No. 854,503. PATENTED MAY 21, 1907.

G. W. JAYNE.

RAILWAY SAFETY APPLIANCE.

APPLICATION FILED JAN. 22, 1907.

Fig. 1.

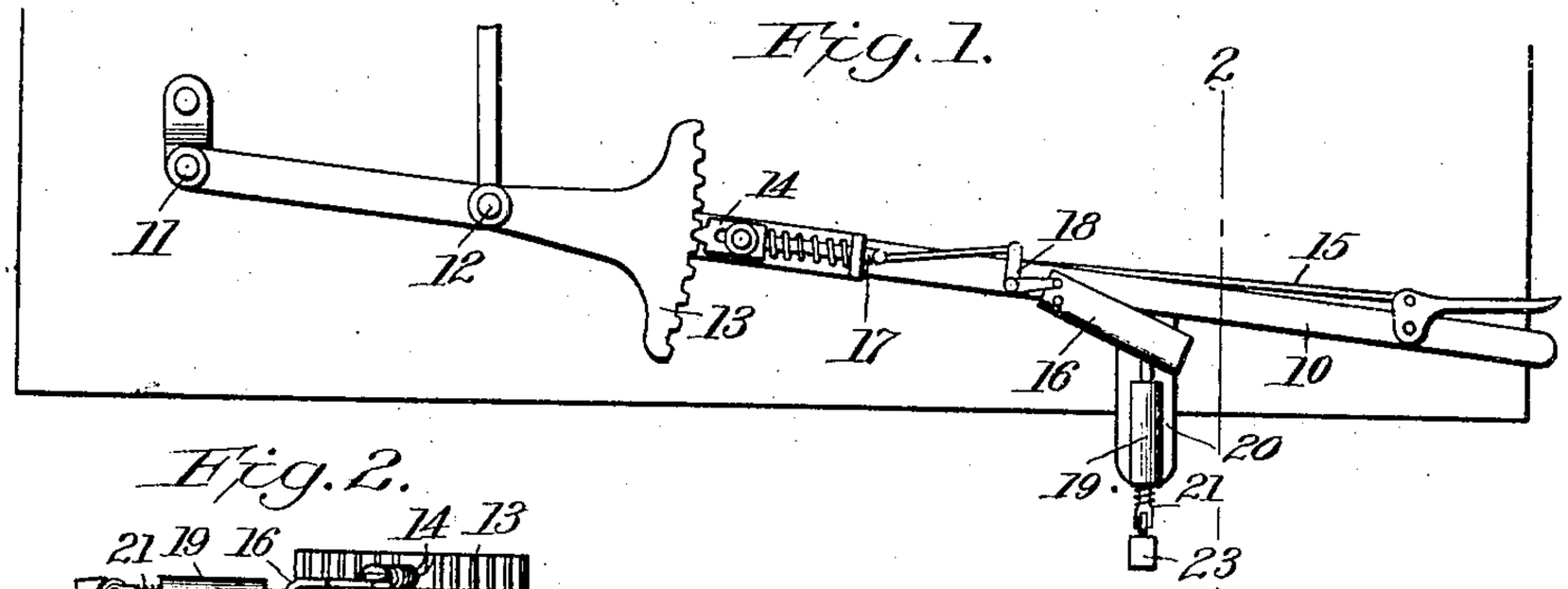

Fig. 2.

