

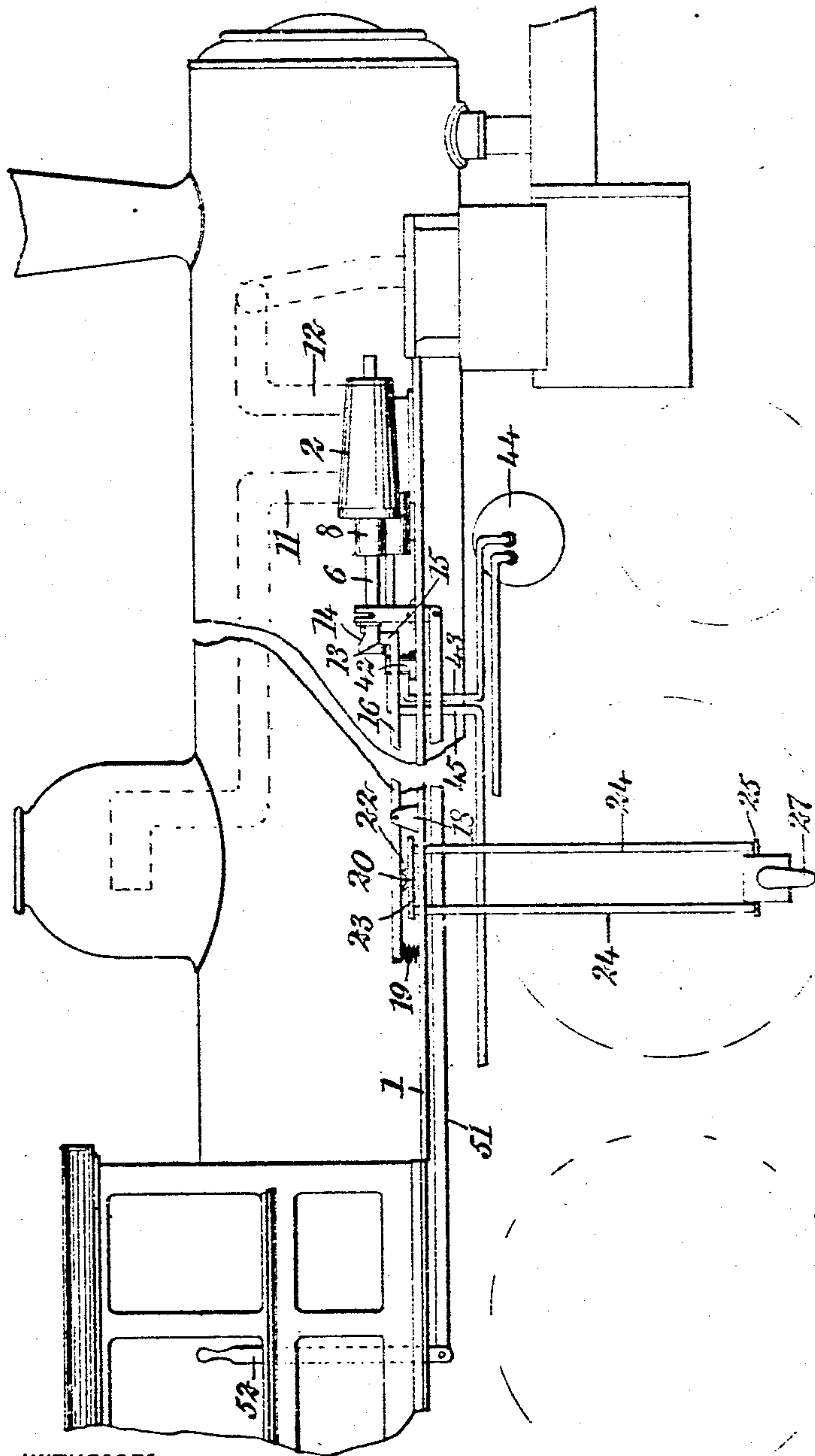
No. 880,996.

PATENTED MAR. 3, 1908.

