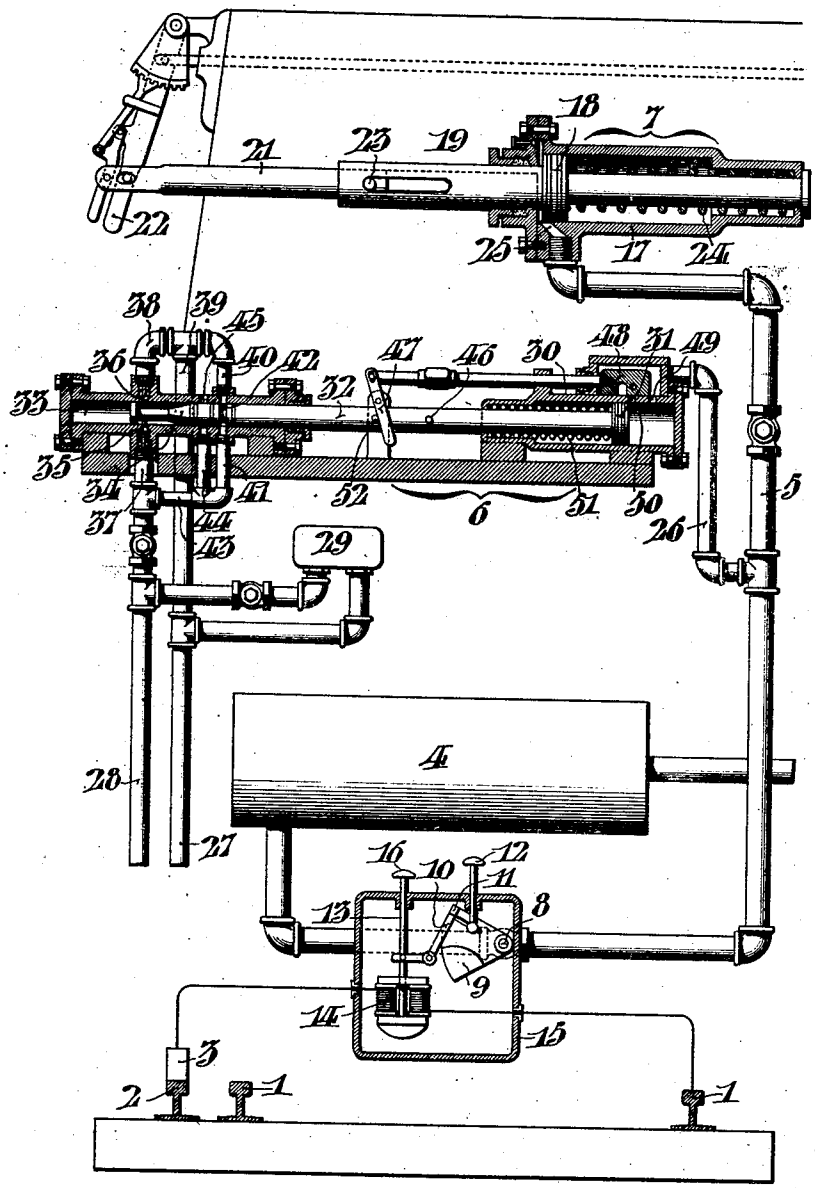
J. M. KRAMLICH.

STOPPING DEVICE FOR TRAINS.

APPLICATION FILED OCT. 29, 1910.

1,055,762.

Patented Mar. 11, 1913.



Witnesses

John C. Bergner

James H. Bell

Inventor

John M. Kramlich,

by Riley & Paul,

Attorneys

UNITED STATES PATENT OFFICE.

JOHN MORRIS KRAMLICH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO JAY VICTOR HUGO KULP, OF PHILADELPHIA, PENNSYLVANIA.

STOPPING DEVICE FOR TRAINS.

1,055,762. Specification of Letters Patent. Patented Mar. 11, 1913.

Application filed October 29, 1910. Serial No. 589,701.

To all whom it may concern:

Be it known that I, JOHN MORRIS KRAMLICH, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Stopping Devices for Trains, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to new and useful improvements in stopping devices for trains, wherein the throttle and train pipe are automatically controlled by the signal system for the trains.

An object of the invention is to provide a controlling device for a stop mechanism of the above character, which controlling device is electrically operated by the usual third rail of the signal system.

A further object of the invention is to provide an independently operated valve mechanism controlling the train pipe which in turn is controlled and operated electrically by the third rail of the signal system.

A further object of my invention is to provide a brake system whereby the brakes are automatically and intermittently applied and thereby gradually bring the train to a stop, thus obviating the shock of the sudden stopping of the train as in prior devices of this kind.

