S. NYDAM.

AUTOMATIC TRAIN CONTROL.

APPLICATION FILED MAR. 10, 1909.

949,775.

Patented Feb. 22, 1910.

2 SHEETS—SHEET 1.

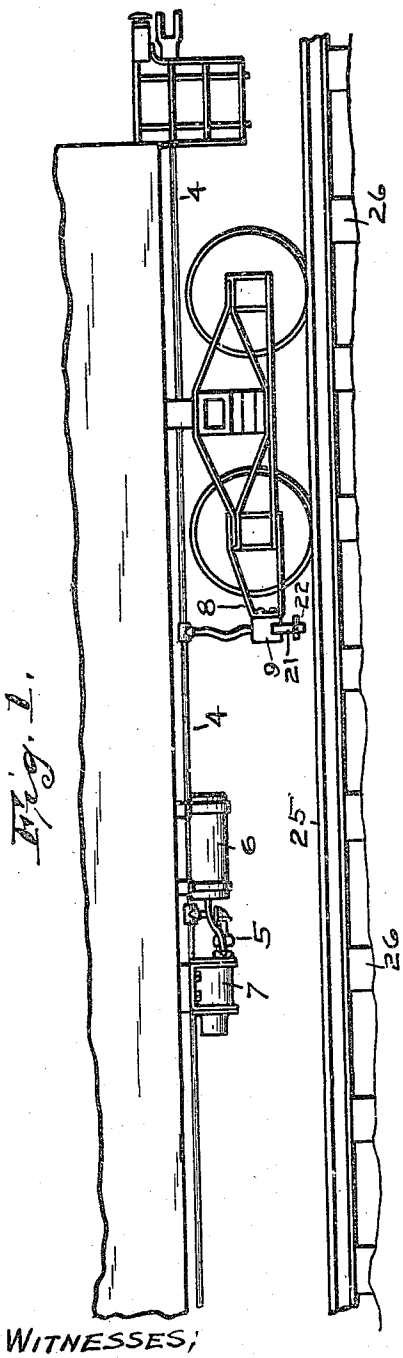

Fig. 1.

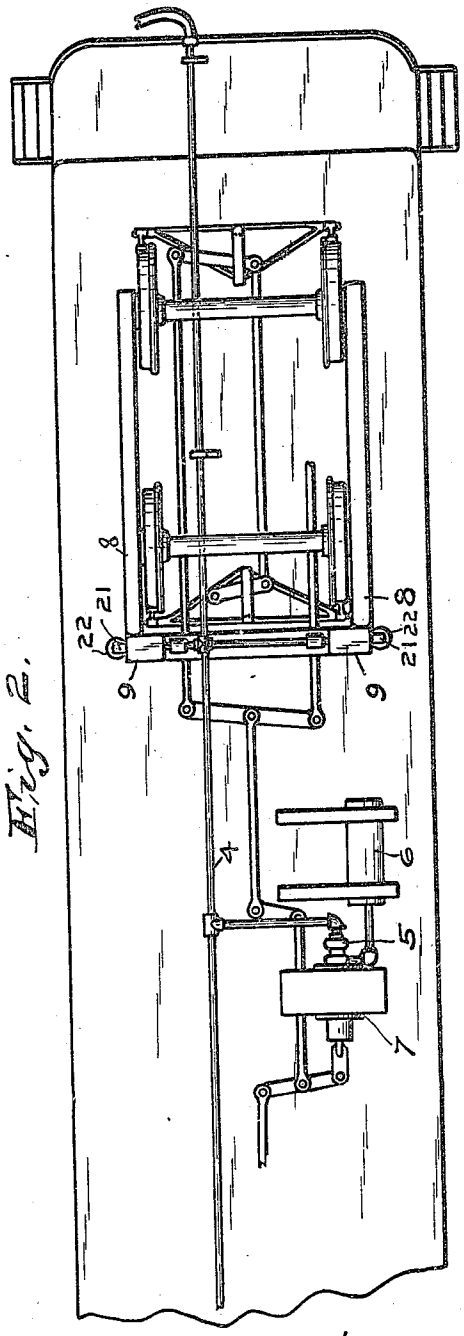

Fig. 2.

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Fig. 3.

