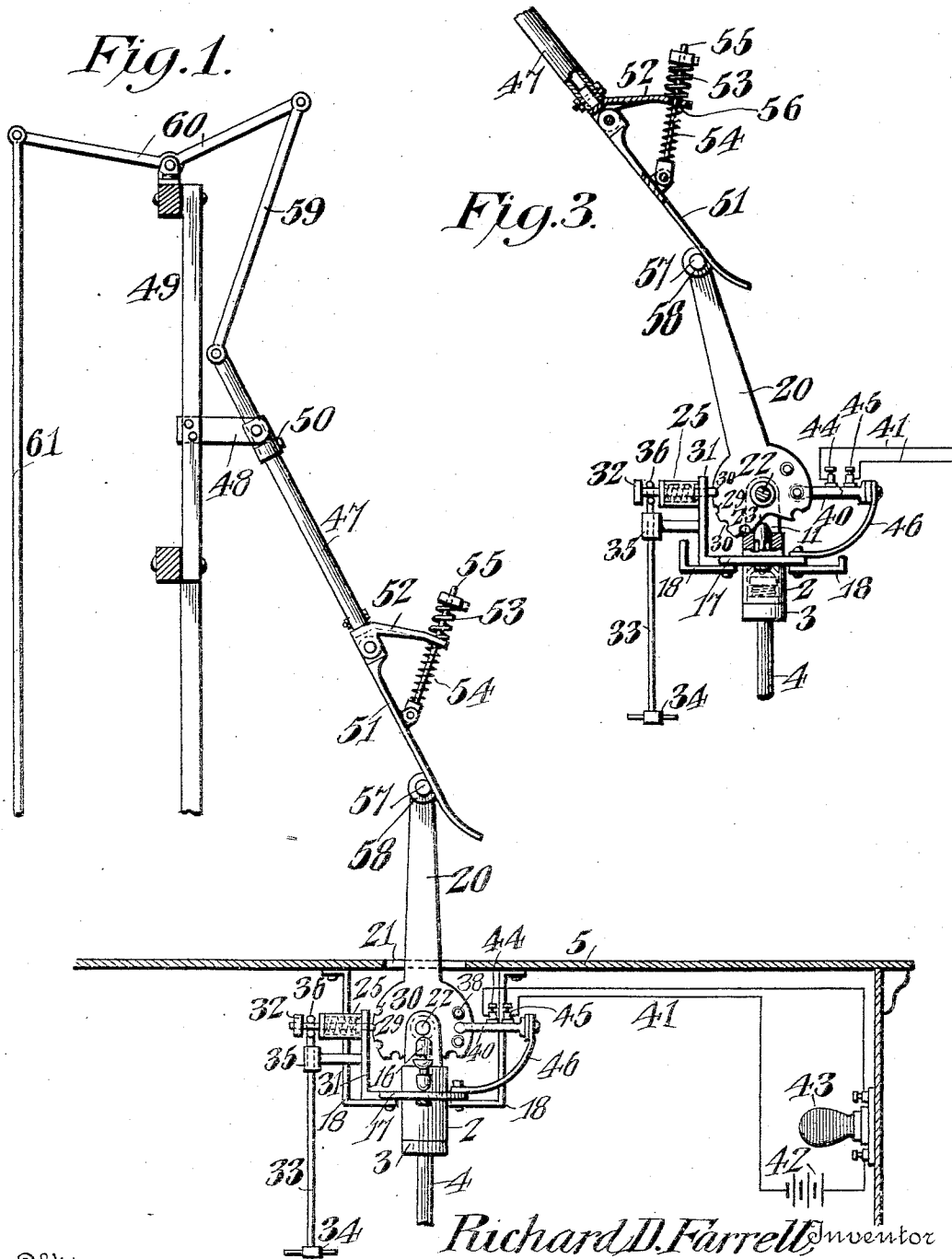


R. D. FARRELL.
 AUTOMATIC SAFETY APPLIANCE FOR RAILWAYS.
 APPLICATION FILED MAR. 31, 1909.

937,294.

Patented Oct. 19, 1909.

2 SHEETS—SHEET 1.



Witnesses
 Jas. E. McLaughlin
 H. W. Riley

Richard D. Farrell, Inventor

By *E. J. Siggers*
 Attorney

937,294.

2 SHEETS—SHEET 2.

Fig. 2.

