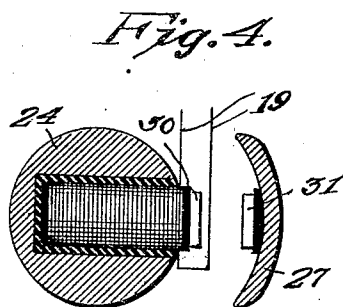
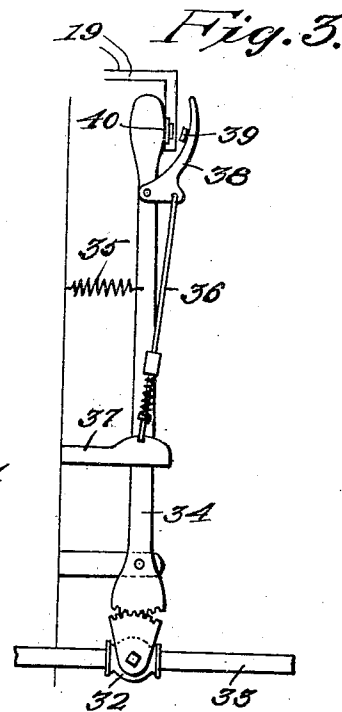
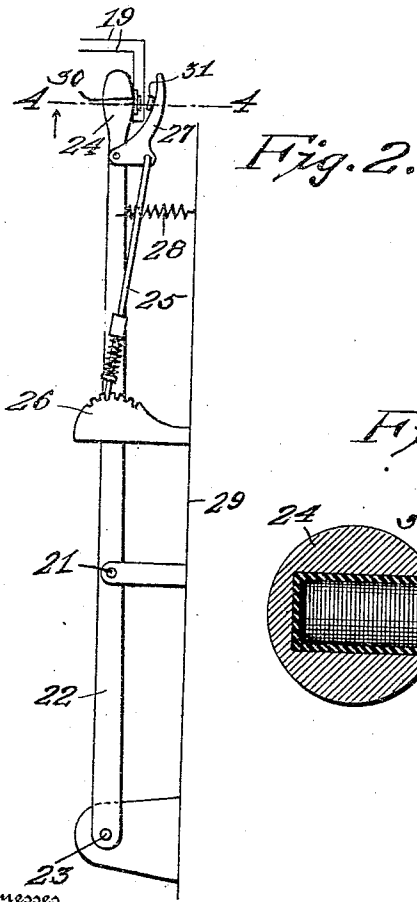
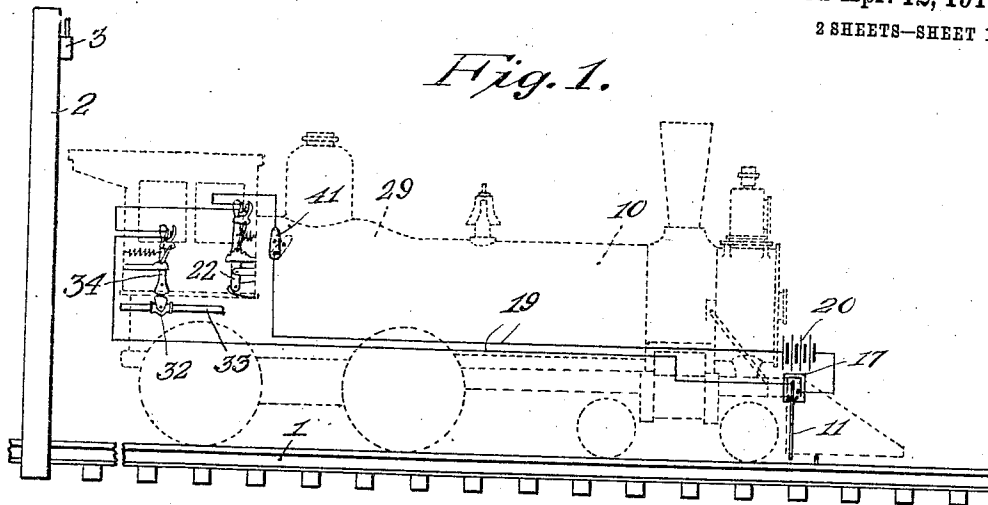


S. D. JARVIS.  
 AUTOMATIC TRAIN STOP.  
 APPLICATION FILED APR. 10, 1909.

954,517.

Patented Apr. 12, 1910.

2 SHEETS—SHEET 1.



Witnesses

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Fig. 6.

