M. A. CARMICHAEL.

AUTOMATIC TRAIN STOP.

APPLICATION FILED NOV. 21, 1914.

1,195,975.

Patented Aug. 29, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

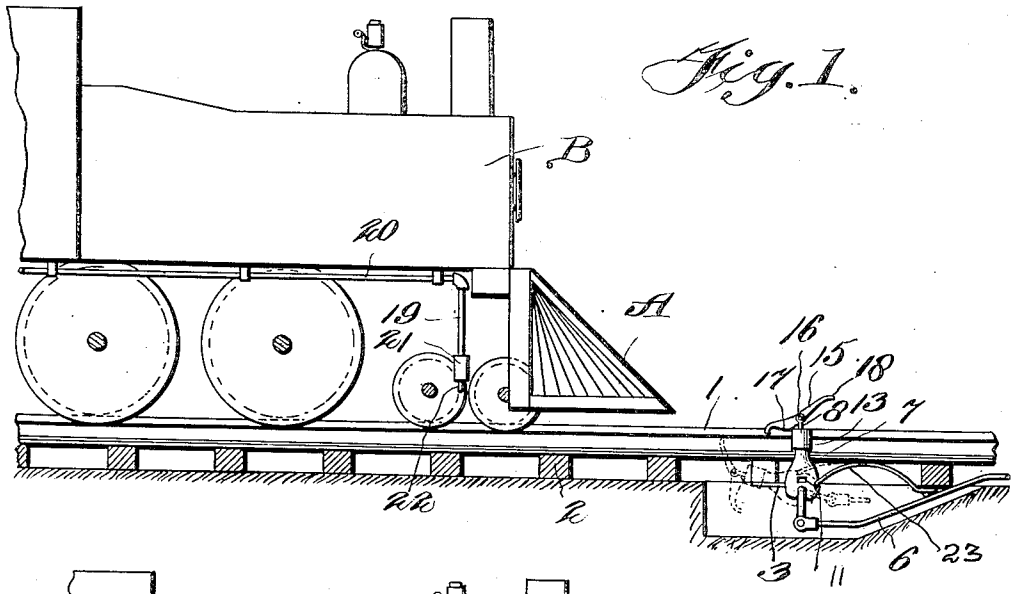
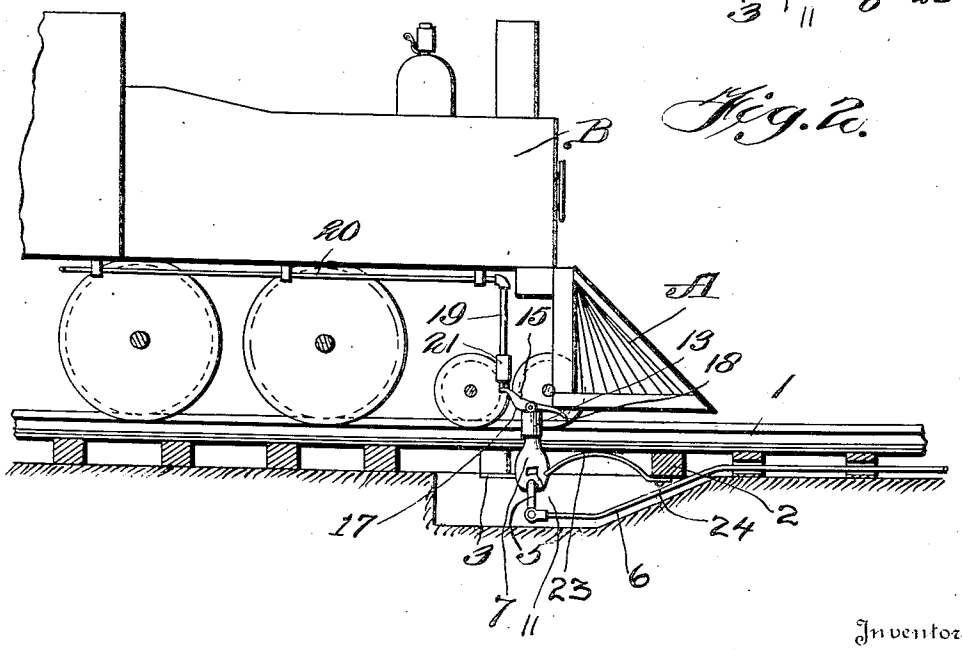