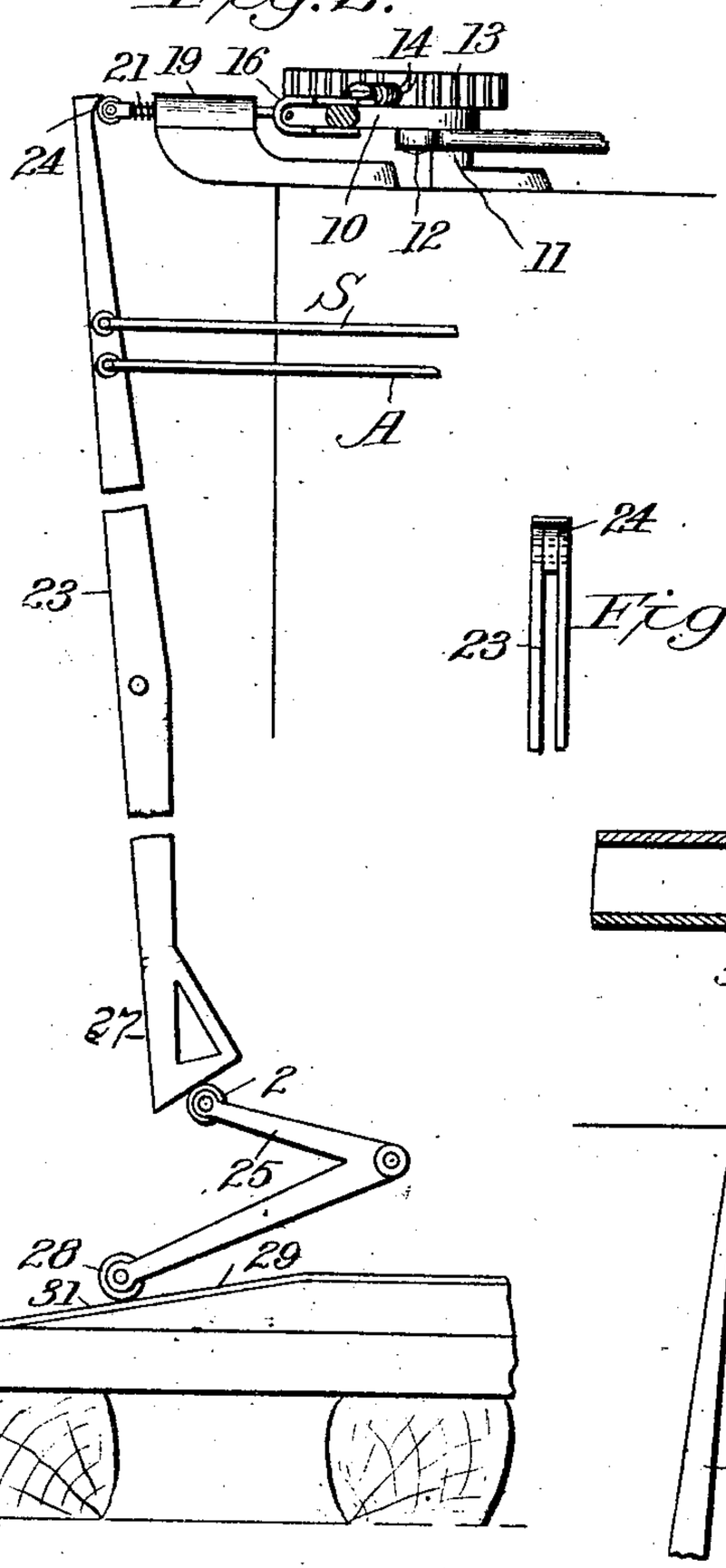

Fig. 3.

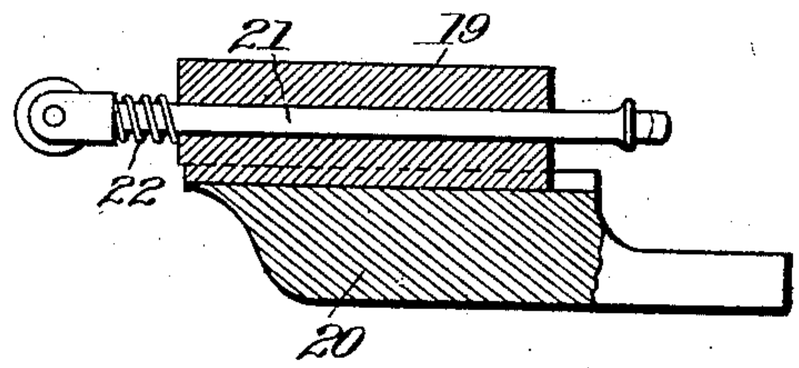

Fig. 6.

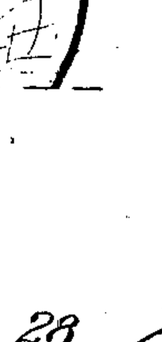

Fig. 4.