R. H. HUNT.
RAILWAY SAFETY APPARATUS.

APPLICATION FILED JULY 15, 1907.

2 SHEETS—SHEET 1.



WITNESSES
Ben. J. J. J.
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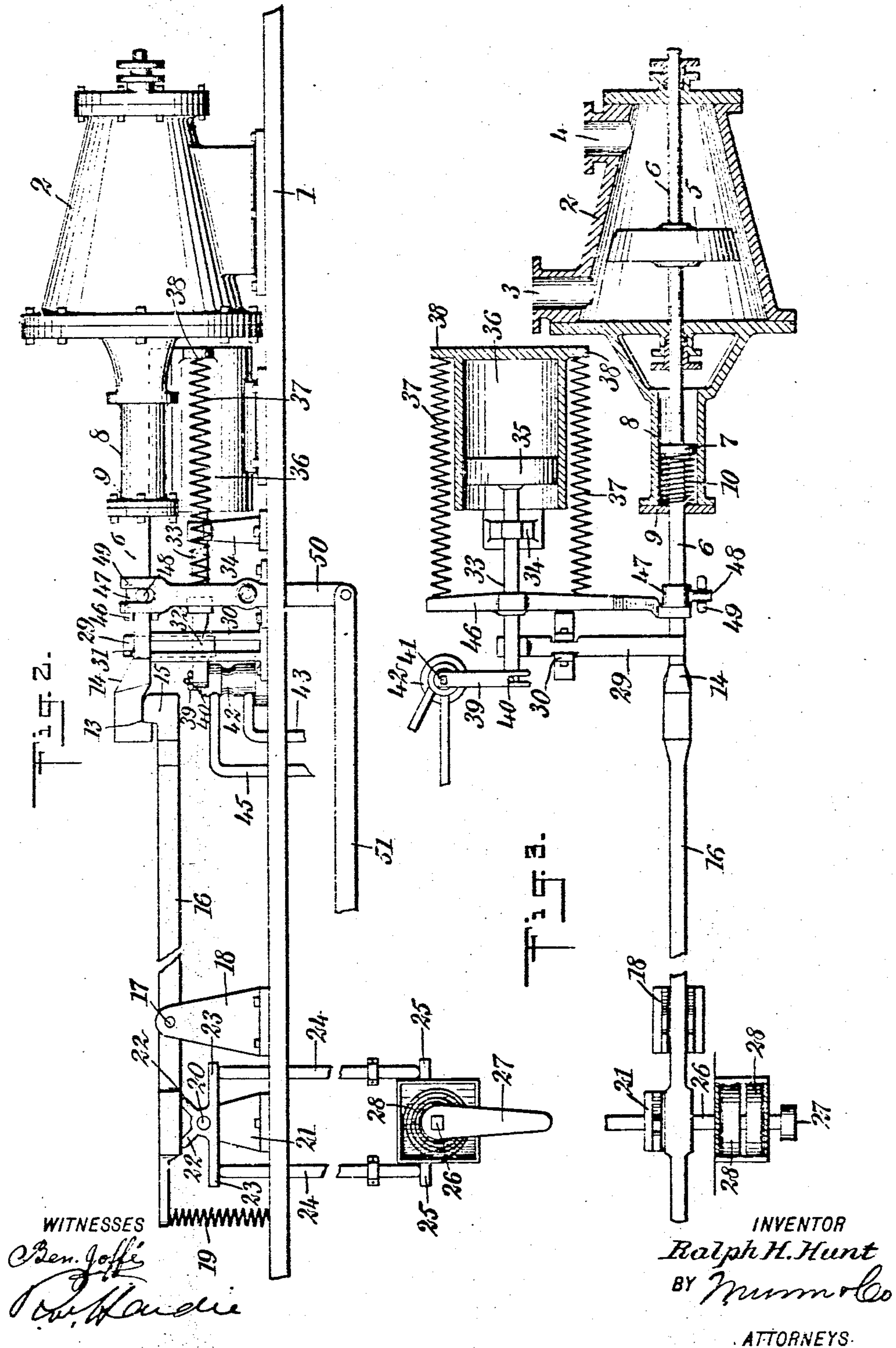
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

RALPH H. HUNT, OF CHELSEA, NEW YORK.