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3

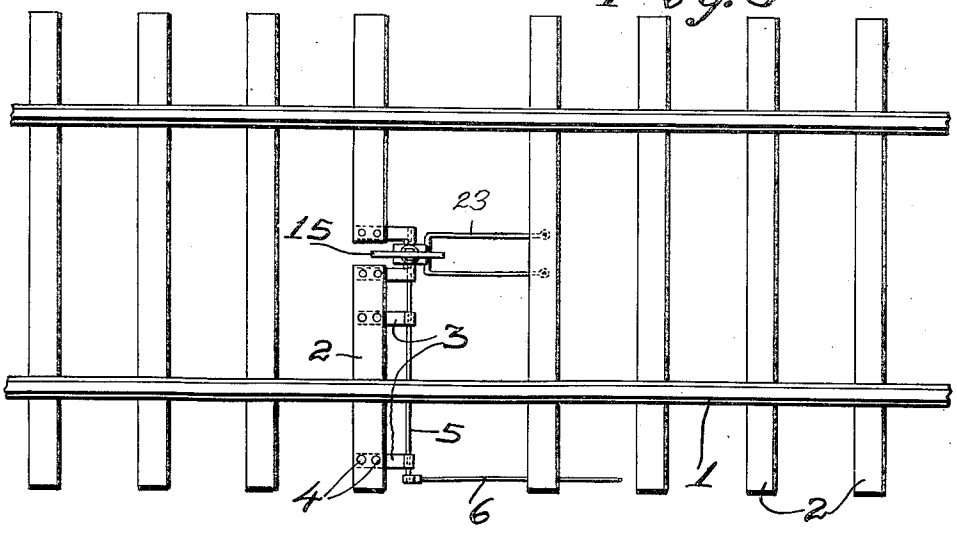
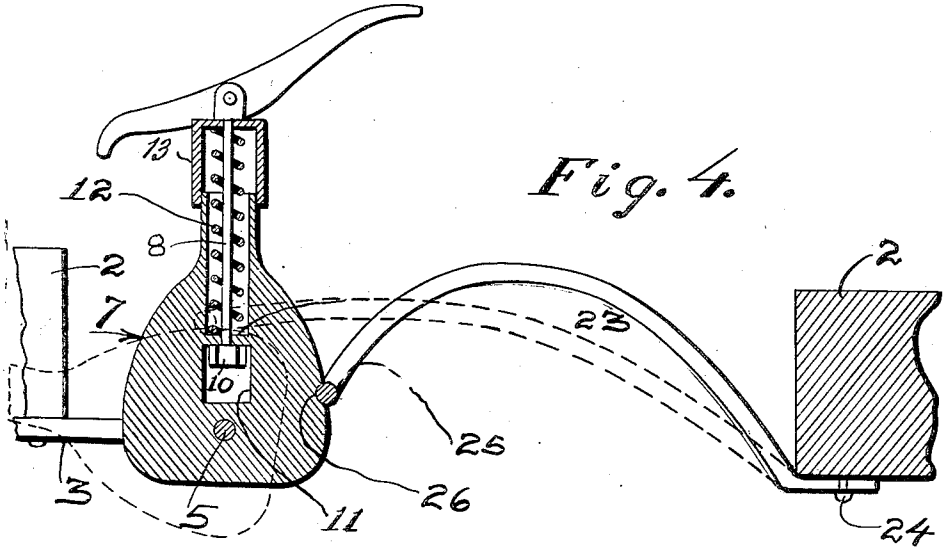


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

MELVIN A. CARMICHAEL, OF EVERETT, WASHINGTON.

AUTOMATIC TRAIN-STOP.

1,195,975. Specification of Letters Patent. Patented Aug. 29, 1916.

Application filed November 21, 1914. Serial No. 873,349.

To all whom it may concern:

Be it known that I, MELVIN A. CARMICHAEL, a citizen of the United States, residing at Everett, in the county of Snohomish and State of Washington, have invented certain new and useful Improvements in Automatic Train-Stops; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in apparatus for automatically stopping trains should the engineer fail to heed a set danger signal and attempt to run by the signal.

An important object of my invention is to provide a simple, inexpensive and reliable device that is to be arranged adjacent to the rails of a track and moved into and out of operative position through the medium of semaphore or like signaling devices so as to coöperate with a train to bring about the application of the brakes, resulting in the stopping of the train.

Another object is to provide a device of the character described that is of simple construction, reliable and efficient in operation and inexpensive to manufacture and install.

The above and additional objects are accomplished by such means as are illustrated in the accompanying drawings, described in the following specification and then more particularly pointed out as claimed.

With reference to the drawings, wherein I have illustrated the preferred embodiment of my invention as it is reduced to practice, and throughout the several views of which similar reference numerals designate corresponding parts, Figure 1 is a side elevation of a locomotive and track showing my improved automatic train stop in operative position ready to coöperate with a train, Fig. 2 is a similar view showing the automatic mechanism coöperating with the train and in engagement therewith, Fig. 3 is a plan view of my improved mechanism showing its relation relative to the rails of a track, and Fig. 4 is an enlarged fragmentary detail vertical sectional view taken through the train engaging member showing the means for holding it yieldingly in operative position.