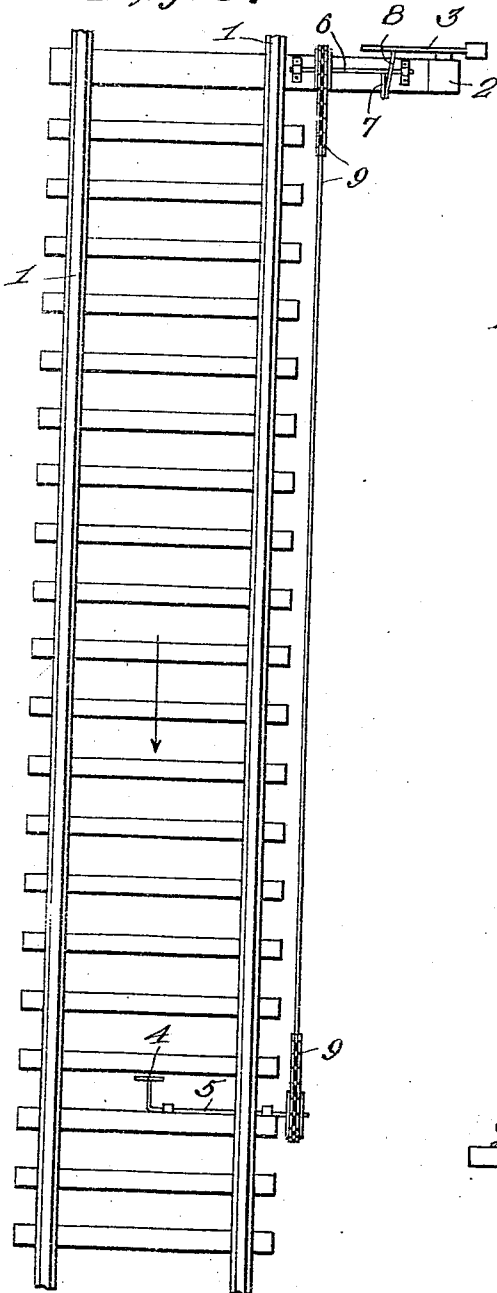


Fig. 5.

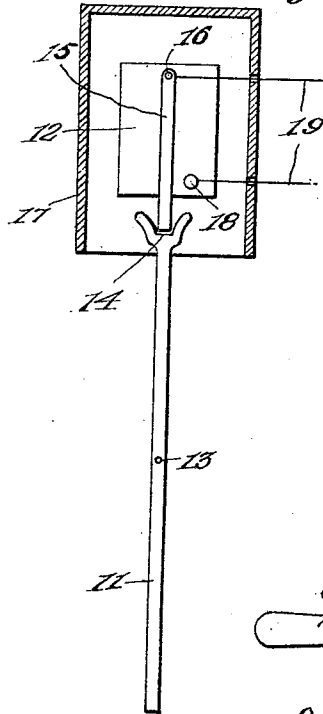
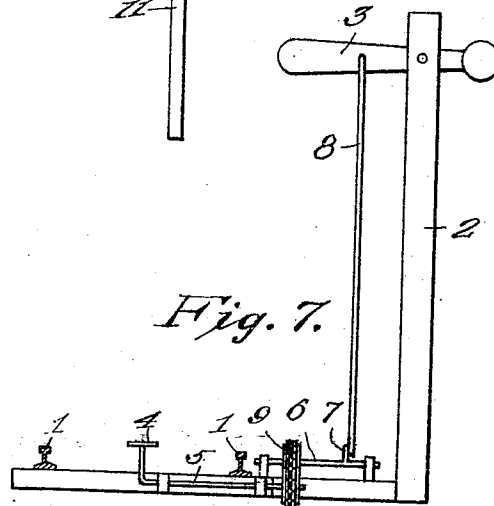


Fig. 7.



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# UNITED STATES PATENT OFFICE.

SAMUEL D. JARVIS, OF LATHAM, ILLINOIS.

## AUTOMATIC TRAIN-STOP.

954,517.

Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed April 10, 1909. Serial No. 489,081.

*To all whom it may concern:*

Be it known that I, SAMUEL D. JARVIS, a citizen of the United States, residing at Latham, in the county of Logan and State of Illinois, have invented certain new and useful Improvements in Automatic Train-Stops, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in automatic train stops or apparatus for controlling railway trains.