RAILWAY SAFETY APPARATUS.

No. 880,996.

Specification of Letters Patent.

Patented March 3, 1908.

Application filed July 15, 1907. Serial No. 383,776.

To all whom it may concern:

Be it known that I, RALPH H. HUNT, a citizen of the United States, and a resident of Chelsea, in the county of Dutchess and State of New York, have invented a new and Improved Railway Safety Apparatus, of which the following is a full, clear, and exact description.

This invention relates to safety apparatus designed to be used in connection with track devices for controlling a locomotive, and has for its object to provide means simple in construction, positive and effective in operation, and adapted to automatically shut off the supply of steam to an engine cylinder and apply the air brakes when a track device or obstruction is met in the path of the engine adjacent to the rail.

Other objects relating to the specific construction and special arrangement of the several parts of my invention will be understood from the following description and accompanying drawings, in which drawings like characters of reference indicate like parts throughout the views, and wherein

Figure 1 represents a diagrammatic view of a device embodying my invention applied to a locomotive; Fig. 2 is a side elevation of the device shown in Fig. 1; and Fig. 3 is a plan of the same partly in horizontal section.

As illustrated in the drawings, 1 represents a base plate attached to a locomotive upon which is mounted in any suitable manner a valve casing 2 provided with an inlet port 3 and an outlet port 4. The casing may be of any suitable construction, but is preferably made conical and adapted to receive a round valve 5 having a beveled edge and arranged within the casing and mounted upon a valve rod 6. This valve rod extends through the opposite ends of the casing and stuffing boxes connected therewith, and is preferably provided with a collar 7 fixedly attached thereto; adapted to travel in a cylinder 8 formed on the head of the valve casing and provided with a gland 9 attached to said cylinder in any suitable manner. A spring 10 is mounted upon the valve rod 6 and bears at one end against the collar 7, and at its opposite end against the gland 9 so as to normally press the valve rod backward and bring the periphery of the valve 5 in contact with the inner surface of the casing 2, thereby shutting off the supply of steam through the outlet port 4.

The inlet port 3 is connected in any suitable

manner with a steam supply pipe 11, and the outlet port 4 is connected with a supply pipe 12 leading from said port to the cylinder of the engine. The valve rod 6 is provided on its forward end with a head having a notch 13, and an inclined upper surface 14. The notch 13 of said head engages the off-set end 15 of a lever 16, which is mounted at 17 upon a bracket or standard 18. The end of the lever 16 opposite to that engaging the head of the valve stem is connected by means of a spring 19 with the bed plate 1 or other fixed object, so as to normally hold down that end of the lever and keep the off-set end 15 of said lever in engagement with the notch 13 of the head of the valve stem. The lever 16 is preferably pivoted unequally of its length and the short arm of said lever engages a tripping device mounted upon a shaft 20, which is journaled in any suitable manner upon a bracket or support 21. The tripping device is preferably provided with arms 22 extending in diverging lines from the shaft 20 so as to form a broad bearing for the short end of the lever 16. The tripping device is also provided with arms 23 extending in opposite directions and engaging the upper ends of links 24, the lower ends of said links bearing against a cross bar 25 which is attached to a rock shaft 26 mounted upon a fixed plate in any suitable manner. The rock shaft 26 is provided with a trip lever 27 which is adapted to be arranged in close proximity to a track device when the apparatus is in use. Spiral springs 28 are attached to the rock shaft 26, one right handed and the other left handed, and thereby adapted to hold the rock arm 27 against free movement in any direction. A lever 29 arranged transversely of the valve rod 6 is pivotally mounted upon a standard or bracket 30, and provided on one end with an inclined face 31 adapted to bear against the inclined surface 14 of the head of the valve stem. The opposite end of said lever engages the notched end 32 of a piston rod 33 which may be mounted to move in a guide-way or support 34. A piston 35 is secured to the inner end of said rod and moves within a cylinder 36 having helical springs 37 connected therewith, preferably by means of lugs 38 formed on said cylinder. The outer or free end of the piston rod 33 is pivotally connected with a lever 39 by means of a pin 40, and the lever 39 is fixedly attached to the stem 41 of an air valve 42 having connected therewith a pipe 43 leading