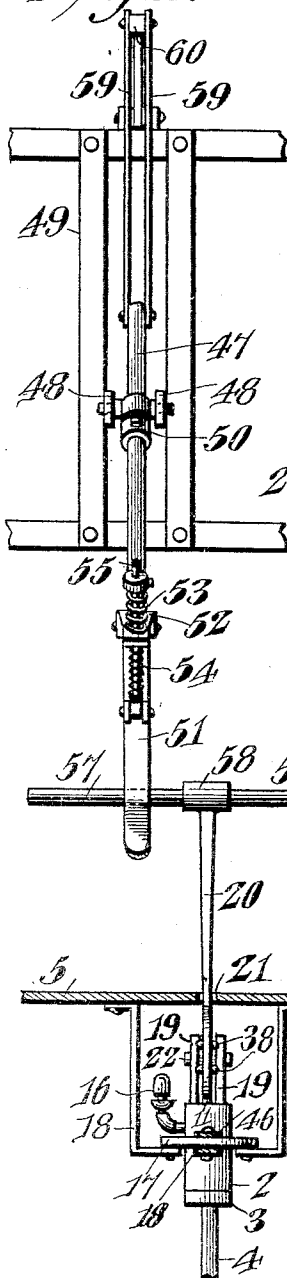


Fig. 5.

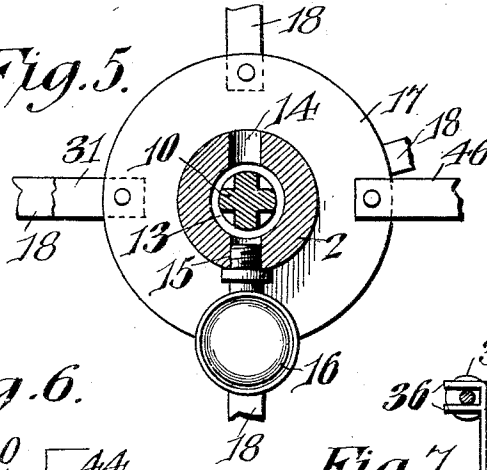


Fig. 6.

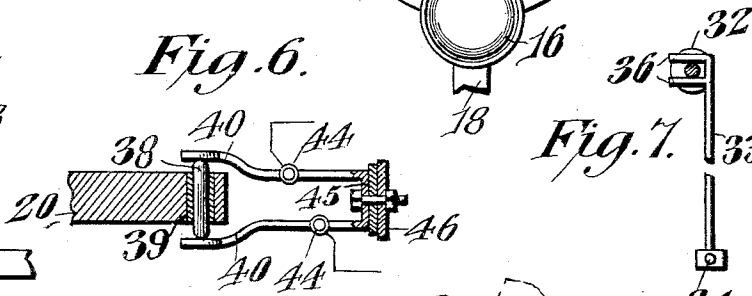


Fig. 7. 33

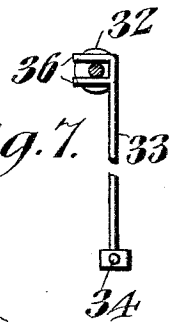
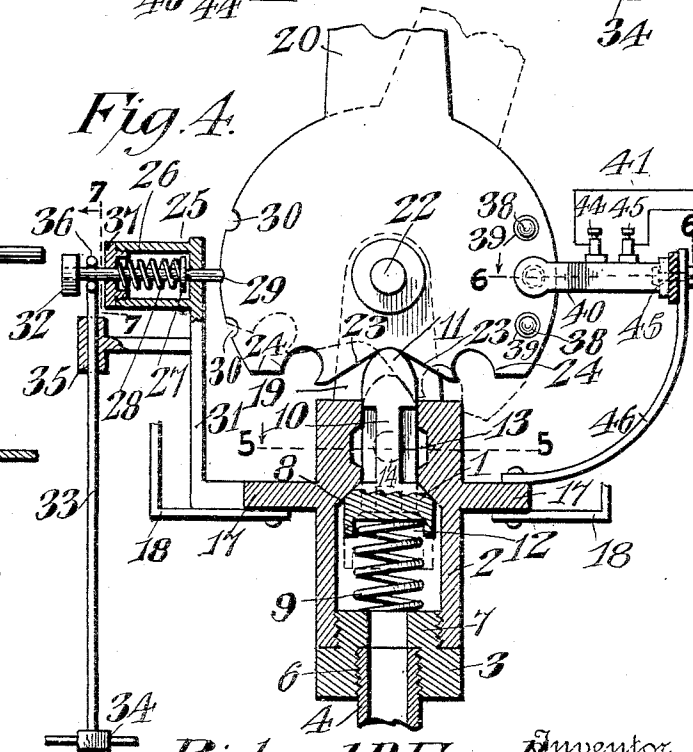


Fig. A.