The object of the invention is to provide a simple and practical means for automatically stopping or arresting a train should the engineer fail to observe a signal or disregard the same, the stopping of the train being effected by automatically cutting off the supply of steam to the engine and simultaneously applying the brakes.

With the above and other objects in view, the invention consists of the novel features of construction and the combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a view showing in dotted lines a locomotive equipped with my improved controlling and stopping apparatus; Figs. 2 and 3 are detail views showing the throttle and air brake levers; Fig. 4 is a detail section taken on the plane indicated by the line 4—4 in Fig. 2; Fig. 5 is a detail sectional view showing the circuit closing switch and operating means therefor; and Figs. 6 and 7 are views showing the trip upon the track and the semaphore or signal controlling the same.

In the drawings 1 denotes a railway track alongside of which is a signal post or tower 2 carrying a semaphore or other signal 3. The latter is operatively connected by any suitable operating connections to a trip 4 arranged upon the track. Said trip is adapted to engage and operate co-acting devices on locomotives passing over the track and, while it may be of any form and construction and arranged at any distance from the signal, it is preferably in the form of a rock arm or lever and arranged at a suitable distance from the signal or semaphore 3. The operating connections between the signal and trip are such that when the signal is raised to a danger signaling position the trip 4 will be simultaneously moved to operative position,

that is, in the path of the device or devices on passing locomotives, in order that should the engineer fail to observe or should he disregard the signal, the trip 4 will actuate devices upon the locomotive which will simultaneously cut off steam and apply the brakes to automatically stop the train. As illustrated, said operative connections consist of a transverse rock shaft 5 on which the trip arm or lever 4 is fixed, a second rock shaft 6 rotated adjacent to the post 2 and having an arm 7 connected by a rod or link 8 to the pivoted signal arm 3, and sprocket and sprocket chain connections 9 between the shafts 5, 6.

Carried by the locomotive 10 and preferably arranged adjacent to or under its pilot is a depending lever 11 adapted to be engaged and actuated by the trip 4 on the track. Said lever when struck by the trip is adapted to close an electric switch 12 and, as illustrated, it is fulcrumed intermediate its ends on a transverse pivot 13 so that its lower end can swing in a forward and rearward direction or longitudinally of the track. The upper end of said lever 11 is forked, as shown at 14, to receive the free lower end of a contact lever 15 forming one member of the switch 12 and having its upper end pivoted at 16 on an insulated support arranged in a protecting box or casing 17, preferably made of metal and arranged at the rear of the pilot of the locomotive. The switch lever 15 when actuated is adapted to engage the stationary contact 18 of the switch 12 and thereby close a normally open electric circuit having conductors 19 connected to the switch lever 15 and switch contact 18 and leading from an electric battery 20 preferably arranged on the pilot of the locomotive, as shown. It will be understood, however, that any other source of electric energy supply may be substituted for the battery 20. The conductors 19 extend rearwardly upon the locomotive to the cab and are connected to devices which control the throttle and the air brake system.

21 denotes the stem of the throttle valve of the engine or locomotive which stem is connected to the usual operating hand lever 22 having one end pivoted at 23 and its other end provided with a hand grip 24. The lever 22 is locked in the usual manner by a spring pressed slidably mounted pawl 25 adapted to engage a stationary segmental

locking rack 26 and to be retracted from engagement with the latter by means of a pivoted bell crank lever or hand piece 27. In the practice of the invention, I provide a spring 28, preferably a coil spring, between the lever 22 and the wall of the boiler 29 or any other stationary support, which spring will actuate the lever to close the throttle valve the instant said lever is unlocked; and I also make the hand grip 24 of said lever hollow and within its cavity I provide an electromagnet 30, the armature 31 of which I secure to the hand piece or clutch 27. The magnet and its armature are suitably insulated from the parts which carry them and said magnet has its coils connected to the conductors 19 so that it is in said electric circuit. By arranging the magnet and its armature as set forth, it will be seen that when said circuit is closed the magnet will be energized and will attract its armature, thereby retracting the dog 25 from engagement with the rack teeth 26 so that the spring 28 will shift the lever 22 to close the throttle valve and thereby cut off the supply of steam to the engine cylinders.