from an air cylinder 44 and a pipe 45 leading to an auxiliary air cylinder, not shown. A cross head 46 is attached to the piston rod 33 having arms of unequal length, the longer arm being bifurcated so as to engage the valve rod. A collar 47 is fixedly attached to the valve rod 6 and provided with a pin 48 which is engaged by the bifurcated ends 49 of a lever 50 pivotally mounted upon the bed plate 1, or otherwise supported. A link 51 connects the lever 50 with an operating lever 52 arranged within the cab of the engine.

When the device is in operation and a track device is arranged in the path of the trip lever 27, said lever is moved laterally by means of the track device, thereby rocking the shaft 26 and raising one end of the cross bar 25 mounted on said shaft. The upward movement of that end of the cross bar causes a corresponding upward movement of the link or connecting rod 24 adjacent thereto, thereby rocking the tripping device mounted on the shaft 20 and raising the short arm of the lever 16 against the tension of the spring 19. The upward movement of that end of the lever, depresses the opposite end of the lever 16 and releases the off-set end 15 of said lever from engagement with the notch 13 in the head connected with the valve rod 6.

As soon as the head of the valve rod is released from engagement with the off-set end of the lever 16, the spring 10 within the cylinder 8 forces the valve rod inward, carrying with it the valve 5, which bears against the inner conical wall of the casing, and prevents steam from passing through the inlet port 3 and out of the outlet port 4 into the steam chest of the engine. The supply of steam is thereby entirely shut off from the engine.

As the valve rod 6 is moved backward by the spring 10, the arm adjacent thereto of the lever 29, is raised by coming in contact with the inclined surface 14 of the head of the valve stem, thereby depressing the opposite arm of said lever and releasing it from the notch 32 of the piston rod 33, which normally holds the piston rod outward against the tension of the springs 37. When the piston rod is released from engagement with the lever 29, the springs 37 draw the cross head 46 backward together with the piston rod 33 and piston 35, and operate the arm 39 of the air valve 42 so as to set the brakes. The piston 35 fits loosely into the interior of the cylinder 36, so that as the piston 35 is moved backward it forms a cushion adapted to prevent the air valves from being set too quickly, and allows the air to escape gradually, and the air brakes to be applied without unnecessary shocks or strains.

After the apparatus has been once operated and it is desired to re-set the parts, the valve connected with the main supply pipe is shut off in the cab, in which case the pressure of the steam on opposite sides of the

valve 5 becomes equalized and the valve stem 6 drawn forward and outward by the lever 52 in the cab of the engine, the connecting link 51 and the pivoted lever 50. As the head of the valve stem is brought in engagement with the off-set end 15 of the lever 16, it becomes automatically connected therewith because of the spring 19 holding down the short arm of the lever 16, and consequently holding up the opposite end of said lever in engagement with the notched head of the valve rod. This forward movement of the valve rod also carries with it the cross head 46 which freely connected with the valve stem, and as the cross head 46 is drawn forward by the valve stem and the collar 47 mounted thereon, it carries with it the piston rod 33 and brings the notched forward end of said rod in engagement with one of the arms of the lever 29, thereby locking said piston rod in engagement with said lever and against the tension of the springs 37, leaving the apparatus in position to operate as before.

This apparatus is designed to be used in connection with track devices arranged at desired intervals along the track, and controlled by an operator from a central station, thereby enabling an operator to stop a train on the road when necessary independently of the person in charge thereof. The track devices may be of any suitable construction, and so constructed and arranged as to operate automatically instead of being under the control of a station operator.