Witnesses
Jas. E. McLaughlin
H. J. Kelly

Richard D. Farrell Inventor

By

E. G. Linger

Attorney

UNITED STATES PATENT OFFICE.

RICHARD D. FARRELL, OF TYRONE, PENNSYLVANIA.

AUTOMATIC SAFETY APPLIANCE FOR RAILWAYS.

937,294.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed March 31, 1909. Serial No. 487,004.

To all whom it may concern:

Be it known that I, RICHARD D. FARRELL, a citizen of the United States, residing at Tyrone, in the county of Blair and State of Pennsylvania, have invented a new and useful Automatic Safety Appliance for Railways, of which the following is a specification.

The invention relates to improvements in automatic safety appliances for railways.

The object of the present invention is to improve the construction of safety appliances for railways, more especially that shown and described in Patent No. 911,961, granted to me Feb. 9, 1909, and to secure an operation of safety appliances with a less reduction of train pipe pressure.

A further object of the invention is to enable the air brake bleeding valve to be closed by the engineer without leaving his cab, and to utilize the air escaping through the said valve to operate the signal whistle.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a side elevation of an automatic safety appliance for railways, constructed in accordance with this invention, the cab of the locomotive and the support for the tripping device being in section. Fig. 2 is a front elevation of the same, the top of the cab being in section. Fig. 3 is a side elevation, partly in section, illustrating the manner of operating the oscillatory lever. Fig. 4 is an enlarged detail sectional view of the air brake bleeding valve and the manner for actuating the same. Fig. 5 is a horizontal sectional view on the line 5—5 of Fig. 4. Fig. 6 is a similar view on the line 6—6 of Fig. 4. Fig. 7 is a vertical sectional view on the line 7—7 of Fig. 4.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates an air brake bleeding valve, movable vertically within the valve casing 2, which is connected by a nipple 3 with a

pipe 4 in communication with the train pipe, whereby when the valve is opened, as hereinafter explained, the pressure in the train pipe will be reduced for applying the brakes. The pipe 4 is preferably located within the cab 5 of a locomotive, and the nipple 3 is interiorly threaded to screw on the threaded end 6 of the pipe 4, and it has a reduced projecting exteriorly threaded portion 7, which screws into the lower threaded end of the valve casing 2. The valve casing 2, which is arranged vertically, is provided at a point intermediate of its ends with an interior valve seat 8, and the valve 1, which is normally maintained in engagement with the seat by a coiled spring 9, is provided with an upwardly extending flanged stem 10, having a rounded projecting terminal portion or head 11. The spring has its lower end seated on the nipple and the valve is provided in its lower face with a recess 12, which receives the upper end of the spring 9. The bore of the casing 2 is enlarged above the valve seat 8 to form a chamber 13, and it has opposite discharge ports 14 and 15, the port 14 being in communication with the outside atmosphere, and a whistle signal 16 being screwed into the other port 15, so that a portion of air bled from the train pipe is utilized for blowing the signal whistle. This obviates the necessity of providing a separate valve and pipe connection for blowing the signal whistle, which is located in the cab at one side of the casing 2. The chamber or enlargement 13 of the bore and the flanging of the valve stem permit the air to pass readily around the latter.

The valve casing is provided at an intermediate point with an exterior annular flange 17, and it is supported by hangers 18, depending from the top of the cab and having horizontal arms, secured to the flange 17, as clearly illustrated in Figs. 1 and 4 of the drawings. The upper ends of the hangers are bent outward and are suitably secured to the top of the cab, and their lower ends are bent inward to form the said arms.

The valve casing 2 is provided at the top with upwardly extending arms 19, between which is pivoted a double acting oscillatory lever 20. The lever 20, which extends upward through an opening 21 in the top of the cab, is provided at its lower end with a

segmental head and is mounted on a transverse pivot or pin 22, arranged in suitable bearing openings of the arms 19. The head of the lever is provided at the bottom with a tapered recess, forming opposite inclined upwardly converging cam edges 23, as clearly illustrated in Fig. 4 of the drawings. The tapered recess receives the projecting portion of the valve stem, and when the lever is oscillated in either direction, one of the cam edges will be carried into engagement with the said projecting portion, and will depress and open the valve and permit the air to escape from the pipe 4, thereby effecting a reduction in the train pipe pressure. This operation is designed to take place should the engineer run under a danger signal or signal to stop, and the flow of air from the pipe 4 will blow the signal and warn the engineer. The cam edges are relatively long and the projecting portion of the valve stem engages with the cam edges at a point intermediate of the ends thereof, the movement of the lever not being sufficient to carry the terminals of the cam edges to the valve stem. The lever is recessed or cut-away at opposite sides of the cams to provide opposite stop shoulders 24, adapted to be carried into engagement with the valve casing, as illustrated in dotted lines in Fig. 4 of the drawings, to limit the oscillatory movement of the lever 20. These stops 25 prevent the lever from being swung too far in either direction.