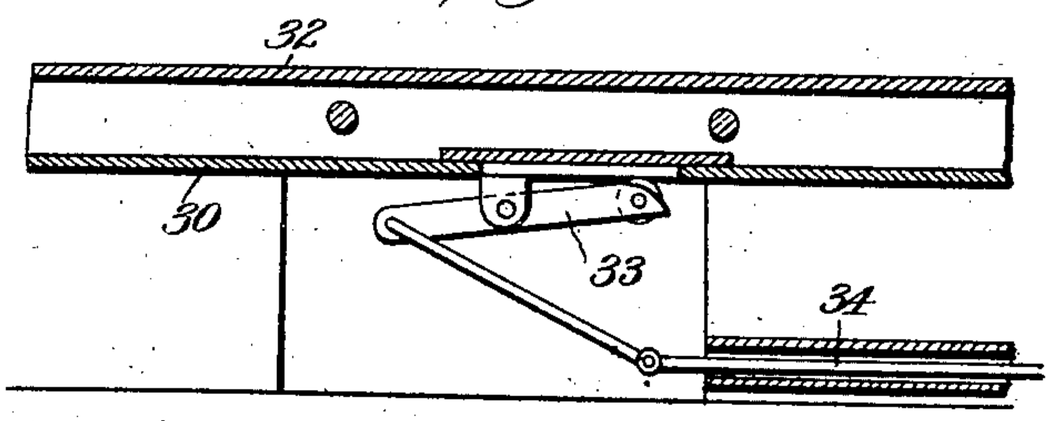

Fig. 5.

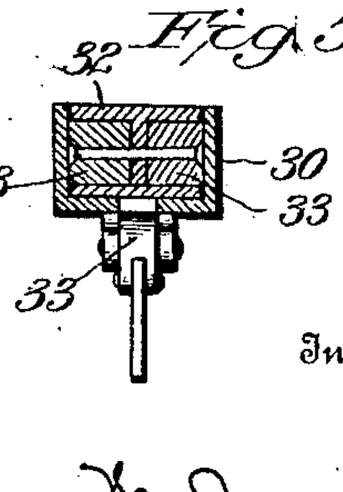

Fig. 7.

Witnesses

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RAILWAY SAFETY APPLIANCE.

No. 854,503. Specification of Letters Patent. Patented May 21, 1907.

Application filed January 22, 1907. Serial No. 353,535.

To all whom it may concern:

Be it known that I, GEORGE W. JAYNE, of Washington, in the District of Columbia, have invented certain new and useful Improvements in Railway Safety Appliances, of which the following is a specification.

This invention relates to certain new and useful improvements in railway safety appliances, and has reference more particularly to that class of inventions which are designed to automatically stop a locomotive should the engineer or driver fail to regard danger, or other cautionary signals forming a portion of the block system of a railroad.

The invention has for its object the production of a simple and inexpensive device which can be applied to the locomotives now in general use without changing their construction in any manner, and which will so act upon the throttle lever of the engine as to first disengage said lever from its locking device and subsequently throw the lever in a direction to cut off the power.

A further object is to provide means whereby sand is applied to the tracks and an emergency valve in the brake system opened, in the order named, the sanding and air release being accomplished by the same device that cuts off the power.

A further object is to provide an improved trip to operate my improved safety appliance.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawing:—Figure 1 is a top plan view illustrating my invention. Fig. 2 is a section on the line 2—2, Fig. 1. Fig. 3 is a detail view of the sliding member. Figs. 4 and 5 are detail views of the trip actuating device. Fig. 6 is a detail. Fig. 7 is a view of a modified form of operating lever.

Referring to the drawing, 10 designates the throttle lever pivoted at 11 and connected to the throttle valve at 12. Adjacent said lever is mounted a toothed locking segment 13 which is engaged by a spring pressed dog 14, the latter being retracted through the medium of a rod 15 connected to a hand lever adjacent the free end of the throttle lever. The foregoing structure is that in general use upon standard locomotives in this country. Upon lever 10 is pivoted a member 16 of approximately U-shape and embracing said lever in such a manner that the latter serves to limit the movement thereof, the pivot of said member being located near the end adjacent the shaft 17 of the dog 14. The shaft 17 is connected to member 16 by means of a bell crank lever 18 pivoted to the top of the throttle lever 10.