In the construction herein shown and described, I have embodied my invention in its preferred form. I do not desire to be limited to said construction, however, as other means having similar capabilities may be used without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent:

1. The combination with a steam valve casing provided with inlet and outlet ports, of a valve mounted in the casing, a rod secured at one end to the valve, a lever having a locking engagement with the other end of the valve rod, mechanism adapted to release said lever from engagement with the valve rod, and means for re-tracting the valve in the casing when the valve rod is released.

2. The combination with a valve casing provided with inlet and outlet ports, of a valve mounted in the casing, a rod secured at one end to said valve, a pivoted lever having a locking engagement with the other end of said rod, a spring adapted to normally hold the end of said lever in engagement with the end of the valve rod, and means for operating the end of said lever against the tension of said spring to release the lever from engagement with the valve rod.

3. The combination with a valve casing

provided with inlet and outlet ports, of a valve mounted in the casing, a rod secured at one end to said valve, a pivoted lever having a locking engagement with the other end of the valve rod, means for normally holding said lever in engagement with said rod, a shaft provided with rock arms adapted to engage one end of said lever, and a trip lever connected with and adapted to operate said rock arm.

4. The combination with a conical casing provided with inlet and outlet ports, of a round valve mounted in the casing and provided with a beveled edge, a rod secured at one end to said valve, a lever having a locking engagement with the other end of the said rod, a spring adapted to retract said rod within the casing, means for holding said rod in a projected position against the tension of said spring, and a trip lever and connecting mechanism adapted to release said valve rod so as to be operated by said spring.

5. The combination with a conical casing provided with inlet and outlet ports, of a round valve mounted in the casing and provided with a beveled edge, a valve rod secured at one end to said valve, a spring adapted to close said valve against the wall of the casing, mechanism for retracting the edge of said valve from the wall of the casing, means for holding the valve in its retracted position, a trip lever and mechanism connected therewith adapted to release said valve and enable it to be controlled by said spring.

6. The combination with a conical casing provided with inlet and outlet ports, of a valve mounted within the casing and provided with a beveled edge, a rod secured at one end to said valve, a pivoted lever having a locking engagement with the other end of said rod, a trip lever held in a normal position by means of springs, and connecting mechanism between said trip lever and pivoted lever adapted to release the pivoted lever from engagement with the valve rod.

7. The combination with a conical casing provided with inlet and outlet ports, of a round valve mounted in the cylinder and provided with a beveled edge, a rod secured at one end to said valve and provided on its other end with an off-set, a pivoted lever provided with an off-set engaging the corresponding end of the valve rod, a spring holding said lever in engagement with said

rod, a trip lever held in a normal position by spring tension, and mechanism connected with said trip lever adapted to release the valve rod in engagement with the pivoted lever.

8. The combination with a conical casing provided with inlet and outlet ports, of a round valve mounted in said casing and provided with a beveled edge, a rod secured at one end to said valve and provided with a beveled head on its other end, a cylinder, a piston mounted therein, and provided with a piston rod, a cross head mounted on said piston rod and connected with the valve rod, springs connected with said cross head adapted to normally retract the piston within the cylinder, a pivoted lever connected at one end with the valve rod in line with said beveled head, and at the other end with the piston rod adapted to hold the piston rod in a projected position against the tension of said springs, an air valve connected with said piston rod, means for holding the valve rod in a projected position, and a trip lever adapted to release the valve rod, thereby closing the valve against the casing and releasing the piston rod so as to enable the springs connected therewith to retract the piston and open the air valve.

9. The combination with a valve casing, of a valve mounted on a rod and arranged within said casing, means for normally closing said valve on its seat, mechanism adapted to hold said valve retracted from its seat, a trip lever, mechanism connected therewith adapted to release said valve, a cylinder, a piston arranged within said cylinder provided with a piston rod, an air valve connected with said rod, means for normally retracting the piston in the cylinder, mechanism connected with said piston rod and valve rod adapted to move the piston outward in said cylinder, and means connected with said piston rod and valve rod adapted to hold the piston rod in its outward position while the valve is removed from its seat, and to release the piston rod as the valve is moved backward to close on its seat.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RALPH H. HUNT.

Witnesses:

CHAS. B. GLASS,
E. H. VAN VOORHIS.