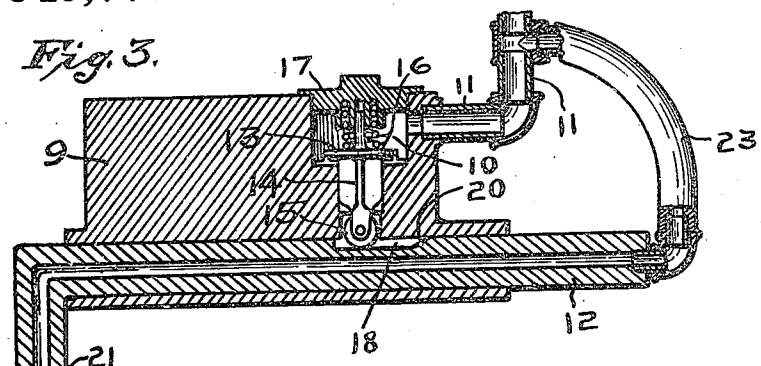


Fig. 4.

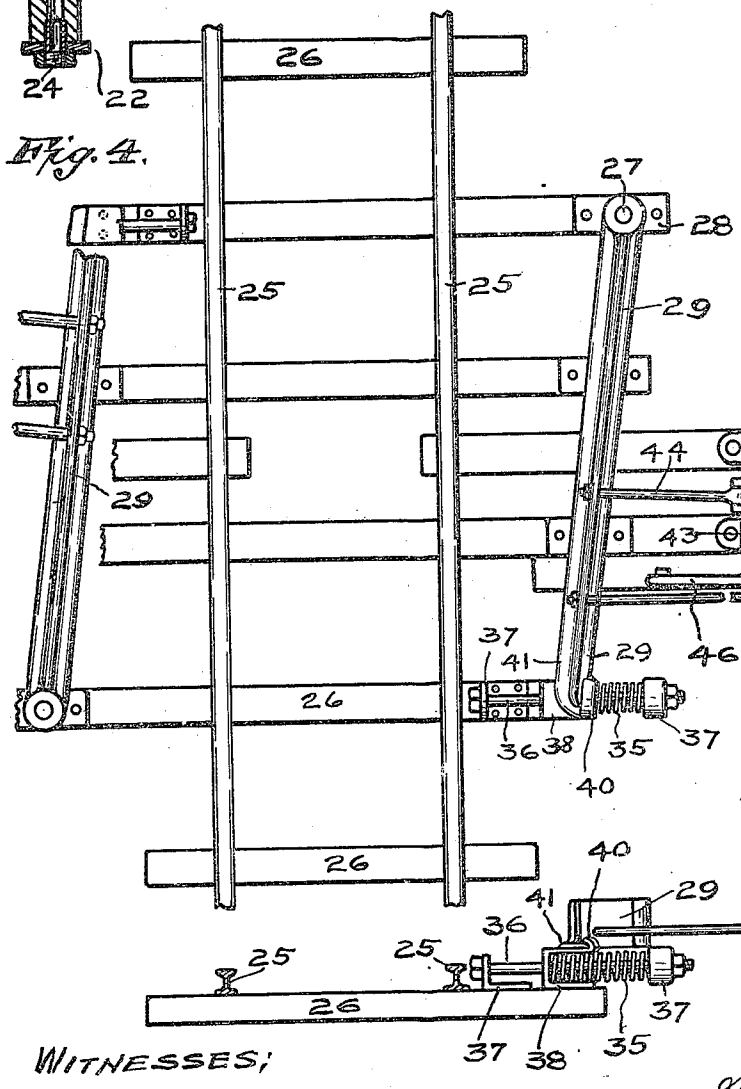
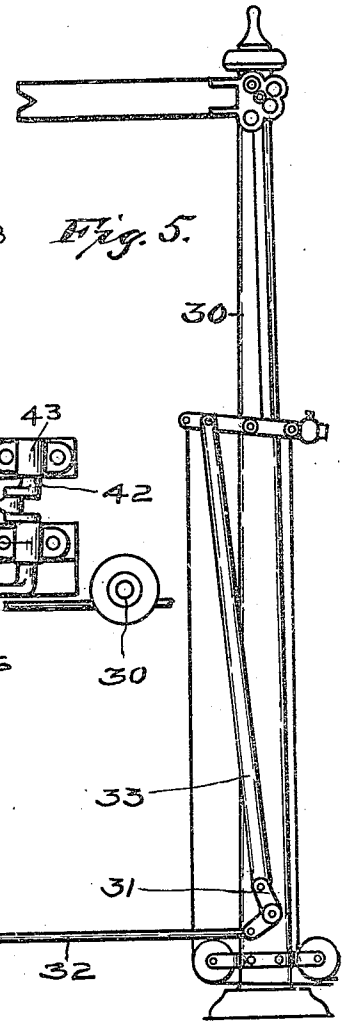


Fig. 5.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC TRAIN CONTROL.