In order to prevent an accidental operation of the safety appliance through the vibration of a train, the lever is held against accidental movement by means of a spring actuated locking device 25, consisting of a rod slidable through a cylindrical casing 26 and provided with a collar or flange 27, arranged within the casing 26 and engaged by a coiled spring 28, which urges the rod inwardly and maintains the same normally in engagement with the head or enlarged lower end of the oscillatory lever. The segmental head presents an arcuate edge to the locking device, and is provided with a central shallow notch 29 and upper and lower relatively deep recesses 30. The shallow notch, which is engaged by the locking device when the lever is in a vertical position, enables the said device to hold the lever against accidental movement, but it permits the head of the lever to be readily moved in either direction when sufficient force is applied, as when the lever comes in contact with the tripping device hereinafter described. The oscillation of the lever through contact with the tripping device carries one of the relatively deep recesses or seats 30 opposite the locking device, which is carried into engagement with such recess or seat by the spring, thereby positively locking the oscillatory lever in an

inclined position. The casing 26, which is horizontally disposed, is mounted on a bracket arm 31, and the rod, which is provided at its outer end with a head 32, is adapted to be moved rearwardly or out of engagement with the lever by a vertical operating shaft 33 to permit the oscillatory lever to return to a vertical position. The spring 9 is designed to be of sufficient power to effect the return of the lever, which is then engaged and held by the locking device. The vertical operating shaft 33, which is located within the cab, is provided at the lower end with a suitable handle 34, and it is journaled in a bearing sleeve 35 and is provided above the same with spaced fingers 36, receiving the rod of the locking device between them and located between the head 32 and the adjacent end of the casing 26. This will enable the engineer to instantly release the valve 1 before there is any great reduction in the train pipe pressure. However, if the valve is permitted to remain open, the brakes will be applied and the train brought to a standstill. The bearing sleeve 35 is carried by a horizontal arm of the bracket 31, and is located below the outer end of the cylindrical casing 26. The outer end or head 37 of the casing is removable to afford access to the spring and to permit the parts to be assembled.

The head of the oscillatory lever is provided at the side opposite that having the notches and the recess with openings in which spaced electrical connectors 38 are mounted. The electrical connectors consist of short pieces, arranged in insulating sleeves 39 and projecting from the side faces of the head of the lever and having rounded terminals, adapted to engage resilient contacted arms 40 of an electric circuit 41. The electric circuit includes a battery 42 and an electric light 43, which is preferably provided with a red bulb. The resilient contacted arms have enlarged ends to receive the electrical connectors 38, and they are equipped with binding posts 44 to receive two of the terminals of the wires of the circuit. When the levers oscillate in either direction one of the electrical connectors will be carried between and into contact with the enlarged ends of the resilient arms 40, and the circuit will be closed and the electric light displayed. The resilient arms are formed integral with a transverse connecting portion 45, which is secured to and insulated from a supporting arm 46, mounted on the flange 17 of the casing. Audible and visual signals will insure the attention of the engineer, if alive, and the locking of the valve in its open position will produce a complete application of the brakes in event of death or other inability of the engineer to control his engine.

The tripping device consists of a lever 47, fulcrumed at an intermediate point between projecting arms 48 of a supporting frame and provided with an adjustable set sleeve 50, having opposite pivots arranged in perforations of the arms 48. The set sleeve is secured to the lever 47 by a set screw, or other suitable fastening means, and it enables the relative length of the arms of the lever to be changed to secure the desired throw or movement of the tripping device. The tripping device is equipped with a pivot member 51 and a relatively fixed member 52. The pivoted member is hinged to the body portion of the lever 47 and forms a continuation of the same, being normally maintained in alinement with the body portion of the lever by means of coiled springs 53 and 54, located above and below the relatively fixed member 52 and mounted on a rod 55, which is connected with the pivot member 51. The lever 47 is arranged at an inclination, and the pivot member, which is located at the lower end of the lever, is provided with ears to receive the lower end of the rod 55, which is guided in a perforation 56 of the relatively fixed member 52. The relatively fixed member 52 is arranged at an obtuse angle to the body portion of the lever 47, and is located above the pivot member 51. The springs permit the pivot member to be moved in either direction, and they are of sufficient force to secure an operation of the oscillatory lever 20, which is provided at the top with a rod 57, extending through a sleeve 58 of the said lever 20 and forming opposite laterally extending horizontal arms. The rod 57 is of sufficient length to permit the tripping device to have a considerable range of adjustment.