In engines of the extended boiler type, where the throttle lever is over the top of the boiler, I employ a slidable operating member 19 mounted in a bracket 20 and having a bore in which works a rod 21. The forward end of said rod is normally engaged by the free end of the member 16. The rear end of rod 21 is provided with an antifriction roller, and a spring 22 serves to assist the spring of dog 14 in holding said rod in a normally rearward position. The sliding member 20 is operated by means of a lever 23 which extends down through the cab floor, the upper end of said lever being provided with a cam portion 24 which engages the antifriction roller on rod 21. The lower end of lever 23 is engaged by a trip lever 25 pivoted adjacent thereto and shaped substantially as a bell crank, one end of said trip lever being provided with a roller 28 to engage the trip device 29. The lever 23 is preferably made of two parallel pieces of metal shaped substantially as shown, and riveted together, with the cams 24 and 27 formed of blocks of metal secured between the parallel pieces.

To the upper part of lever 23 is secured a rod S arranged to operate the sanding device (not shown) in any preferred or suitable manner, and below said rod is a second rod A connected to an emergency valve (not shown) in the air brake system. These rods are so located that just as the power is cut off the sanding apparatus is operated to sand the tracks and immediately after the delivery of the sand is started the air brakes are set.

Any suitable trip device may be employed, but I prefer to construct the same by forming a trough 30 of angle irons arranged in juxtaposition and supported on the ties in any suitable manner, and in said trough I arrange the tripping member formed of a T-shaped beam 32 with timbers 33 bolted thereto, the ends being arranged with long tapers or inclines 31. The weight of the tripping member is sufficient to cause the same to normally rest upon the bottom of trough 30, out of the path traversed by trip lever 25, and the same is raised by means of suitable levers 33 connected with the apparatus for operating the semaphore target, by means of rods 34. Of course it will be noted that while I have

described the trip as operated in conjunction with a semaphore, yet it is perfectly obvious that it may be also operated in connection with a switch, drawbridge, or the like, or it may be operated independently.

In that type of engines in which the throttle lever is located at the rear end of the boiler, I dispense with member 20 and its adjuncts, and operate the member 16 by direct engagement with lever 23, as shown in Fig. 7. If desired, the trip lever 25 may also be dispensed with and the lever 23 provided with an integral tripping portion 25′, formed by bending the lower end of lever 23 at an approximate angle of 45°, this modification being also illustrated in Fig. 7, the bent portion being reinforced, as shown.

In practice the tripping member is normally below the plane of the trip lever, but when the signalman or operator sets the apparatus by raising the tripping member, the lever 23 will be rocked. The effect of this rocking movement is to push forward the rod 21, where the same is employed, to move member 16, or else by direct engagement to move said member, the effect of which is to retract dog 14 against the action of its spring thereby disengaging said dog from segment 13. In locomotives which are provided with the double balanced type of throttle valve the foregoing action would serve in time to effect the automatic cutting off of the power, but in order to insure an immediate shutting off of the power, a continued movement of the lever 23 is permitted to push the throttle lever forward after the dog 14 is disengaged, thus positively closing the throttle valve. Where the sliding member 19 is employed the rod 21 is first moved to unlock the throttle lever and then the continued movement of the lever 23 forces member 19 forward to complete the movement of the throttle lever. By thus arranging the relative movement of the member 19 and rod 21 I avoid the necessity of employing a long connecting rod. The rods S and A are so positioned with relation to lever 23 that just after the power is cut off the sand valve is opened and the tracks sanded and immediately thereafter the air pressure in the brake system is reduced, thus bringing the train to a stop without any unnecessary jar or shock.

The advantages of my improved safety appliance are obvious. It will be particularly observed that I have provided a simple and inexpensive apparatus that may be applied to the standard locomotives without altering the construction thereof, and by means of which the power is automatically cut off from the engine and the train brought to a stop without any unusual shock or jar and within a minimum distance. It will also be observed that the same lever which operates to cut off the power is also arranged to operate the sanding devices and the air brakes in the order named. It will be further observed that while I have described my improved trip as operated by a signalman, it is perfectly obvious that the setting of the same may be controlled by a previous train, by employing any one of the numerous automatic devices heretofore designed for that purpose. Another advantage lies in the fact that in practice two trip members are preferably operated in conjunction and so separated that the engine will be brought to a stop through the medium of the first one, the second being so located with relation to the first that the engine will stop thereover. By this arrangement it will be impossible for the engineer to operate the throttle lever to start his engine until the trip devices are lowered, thus completely safeguarding against negligence or recklessness on the part of the engineer.

