting lever, mechanism operated thereby for reseating the valve, means connected with the reseating mechanism for retarding the reseating action, and means on the trackway for operating the resetting lever independently of the tripping lever.

32. In a device of the character described, the combination of a valve, means for holding it normally seated, means for releasing it, and means for resetting it when released comprising a resetting lever, means along the trackway for operating said lever, a cam on said lever for operating the resetting means, said cam being so shaped that the first part of the movement moves the resetting means and the remaining portion provides a rest, preventing instantaneous return of the resetting mechanism.

33. In a device of the character described, the combination with a valve, of a bar for holding it seated, a tripping lever connected with said bar, resetting mechanism including a means for engaging the bar, means for drawing the same toward the valve, a second operating lever for the resetting means, a cam on said lever adapted when the lever

is moved upwardly to move the resetting means into engagement with said bar on the first part of the movement of the lever while preventing the return movement thereof until the lever returns substantially to its normal position.

34. In a device of the character described, the combination of a valve, a bar for holding it seated, a latch for engaging one end of said bar, a tripping lever attached to the other end, means for moving the latch to engage the bar when the valve is unseated, and a resetting mechanism including a cam thereon for actuating said means, said cam being so shaped that the first part of its movement brings the latch into position to engage the bar and thereafter prevents the return movement of the latch until the lever returns nearly to normal position.

35. The combination with a valve, of means for holding it seated and a latch cooperating with said means, means for releasing the valve, means for moving the latch to reseat the valve, an operating lever therefor having a cam, a roller on the latch moving means coöperating with said cam, said cam having an arcuate surface struck about the pivot of the lever as a center whereby when the lever is moved toward said roller, the part of the movement moves said latch and the remaining portion acts as a rest preventing the return of the latch until said lever returns nearly to its normal position.

36. In a device of the character described, the combination of a valve, a bar holding the valve seated, a latch engaging one end of the bar and a latch attached to the other end drawing the lever out of engagement with the latch, a lever for moving said latch downwardly to reëngage the bar, and means tending to return the lever, an operating lever having a cam mounted thereon with an operating surface adapted to coöperate with the lever moving the latch, the first part of the movement of the cam acting to move the latch downwardly while the remaining portion of the cam prevents the return thereof until its lever returns nearly to normal position.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

ELMER M. JONES.

Witnesses:
ALBERT H. BATES,
JUSTIN W. MACKLIN.