These and other objects will in part be obvious, and will in part be hereinafter more fully described.

The figure of the drawing is a view partly in vertical section and partly diagrammatic of the details of my improved stopping mechanism.

My improved stopping device in the present embodiment of the invention, is operated by means of a third rail system and is subject to the control of the ordinary lock signal to which it is electrically connected. The third rail in each block in a system of this character is constantly charged except when the signal is set at danger position, at which time the circuit is automatically opened by means of the well known relays connected thereto.

In the drawings, I have shown diagrammatically the road bed which includes the ordinary rails 1, 1, and the third rail 2, of the signal system above referred to. A shoe 3, is carried by the locomotive and is maintained in constant contact with the third rail 2.

The valve mechanism both for the throttle and the train pipe are operated from a reservoir 4, which is supplied with compressed air directly from the pump which supplies the train system.

A pipe 5, leads from the reservoir 4, to the valve mechanism 6, controlling the train pipe and also to the valve operating mechanism 7, controlling the throttle. Located in the pipe 5, is a valve 8, which, when closed, shuts off the supply of compressed air through the pipe 5, from the reservoir 4. The weighted sector 9, is rigidly connected to the valve 8. A tripping lever 10, engages a lug 11, on the weighted sector 9, and normally holds said weighted sector raised and the valve closed. A reset knob 12, is provided for raising the weighted sector, after the same has been released, to restore it to normal position. The trip lever 10, is operated by a weighted stem 13, which is normally held raised by the magnets 14, the windings of which are connected in circuit with the shoe 3, and one of the rails of the road bed. The weighted stem 13, is guided in a bearing formed in the wall of the housing or casing 15, which surrounds the magnets and the mechanism for operating the valve 8. When the magnets 14, are energized, the weighted end of the stem 13, serves as an armature for the magnets and said armature is held in raised position with the tripping lever 10, in engagement with the lug 11, which in turn holds the valve 8, closed.

The stem 13, is provided with a knob 16, on its upper end, by means of which the weighted stem 13, may be raised after the valve operating sector is raised, so as to lock the valve in closed position. If the signal system is set with the danger signal in position, then the third rail 2, is automatically cut out of the circuit and when the shoe 3, contacts with the section of the third rail which is dead, then the magnets become deënergized and the weighted stem 13, will drop, moving the tripping lever so as to release the weighted sector which in turn will drop and open the valve 8. The parts will remain in this position until manually reset.

When the valve 8, is open, the compressed

air from the reservoir 4, will pass through the pipe 5, which leads to the valve operating mechanism 7, controlling the throttle. The valve operating mechanism 7, consists of a cylinder 17, having a piston 18, sliding therein, which is attached to a sleeve 19, formed with a slot 20, extending longitudinally thereof. A link 21, is connected to the throttle lever 22, and slides in the sleeve 19. A pin 23, limits the movement of the sliding connection between the sleeve 19, and the link 21. A spring 24, normally forces the piston 18, to the left hand end of the cylinder 17. An air port 25, extends from the pipe 5, into the cylinder 17, and when the valve 8, is open, the piston 18, will be forced toward the opposite end of the cylinder 7, and the throttle will be closed. It will be noted that it would be absolutely impossible to open the throttle without the resetting of the valve 8, and the relieving of the air pressure from the piston 18.

The pipe 5, also supplies by means of a by-pass 26, the valve mechanism 6, for automatically controlling the brakes. The supply pipe 27, extends from the compressed air reservoir not shown in the drawings, and the pipe 28, leads to the train line. The usual manually controlled valve 29, is provided for controlling the train system.