32 denotes a valve arranged in a branch pipe 33 from the train pipe or other suitable portion of the air brake system of the train and adapted when open to cause the application of the air brakes. This valve, it will be understood, is independent of the engineer's valve and has connected to it an operating lever 34 which is similar in construction and operation to the throttle lever 22. Said lever 34 is actuated to its open position by a spring 35 and is locked in its closed position by a spring pressed pawl 36 which engages a stationary segmental locking rack 37, the latter having but one notch for the reception of the pawl. The pawl 36 is retracted by a pivoted hand piece or clutch 38, which latter carries the armature 39 of an electromagnet 40 arranged in the hand grip of the lever 34. Said magnet 40 has its coil included in the circuit 19 so that it will be energized simultaneously with the magnet 30 and, consequently, the air brakes will be applied at the same time the throttle valve is closed.

For the purpose of preventing the apparatus from stopping the train should the engineer see the signal 3, a suitable switch 41 is also included in the circuit 19. Said switch is a normally closed one and preferably in the form of a push button.

In operation, it will be seen that when the signal 3 is moved to its set or danger signaling position, the trip 4 on the track will be simultaneously raised to an operative position so that should the engineer fail to see the signal 3 the train will be automatically stopped when it passes the trip 4. When the locomotive passes the trip 4, the lever 11 will be actuated and will cause

the switch lever 15 to engage the contact 18 and thereby close the normally open circuit 19 in which the magnets 30, and 40 are included. The instant the circuit is closed, said magnets are energized and they will attract their armatures and thereby unlock the levers 22, 34 so that the springs 28, 35, respectively, of said levers will actuate them and thereby cause a simultaneous cutting off of the supply of steam to the engine and applying the brakes of the train. It will be noted that the provision of the magnets and armatures on the throttle air brake levers will not interfere with the resetting of said levers nor will the magnet 30 interfere with the ordinary operation of the throttle lever.

From the foregoing it will be noted that the invention provides an exceedingly simple and practical train controlling or stopping apparatus; that it may be installed on present railroads for a comparatively small cost and that it will be effective and reliable in operation.

While the preferred embodiment of the invention has been shown and described in detail, it will be understood that I do not wish to be limited to the constructions set forth since various changes in the form, proportion and arrangement of parts and in the details of construction may be resorted to without departing from the spirit and scope of the invention.

Having thus described the invention what is claimed is:

1. A train stopping apparatus comprising a power controlling lever, a pawl and ratchet locking device for said lever, a spring for actuating said lever to cut off the motive power when released by its locking device, a retracting member for said locking device, an electromagnet carried by the lever and having its armature carried by said retracting member, a normally open switch, an electric circuit including said switch and said magnet and co-acting means on the train and road bed for closing said switch.

2. A train stopping apparatus comprising a lever for controlling the application of the train brakes, a spring for moving said lever to a position to cause the application of the brakes, a dog for locking said lever in normal position, a retracting member for said dog, an electromagnet carried by said lever and having its armature carried by said retracting member, a normally open switch, an electric circuit including said switch and said magnet and co-acting means on the train and road bed for closing said switch.

3. A train stopping apparatus comprising a power-controlling lever having a hand grip formed in one side with a cavity, an electromagnet set in said cavity and insulated from the lever, a pawl and ratchet

locking device for said lever, a pawl retracting hand piece mounted upon the lever and movable toward and from said hand grip, an armature carried by said hand piece to co-act with said magnet, a spring for actuating said lever to cut off the motive power when released by said locking device, a normally open switch, an electric circuit including said switch and said magnet, and co-acting means on the train and road bed for closing said switch.

4. A train stopping apparatus comprising a lever for controlling the application of the train brakes and formed with a hand grip having a cavity in one of its sides, an electromagnet arranged in said cavity and insulated from the lever, a locking dog for said lever, a movable hand piece for retracting said dog and mounted on the lever for movement toward and from said hand grip, an armature carried by said hand piece to co-act with said magnet, a spring for actuating said lever to cause the application of the brakes when said lever is released by its locking dog, a normally open switch, and an electric circuit including said switch and

said magnet, and co-acting means on the train and road bed for closing said switch.

5. A train stopping apparatus comprising power-controlling and train-arresting devices, electrically operated means for controlling said devices, a switch having a stationary contact, and a vertically disposed lever pivoted at its upper end adapted to hang normally in perpendicular position out of engagement with said stationary contact, an electric circuit including said switch and said electrically operated controlling means, a vertically disposed switch operating arm pivoted intermediate its ends upon a locomotive and having its upper end forked to receive the lower end of said switch lever, a trip arm upon the road bed and supports and connections by which said trip arm is elevated into the path of the lower end of said switch operating arm.

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

SAMUEL D. JARVIS.

Witnesses:

THOS. GASAWAY,  
CHAS. J. CONROY.