

M. L. SHEPHERD.  
RAILROAD SIGNAL SYSTEM.  
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898,693.

Patented Sept. 15, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

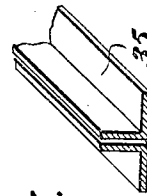
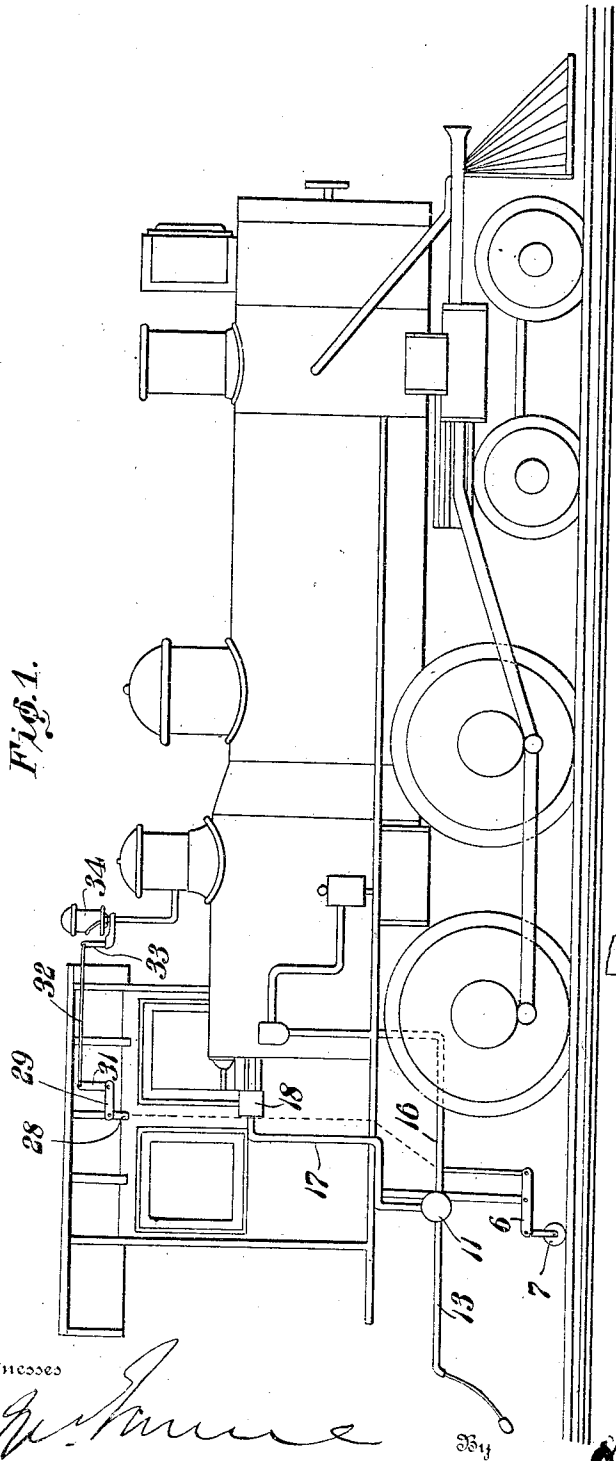


Fig. 3.