949,775. Specification of Letters Patent. Patented Feb. 22, 1910.

Application filed March 10, 1909. Serial No. 482,592.

To all whom it may concern:

Be it known that I, SIBBLE NYDAM, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Automatic Train Control, of which the following is a specification.

This invention relates to improvements in automatic train control, and the object is to automatically stop a train regardless of the care and attention of the engineer, by automatically applying the brake should the engineer disregard the signal at danger position.

I accomplish the objects of the invention by the mechanism illustrated in the accompanying drawings in which—

Figure 1 is a detail in side elevation of an engine-tender equipped with my invention. Fig. 2 an under side plan view of same. Fig. 3 a detail in vertical section of the trip casting and valve mechanism for reducing the pressure in the train pipe. Fig. 4 a detail in top plan view of a railway track provided with my improved mechanism for automatically operating the train pipe valve shown in Fig. 3, and Fig. 5 is a view in vertical section of the track shown in Fig. 4 showing the valve operating mechanism and signal mast in elevation.

Like numerals of reference indicate like parts throughout the several views of the drawings.

I have here shown my invention in connection with a brake system comprising a train pipe 4, triple valve 5, auxiliary reservoirs 6 and brake cylinder 7, all of usual construction, the brakes on the cars being set by reducing the pressure in the train pipe 4 in the manner as will be well understood by those skilled in the art to which this invention relates.

Attached to the bracket 8 of one of the trucks is a trip-casting 9 having a chamber 10 which is connected through pipe 11 and hose 12 with the train pipe 4. The trip-casting 9 is provided with a horizontal slide bar 12 and the bottom of the chamber 10 has an exhaust port which is closed and opened by a wing valve 13, the stem 14 of which valve is provided with a roller 15. The valve is normally seated by the spring 16. The chamber 10 has a removable cap 17 with a socket in its inner wall in which the spring 16 is seated and the spring 16 by bearing against the cover 17 and valve 13 thus forces the valve normally against its seat closing the exhaust port. An upper extension of the valve stem 14 enters a socket in the cap 17 and the valve is thereby guided in its movements.

The slide bar 12 is provided with a longitudinal groove 18 under the valve stem 14 and the roller 15 on said stem extends into the groove 18 but does not make rolling contact with the bottom of the groove. An end 20 of groove 18 is made oblique whereby, when the bar 12 is moved far enough longitudinally to bring the oblique end of the groove in contact with the roller 15 it will cause the roller to move upwardly thereby opening the valve 13. The opening of the valve 13 exhausts the air from the train pipe 4 causing the brakes of the car or cars to be set in the well known manner.

An end of the slide bar 12 will be bent down as shown at 21 to contact with a plate or bar located at a part of the railway track where an engineer of passing trains is required to stop his train or run it at a lower speed. This will generally be attended to by the engineer in obedience to semaphore signals, but as these are frequently disregarded through neglect or accident, my invention insures safety by automatically performing the engineer's duties in this regard. The lower end of the vertical extension 21 of slide bar 12 is provided with a friction wheel 22 to contact with the track-bar which moves the slide bar 12.

The slide bar 12 and its extension 21 are hollow, as shown in Fig. 3, and one end of the opening communicates through a flexible hose 23 with pipe 11 leading to the train pipe 4 whereby the hollow interior of bar 12 and its extension 21 are in constant communication with the interior of the said train pipe. The lower end of the extension 21 is normally closed by a plug 24, but in case of the breaking off of the extension 21 by the repeated striking contacts of the latter with the track-bar which moves it, the failure of the valve 13 to open due to

such accident is compensated for by the escape of air from the train pipe through the hollow slide bar 12 and extension 21.