I claim as my invention:—

1. The combination with a throttle lever and a lock therefor, of means mounted on said lever for controlling said lock, and means for operating the lock controlling means to unlock the throttle lever and to subsequently engage the same to move it in a direction to shut off the power, said lock controlling means and said operating means being normally disconnected, said operating means being located to one side of said throttle lever and independent of the latter.

2. The combination with a throttle lever and a lock therefor, of a member pivoted to said throttle lever for controlling said lock, and means for operating the lock controlling member to unlock the throttle lever and to subsequently engage the same to move it in a direction to shut off the power, said member and said operating means being normally disconnected, said operating means being located to one side of said throttle lever and independent of the latter.

3. The combination with a throttle lever and a lock therefor, of a member pivoted to said throttle lever for controlling said lock, said member being provided with means for limiting the movement thereof, and means for operating said member to unlock the throttle lever and to subsequently move the same in a direction to shut off the power, said member and said operating means being normally disconnected.

4. The combination with a throttle lever and a lock therefor, of a member pivoted to said throttle lever and having a portion to engage the rear edge of the latter, and means for operating said member to unlock said throttle lever and to subsequently move the same in a direction to shut off the power, said member and said operating means being normally disconnected.

5. The combination with a throttle lever and a lock therefor, of a member pivoted at one end on said lever and controlling said

lock, and means for moving the free end of said member to disengage said lock and to subsequently engage the throttle lever to move the same in a direction to shut off the power, said member and said operating means being normally disconnected.

6. The combination with a throttle lever, and a lock therefor, of a U-shaped member pivoted to said lever, said member controlling said lock, and means for moving the free end of said member to disengage said lock and subsequently to embrace said lever to move the same in a direction to shut off the power.

7. The combination with a throttle lever, and a lock therefor, of a member pivoted to said throttle lever and controlling said lock, an operating lever, and means for causing said lever to move said member to first disengage said lock and subsequently move the throttle lever in a direction to shut off the power, said pivoted member and said lever being normally disconnected.

8. The combination with a throttle lever, and a lock therefor, of a member pivoted to said throttle lever and controlling said lock, a trip lever, and means operated by said lever for moving said member to first disengage said lock and to subsequently move said throttle lever in a direction to shut off the power, said pivoted member and said moving means being normally disconnected.

9. The combination with a throttle lever, and a lock therefor, of a member pivoted to said throttle lever and controlling said lock, a slidable member for operating said pivoted member and normally disconnected therefrom, and means for operating the slidable member to first move the pivoted member to disengage said lock, and to subsequently cause the same to engage said throttle lever to move the latter in a direction to shut off the power.

10. The combination with a throttle lever and a lock therefor, of a member pivoted to the said lever and controlling said lock, a slidable member, for operating said pivoted member and normally disconnected therefrom, having a bore, a rod mounted in said bore and engaging the pivoted member, and means for operating said slidable member and rod to move the pivoted member to first disengage said lock and subsequently engage said throttle lever to move the latter in a direction to shut off the power.

11. The combination with a throttle lever and a lock therefor, of a member pivoted to said lever and controlling said lock, a slidable member, and a lever for operating the same, said pivoted member being moved to first disengage said lock and subsequently engage said throttle lever to move the same in a direction to shut off the power.

12. A safety device comprising a lever, means for tripping the same, and means connected to said lever for shutting off the power, for applying sand to the tracks, and for operating the air brakes in the order named.

13. The combination with a throttle lever, of a trip device, and means operated by said trip device for moving said throttle lever in a direction to shut off the power and subsequently provide a temporary lock therefor.

14. The combination with a throttle lever, of a trip device, a slidable member, and means operated by said trip device to project said slidable member against said throttle lever in a direction to shut off the power and to subsequently serve as a temporary lock therefor.

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

GEORGE W. JAYNE.

Witnesses:

H. JOSEPH DOYLE,

WM. S. HODGES.