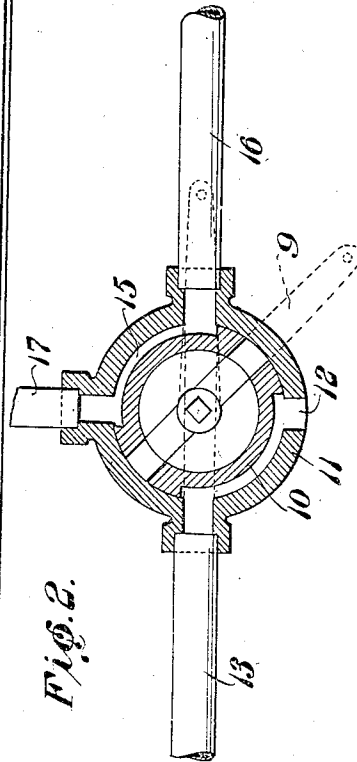


Fig. 2.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

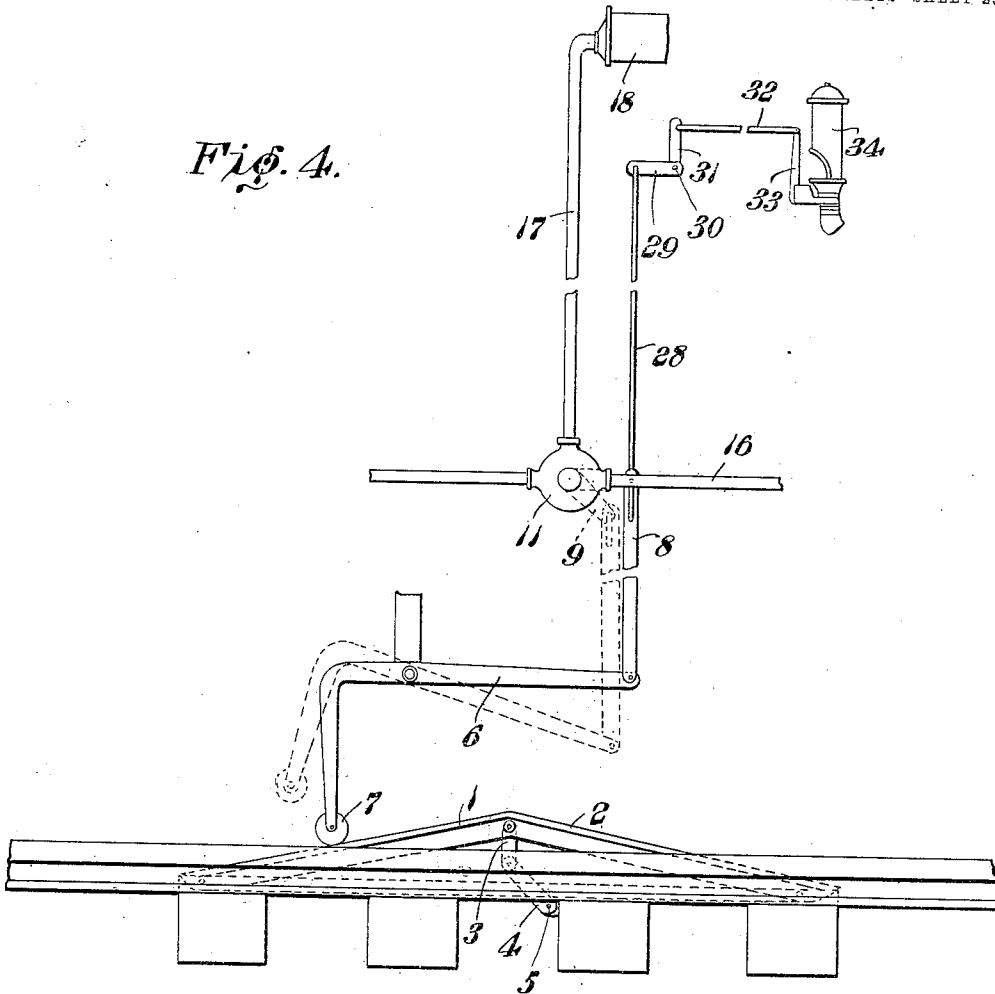


Fig. 7.

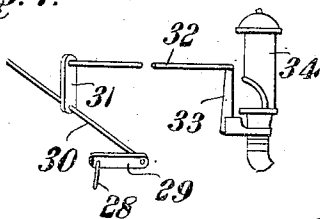


Fig. 5.

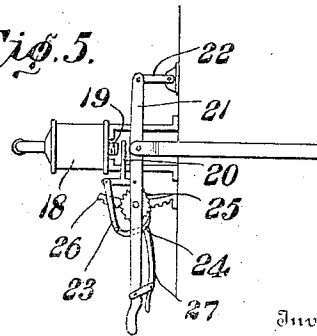
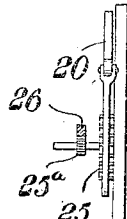


Fig. 6.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## RAILROAD SIGNAL SYSTEM.