The upper end of the lever 47 is connected by a link 59 with a lever 60, fulcrumed at an intermediate point on the support 49 and having angularly related arms. One of the arms of the lever 60 is pivoted to the link 59, and the other is connected with an operating rod 61 of suitable mechanism, extending to a signal tower or other point for enabling the tripping device to be moved into and out of the path of the oscillatory lever.

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

1. An automatic safety appliance for railways including a brake valve, an oscillatory lever provided with means for operating the valve, a spring actuated locking device arranged to engage the lever, and an operating shaft connected with the locking device for enabling the lever to be released without leaving a train.

2. An automatic safety appliance for railways including a brake valve, an oscillatory lever arranged to open the valve, a locking

device comprising a casing, and a spring actuated rod engaging the lever and provided with a head, and an operating shaft receiving the rod and arranged to engage the head thereof to withdraw the rod from engagement with the lever.

3. An automatic safety appliance for railways including a brake valve having a projecting portion, an oscillatory lever provided with a tapered recess receiving the projecting portion of the valve and forming relatively long cam edges for actuating the same, and a locking device arranged to engage the lever to lock the same against movement while the projecting portion of the valve is in engagement with one of the cam edges at a point intermediate of the ends of the same.

4. An automatic safety appliance for railways including a brake valve having a projecting portion, and an oscillatory lever provided with a tapered recess receiving the projecting portion of the valve and forming cam edges for actuating the same, said lever being also provided at opposite sides of the recess with stops arranged to engage the valve for limiting the movement of the lever.

5. An automatic safety appliance for railways including a brake valve having a projecting portion, and an oscillatory lever provided with a tapered recess receiving the projecting portions of the valve and forming cam edges for actuating the same, said lever being recessed or cut-away at opposite sides of the said recess to form shoulders for engaging the valve to limit the movement of the lever, and a locking device arranged to engage the lever.

6. An automatic safety appliance for railways including a brake valve having a projecting rounded portion, an oscillatory lever having a recess receiving the rounded projecting portion of the valve and forming opposite cams for actuating the valve, a locking device engaging the lever, and operating mechanism connected with the locking device for releasing the lever.

7. An automatic safety appliance for railways including an air brake valve, a lever arranged to engage and open the valve and provided with an electrical connector extending from opposite sides of the lever, and an electric circuit having an electric light and provided with spaced resilient contacted arms receiving the lever and arranged to be engaged by the said connector.

8. An automatic safety appliance for railways including an air brake valve, a lever arranged to engage and open the valve and provided with spaced electrical connectors extending from opposite sides of the lever, and an electric circuit including an electric light, and integral resilient contacted arms spaced apart to receive the lever and located

between the electrical connectors and arranged to engage one of the same when the lever is moved in either direction.

9. In an automatic safety appliance for railways, the combination with a brake valve, and an oscillatory lever for opening the same, of a tripping device movable into and out of the path of the lever and including a movable member, a relatively fixed member, a rod connected with one of the members and slidable on the other, and yieldable means supported by the rod for holding the movable member normally against movement.

10. In an automatic safety appliance for railways, the combination with a brake valve, and an oscillatory lever for opening the same, of a tripping device movable into and out of the path of the lever and including a movable member, a relatively fixed member, a rod connected with one of the members and slidable on the other, and springs disposed on the rod for holding the

movable member normally against movement and for returning the movable member to its normal position.

11. In an automatic safety appliance for railways, the combination with a brake valve, and an oscillatory lever for opening the same, of a tripping device including a pivoted lever arranged at an inclination and provided with a pivot member forming a continuation of the lever, said lever being also provided with a relatively fixed member arranged at an angle to the movable member, yieldable means connecting the said members, and operating mechanism connected with the tripping device.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

RICHARD D. FARRELL.

Witnesses:

T. B. MIDDLETON,
WM. L. PASCOE.