I will now describe the track mechanism for moving the slide bar 20 of a passing car, or rather tender, as the mechanism thus far described will generally be installed on the engine-tender, although I do not desire to limit its application to the tender. Referring to Figs. 4 and 5, 25 represents the rails of usual construction of a railway track which is supported upon the cross ties 26 and pivoted at 27 to a plate 28 on an extended end of a tie 26 is a track-bar 29. The track-bar 29 is adapted to swing in a horizontal plane on the pivot 27 and is supported by suitable bearings on the extended ends of ties 26. Suitably located at the side of the railway track adjacent the track bar 29 is a mast 30 on which semaphore signals are displayed in the usual manner. The mast 30 supports a bell crank lever 31 which is moved through its connecting bar 33 by the usual mechanism for controlling the signals. The opposite arm of lever 31 is connected by rod 32 with the track bar 29 whereby said track-bar will be swung by the action of rod 32 toward the mast 30 by a suitable movement of the bell crank lever 31 but will release and not move the track-bar in the opposite direction. The movement of the track-bar in the opposite direction will be accomplished by means of a spring 35. The spring 35 is wrapped around a bolt 36 which passes through an angle plate 37 bolted to one of the ties 26. This bolt passes through a plate 38 which is U-shaped in cross section, and upon the upper member or stem of which the end of track bar 29 rests. This upper member or stem of the U-shaped plate 38 terminates with a hook 40 which engages a flange 41 on the bottom of the track bar 29. The bolt 36 has a large washer or head 37 at its outer end and the spring 35 is placed between the head 37 and the vertical member of the U-shaped plate 38 whereby the force of the spring is exerted to force the plate 38 constantly away from the head 37. The operation of the bell crank lever 31 on mast 30 in one direction will draw the track-bar 29 toward the mast compressing spring 35 but upon the reverse movement of lever 31 the track-bar 29 will be released and thereupon the spring 35 will return it to a normal position, which normal position presents it oblique to the rails 25 of the track in the manner clearly shown in Fig. 4. When the semaphore signal stands at danger as shown in the drawing, the track bar 29 should be oblique to the adjacent rail of the track. The signal means that the approaching train should slow down or stop and should the engineer disobey the signal, the friction wheel 22 on extension 21 of slide bar 12 carried by the train, will contact with the oblique track bar 29 causing the slide bar 12 to move thereby opening the valve 13 and reducing the air in the train pipe which will set the brakes and automatically stop the train.

When the semaphore signal shows at clearance the free end of the track bar 29 will have been drawn by rod 32 toward the mast 30 making the bar 29 parallel with its adjacent rail 25 of the track and in this position the extension 21 carried by the train will pass between the bar 29 and rail 25 without contact and the brakes will therefore not be set. A train going in the opposite direction from that above described will not have its brake mechanism influenced in any manner by my invention. Instead of the slide bar 12 being moved by contact of friction wheels 22 of extension 21 with the track bar 29, the contact of extension 21 with the trip casting 9 will prevent movement of slide bar 12 and as a result the free end of track bar 29 will swing outwardly allowing the extension 21 to pass without influencing the brakes of the train.

Where a double block system is used, the mechanism will be reproduced in a reverse order on the opposite side of the track and the bracket on the opposite side of the truck will be provided with a trip casting slide bar and requisite mechanism such as has already been described.

In permission blocking as where two freight trains are permitted to be in the same block at the same time, the speed of the train will be reduced to five miles per hour or less which will permit a brakeman or fireman to alight and run forward and operate the following special mechanism which I provide for this contingency. At a suitable distance outside of the track-bar 29 I mount a rock shaft 42 in suitable journals 43 supported on ties and having a crank which is connected by rod 44 with the track bar 29 in the same manner as the rod 32 is connected with said track bar. The end of the rock shaft 42 has the hand lever 46 by which the rock shaft is rocked by a throw of said lever. This lever 46 may be and preferably will be kept locked in the usual way to prevent tampering therewith by unauthorized persons.

By the above described mechanism, when the train is slowed down and a trainman goes forward, he will unlock the lever 46 and throw the lever out so as to rock the shaft 42 thereby swinging the track bar 29 into parallel position with rail 25 permitting the train to pass without interference whereupon the lever 46 is returned to its first position and locked. This is done without changing the semaphore signal.