No. 898,693.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed April 13, 1908. Serial No. 427,094.

*To all whom it may concern:*

Be it known that I, MARION L. SHEPHERD, citizen of the United States, residing at Newark, in the county of Licking and State of Ohio, have invented certain new and useful Improvements in Railroad Signal Systems, of which the following is a specification.

This invention relates to safety devices for the block signal systems of railroads, and more particularly to improved means under the control of the operator in the block tower, by which, when a signal is set against an on-coming train, the train may be automatically caused to slow down and come to a standstill by the automatic setting of the brakes and the shutting off of the steam, an audible signal being simultaneously sounded so that the engineer or locomotive driver may be apprised of the condition of the block and have his attention sharply aroused.

With these and other objects in view, as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of the parts, that I shall hereinafter fully describe and then point out the novel features in the appended claims.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings in which:

Figure 1 is a side elevation of a locomotive, illustrating my improvements applied thereto. Fig. 2 is a detail sectional view of the valve employed; Fig. 3 is a detail sectional perspective of parts hereinafter referred to; Fig. 4 is an enlarged side elevation of the apparatus. Fig. 5 is a top plan view of a portion of the apparatus. Fig. 6 is an edge view of a portion of the operating mechanism illustrated in Fig. 5; and, Fig. 7 is a detail perspective view illustrating the parts that are designed to directly operate the whistle.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In carrying out my invention, I have arranged along side of the track at predetermined intervals actuating bars 1 and 2 that are jointed or pivoted together at one end and that extend longitudinally in opposite directions, with their outer ends suitably supported, so that the bars may be raised to an elevated position above the track rail or be

depressed below the tread of the rail, as desired. In the present instance, in order to actuate said bars, I have connected a link 3 to the bars at the jointed ends thereof, said link being in turn connected to a crank 4 on a shaft 5 which projects in a transverse direction and which is under the control of the signal or switch operator in the tower through any desired mechanism or instrumentalities (not shown).

When the bars 1 and 2 are raised, they are designed to engage with an actuating lever 6, which, in the present instance, is an angle lever as shown and which is fulcrumed at any suitable point on the locomotive. One arm of the lever 6 carries a roller 7 which is designed to ride upon the bars 1 and 2 so as to rock the lever when the bars are in their raised positions. The other end of the lever 6 is connected to a link rod 8 which extends upwardly therefrom, the upper end of said link rod being slotted to connect to the handle 9 of a valve 10. The valve 10 is mounted within a case 11, said case being formed with a port 12 opening to the atmosphere, and arranged to communicate with the train pipe 13 of an air brake system, when the valve 10 is turned in such a position that its passage 14 will register with the pipe 13 and port 12 as best seen in Fig. 2. The valve is turned to this position when the link rod 8 is pulled downward by the rocking of the lever 6, when the latter engages the actuating bars 1 and 2. In addition to the passage 14, the valve 10 is formed with another passage 15 designed to establish communication between the pipes 16 and 17 when the passage 14 registers with the pipe 13 and the port 12. The pipe 16 leads from the main reservoir on the locomotive, or from any other suitable source of supply of compressed air, and the pipe 17 leads to a cylinder 18 which stands directly behind the throttle on the boiler head. A piston works within the cylinder 18 and a plunger rod 19 is connected to said piston and projects forwardly out of the cylinder and is arranged to engage with a releasing lever 20 which is fulcrumed on the throttle lever 21 and which is, in the present instance of inverted T shape as shown with its main branch interposed between the end of the plunger 19 and the throttle lever 21. One of the lateral arms of the releasing lever 20 is connected by a link 23 to a detent 24 designed to engage a ratchet 25 mounted on the

throttle lever 21. Movable with the ratchet 25 is a pinion 25<sup>a</sup> designed to engage a toothed segment 26. Under ordinary conditions of its movement, the detent 24 will mesh with the ratchet 25 and hold the ratchet from turning thereby maintaining the throttle lever 21 in locked position. 27 designates a hand releasing rod or hand grip which is designed for use in manually releasing the detent 24 from the ratchet 25 for the manual actuation of the throttle lever.