The valve 6, consists of a cylinder 30, in which reciprocates a piston 31, connected to a piston rod 32. The outer end of the piston rod 32, operates in a second cylinder 33, and is provided with a tapered portion 34, which controls valves 35, and 36, in the pipes 37, and 38, respectively. The pipe 37, is connected with the pipe 28, which in turn leads to the train line while the pipe 38, is supplied from the air brake tank through the main 39, which also supplies a pipe 40, which terminates in the cylinder 33, and is normally in communication with a pipe 41, through a groove 42, in the piston rod 32. The pipe 41, leads through a cross connection 43, to the train pipe 28. By means of the groove 42, in the piston rod 32, air is supplied to the brake system. When the piston rod 32, moves to the left as viewed in the drawing by means of the air pressure from the reservoir 4, being admitted to the cylinder 30, the supply from the pipe 40, is cut off and when the groove 42, reaches the pipe 44, a certain amount of air is permitted to escape from the brake system, through the port 45, in the cylinder 33. The resulting decrease in the pressure causes the brakes to be applied. Further movement to the left of the piston rod 32, cuts off the escape of air from the train line through the port 45, and the brakes remain effective until the tapered portion 34, of the piston rod 32, opens the valves 35, and 36, thereby establishing communication between the pipes 37, and 38, which results in recharging the brake system with normal pressure from the main 39. When however, the piston rod 32, reaches the end of its reciprocation to the left as viewed in the drawings, the pin 46, on the piston rod will engage the tappet lever 47, and shift the slide valve 48, to the right as viewed in the drawing. This movement of the slide valve 48, to the right will cover the port 49, leading to the air pipe 26, and uncover the exhaust port 50, which will allow the spring 51, to return the piston to the position shown in the drawing. A pin 52, on the piston rod will now strike the tappet lever 47, and reverse the slide valve, opening the cylinder 30, to the air pressure in the pipe 26, which will again cause the piston to move to the left. The rate of motion of the retreating piston 31, is under the control of the adjustable exhaust or bleed valve, which communicates with the exhaust port 50. It will be seen that by the continued reciprocation of the piston 31, in the cylinder 30, the brakes are intermittently applied for the gradual stopping of the train. The system is again restored to its original condition by resetting the controlling valve 8.

It is obvious that minor changes in the details of construction and arrangement of parts may be made without departing from the spirit of my invention.

Having thus described my invention, I claim:—

1. A train-stopping device including a brake system, a valve mechanism for controlling said brake system, said valve mechanism including a cylinder, a sliding valve therein for intermittently releasing and supplying air to the brake system, and an electrically controlled valve for rendering operative said valve mechanism.

2. A train-stopping device including in combination, a brake system, a valve mechanism for controlling said brake system, said valve mechanism comprising a cylinder, a sliding valve, means whereby the movement of said valve in one direction will supply, release and again supply air to the brake system, and mechanism for operating said sliding valve.

3. A train-stopping device including in combination, a brake system, a valve mechanism for controlling said brake system, said valve mechanism comprising a cylinder, a sliding valve, means whereby the movement of said valve in one direction will supply, release and again supply air to the brake system, and an electrically controlled valve for rendering operative said valve mechanism.

4. A train-stopping device including in combination, a brake system, a valve mechanism for controlling said brake system, said valve mechanism comprising a cylinder, a sliding valve, means whereby the movement

of said valve in one direction will supply, release and again supply air to the brake system, an electrically controlled valve for rendering operative said valve mechanism, and manual means for resetting the electrically released valve.

5. A train-stopping device including in combination, a brake system, a valve mechanism for controlling said brake system, said valve mechanism comprising a cylinder, a sliding valve therein, means controlled by said sliding valve, whereby air is supplied, released and again supplied to the brake system during the movement of said valve in one direction, an electrically released valve for throwing into operation said valve mechanism, and manual means for resetting said electrically released valve.

6. A train stopping device including in combination, a brake system; a valve mechanism for said brake system comprising a cylinder; a sliding valve located in said cylinder; a piston for operating said sliding valve; an air pressure reservoir for operating said piston; a valve for controlling the supply from said reservoir; and an electrically released valve for operating said valve for controlling the supply from the reservoir.

7. A train stopping device including a brake system; a valve mechanism for controlling said brake system, said brake mechanism comprising a cylinder, a sliding valve therein, and means controlled by said sliding valve, whereby air is supplied, released and again supplied, to the brake system during the movement of said valve in one direction; a piston connected to said sliding valve; a reservoir containing compressed air for operating said piston; a sliding valve for controlling the air pressure to said piston; means operating by the reciprocation of said piston for reciprocating said last named valve whereby said sliding valve is continuously reciprocated; a valve for controlling the air pressure from said reservoir; and means for operating the valve controlling the supply from the reservoir.

8. A train stopping device including a brake system; a valve mechanism for controlling said brake system, said brake mechanism comprising a cylinder, a sliding valve therein, and means controlled by said sliding valve, whereby air is supplied, released and again supplied, to the brake system during the movement of said valve in one direction; a piston connected to said sliding valve; a reservoir containing compressed air for operating said piston; a sliding valve for controlling the air pressure to said piston; means operated by the reciprocation of said piston for reciprocating said last named valve, whereby said sliding valve is continuously reciprocated, a valve for controlling the air pressure from said reservoir; a trip for normally holding the valve controlling the supply for the reservoir closed; an electro-magnet, for holding the trip in place; and a weighted stem connected to said trip for releasing the same when said magnets are deënergized.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this twenty-sixth day of October 1910.

JOHN MORRIS KRAMLICH.

Witnesses:

JAMES H. BELL,

E. L. FULLERTON.