I have here shown and described what I regard as the most approved construction

of my device but it is obvious that the parts may be variously formed without departing from the spirit of my invention and I therefore do not desire to limit myself to the exact form shown, but

What I claim as new and wish to secure by Letters Patent, is—

1. The combination with a car and an air brake system on said car including a train-pipe as a part of said system, of an extension from said train-pipe having a discharge to atmosphere, a valve controlling said discharge having a stem, means to normally close the valve, a bar having an oblique surface to contact with the stem and open the valve, said bar having an extended portion, said bar and its extension being hollow and in constant communication with the interior of said train-pipe, and means located alongside the track for moving said bar longitudinally as the train passes.

2. The combination with a car and an air-brake system on said car including a train-pipe, of an extension from said train-pipe having a discharge to atmosphere, a valve controlling said discharge having a stem, a bar having an incline adapted by the travel of the bar to contact with the stem and open the valve, said bar having a downwardly extended portion, said bar and its extension being hollow and in constant communication with the interior of said train-pipe, and a bar located in an oblique position alongside the track in the path of said downwardly extended portion of said first bar to impart travel to said first bar.

3. The combination with an air brake system, of a train pipe, means carried by the train for reducing the air pressure in said pipe, a bar capable of an oblique position located alongside the track for operating said first means as the train passes when the bar is in an oblique position, a semaphore apparatus, and means operated by the setting of the semaphore for placing said bar alongside the track in oblique position to operate said means carried by the train.

4. In an air-brake system for cars, a train-pipe, an extension therefrom having an exhaust valve, an exhaust valve, a car to which said apparatus is applied, means carried by the car for controlling the valve, said means being hollow and in constant communication with the interior of said train-pipe whereby the air will escape by the breaking of said valve controlling means, means located alongside the track for operating said valve controlling means as the car passes, a semaphore apparatus located alongside the track, and means operated by the setting of said semaphore for rendering the other means alongside the track operative or inoperative.

5. In an air-brake system for cars, a train-pipe, an extension therefrom having an exhaust valve, an exhaust valve, a car to which said apparatus is applied, means carried by the car for controlling the valve, said means being hollow and in constant communication with the interior of said train-pipe whereby the air will escape by the breaking of said valve controlling means, means located alongside the track for operating said valve controlling means as the car passes, a semaphore apparatus located alongside the track, means operated by the setting of said semaphore for rendering the other means alongside the track operative or inoperative, and means independent of said semaphore means for rendering said other means alongside the track inoperative.

6. The combination with a car and an air-brake system on said car including a train-pipe of an extension from said train-pipe having a discharge to atmosphere, a valve controlling said discharge having a stem, a bar having an incline adapted by the travel of the bar to contact with the stem and open the valve, said bar having a downwardly extended portion, and a bar located in an oblique position alongside the track in the path of said downwardly extended portion of said first bar to impart travel to said first bar.

7. The combination with a car and an air-brake system on said car including a train-pipe as a part of said system, of an extension from said train-pipe having a discharge to atmosphere, a valve controlling said discharge having a stem, means to normally close the valve, a bar having an oblique surface to contact with the stem and open the valve said bar having an extended portion, a second bar pivoted at one end alongside the track whereby it may be placed in an oblique position, said bar when in oblique position being in the path of said extension of the bar carried by the car, a semaphore signal alongside the track and means operated by the setting of the semaphore for simultaneously changing the position of said pivoted bar.

8. A car having an air-brake system with a discharge to atmosphere, a valve controlling said discharge, a horizontal bar pivoted at one end alongside the track adapted to contact with said valve controlling means as the car passes, a semaphore device, means operated by the setting of said semaphore device for rendering said bar alongside the track operative, a rock shaft having an operating lever and a crank and a rod connecting the crank with said horizontal bar and forming a means for rendering said bar inoperative without changing the semaphore signal.

9. A car having an air-brake system with a discharge to atmosphere, a valve controlling said discharge, a horizontal bar pivoted at one end alongside the track, a spring pressing said bar to an oblique position to

contact with said valve controlling means as the car passes, a semaphore device, means operated by the setting of said semaphore device for rendering the spring operative on said bar alongside the track.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, this 25th day of Feby., A. D. one thousand nine hundred and nine.

SIBBLE NYDAM. [L. S.]

Witnesses:
J. A. MINTURN,
I. W. WOERNER.