A rod or cord 28 connects the link rod 8 with a crank 29 secured to a transversely extending shaft 30 mounted in the cab preferably in the roof thereof. The shaft 30 is provided with another crank 31 and a link rod or cord 32 connects said last named crank with the handle 33 of a whistle 34.

35 designates spaced angle bars which are arranged along side of the actuating bars 1 and 2 and which are designed to form a casing for said actuating bars when the latter are in their lowered or depressed positions.

In the practical use of my invention, when the block is clear, the signal operator will move the actuating bars 1 and 2 to their lowered positions where they will not be engaged by the trip or actuating lever 6 as the locomotive passes in the block. But when the signals are set against an oncoming train, the operator will raise the actuating bars 1 and 2 and thereupon the roller 7 of the actuating lever 6 will ride upon the angle bars and, as the roller rides upwardly on one bar, it is obvious that the lever 6 will be rocked in a direction to pull downwardly upon the link rod 8 and the downward movement of the link rod 8 will turn the valve stem to a position where it will permit the flow of air from the pipe 16 into the pipe 17 and thence into the cylinder 18, which will cause the piston to move forwardly. The forward movement of the piston will cause the plunger rod 19 to engage the releasing lever 20 and rock the same so as to release the detent 24 from the ratchet 25, and the continued forward movement of the plunger rod 19 will press the main branch of the lever 20 against the rear side of the throttle lever 21 and swing the throttle lever forwardly and shut off the steam. Hence it will be seen that by the use of this improved apparatus, the brakes will be set automatically and the steam will be shut off so as to bring the train to a stand still. At the same time, by the means before described, the shaft 30 will be rocked so as to sound the whistle.

Having thus described the invention, what is claimed as new is:

1. In an apparatus of the character described, the combination of an actuating lever, means for automatically rocking said lever, a valve case, a valve mounted therein, an operative connection between said

valve and said actuating lever, a train pipe, and an air supply pipe connected to said valve case, another air pipe connected to said valve case, the parts being so arranged that the valve will establish communication between the train pipe and the atmosphere and between the two air pipes upon the rocking of the actuating lever, an air cylinder connected to said last named air pipe, a piston mounted in said cylinder, a plunger rod connected to said piston projecting forwardly from the cylinder, a throttle lever, means for holding said lever locked, and a releasing lever for said holding means interposed between the throttle lever and the plunger rod and arranged to be actuated by the latter upon its forward movement.

2. In an apparatus of the character described, the combination with a throttle lever, of a ratchet wheel carried thereby, a pinion movable with said ratchet wheel, a toothed segment with which said pinion meshes, a detent designed to engage said ratchet, a releasing lever fulcrumed on the throttle lever and secured to said detent to move the same into and out of engagement with the ratchet, an air cylinder, a piston in said air cylinder, and provided with a plunger rod adapted to strike the releasing lever to rock the same in a direction to release the detent from the ratchet, and means for automatically admitting air into the cylinder back of the piston.

3. In an apparatus of the character described, the combination with a throttle lever, of a ratchet wheel journaled on said lever, a pinion movable with said ratchet wheel, a toothed segment with which said pinion is designed to mesh, an inverted T-shaped releasing lever fulcrumed by one arm on the throttle lever, a detent arranged to engage said ratchet wheel and connect it to another arm of said releasing lever, an air cylinder, a piston and plunger rod mounted in said cylinder, the plunger being adapted to strike the remaining arm of the lever for the purpose specified, and means for automatically admitting air into the cylinder back of the piston.

4. In an apparatus of the character described, the combination of an actuating lever, means for rocking the same, a train pipe, a throttle lever, a whistle, and means actuated by said actuating lever for venting said train pipe and for simultaneously sounding the whistle, and moving said throttle lever towards closed position.

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

MARION L. SHEPHERD. [L. s.]

Witnesses:

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THOMAS B. FULTON.