Referring to the drawings by characters of reference the numeral 1 designates rails of the ordinary construction and mounted in the ordinary manner upon ties 2. Bearing members 3 are secured by a suitable fastening means 4 to the under face of one of the ties 2 and extends outwardly therefrom. Journaled transversely in the bearing members 3 is a crank shaft 5 that extends at right angles to the rail 1 and is connected at one end with a rod 6 which rod is arranged to be connected with semaphore signaling means usually found along side the track, and not shown.

Rigidly secured at one end to the crank shaft 5 is a tubular member 7 disposed centrally between the rails and having one end closed and the other open, said connection being had at the closed end. The member 7 is enlarged and rounded at its lower end to form a base. A rod 8 is slidable within the tubular member 7 and is positioned centrally therein and guided in its sliding movement by means of a partition or web 9 formed interiorly of the member 7 adjacent to the closed end thereof, which web or partition is centrally apertured to receive the rod 8. A nut 10 is turned on the lower end of the rod 8, to prevent the rod being withdrawn from the web 9. The tubular member 7 is provided with an opening 11 extending therethrough adjacent to the closed end thereof to facilitate positioning and removal of the nut 10. A helical expansion spring 12 is mounted upon the rod and within the tubular member 7. A tubular member 13 having one end closed and the other open, telescopes the member 7 and slidably receives the rod 8 in an aperture 14 in its closed end. The closed end engages the bearing on the upper end of the rod. A trip member 15 is pivoted in a U-shaped bearing 16 formed on the outer end of the rod 8 intermediate and approximately centrally of its ends. The trip member 15 is enlarged as at 17 at one end and at both ends is turned downwardly as at 18 so as to provide a curved upper end surface.

The train carried mechanism to effect the automatic stopping of the train consists of an auxiliary air line pipe 19 that is secured at one end to the air line 20 of the train and at its other end carries a valve 21 to vent said air line. A movable valve handle 22 is carried by the valve 21 and is disposed in such position as to be engaged and moved upwardly or inwardly by the trip member

15 to effect an opening of the valve resulting in the bleeding or venting of the train line and stopping of the train through the medium of the application of the brakes. The tie 2 to which the mechanism is attached is divided centrally of its ends to provide a space so as to allow the member 7 to be moved downwardly to a position below the level of the tops of the rails as shown in dotted lines in Fig. 1.

In operation, should, for example, the semaphore or like signaling mechanism to which the rod 6 is attached, not shown, be operated to indicate danger, the tubular member 7 is thrown from a horizontal position as illustrated in dotted lines in Fig. 1 to vertical operative position and the enlarged end 17 of the lever is by force of gravity held downwardly while the other end is disposed upwardly. Upon the approach of the train the upper end of the trip 15 is engaged and moved downwardly by the pilot A of the locomotive B. When the trip lever 15 is moved downwardly as described the spring 12 is compressed and immediately upon the movement of the pilot A out of engagement with the trip, that is the enlarged end thereof, said end will be moved upwardly while the opposite end is in engagement with the rear of the pilot as shown in Fig. 2, and engage the valve handle 22 and force the same upwardly or in the desired direction to cause the valve 21 to open resulting in the application of the brakes and the stopping of the train. Upon passing of the train the trip 15 will assume the position as shown in Fig. 1, that is, as long as the signal is in danger position. The spring serves to force the rod 8 upwardly and the trip 15 in such manner that the valve is opened in a reliable manner.

It will be readily seen that I have provided novel means to prevent the engineer of a train from running past a set danger signal, said means being of simple construction, reliable and efficient in operation and inexpensive to install. The device carried by the track may be readily attached and detached and access to the interior of the member 7 is readily had through the medium of the removable cap 13. When the signaling mechanism, not shown, is in normal or safety position, the tubular member 7 and corresponding parts are moved into horizontal position beneath the upper surface of the rails 1 as shown in Fig. 1 and so that the trains are free to pass without coöperation therewith.

As a means to hold the member 7 in upright or operative position and permit the yielding thereof when engaged by a train I provide a U-shape spring 23 that is secured at its ends as at 24 to the under face of the tie 2 opposite to the tie to which the device is secured and upon the opposite side of the member 7. The web portion 25 of the U-spring 23 is designed to engage in a notch or recess 26 formed in the opposed face of the enlarged lower end of the member 7. The spring 23 is of arcuate formation as clearly shown in Fig. 4 and when the device is engaged by a train it will permit yielding of the member 7 toward the tie to which the spring is secured. When the member 7 is in down position as shown in dotted lines in Fig. 1, the web portion of the spring 23 rests upon the upper face thereof, as shown clearly in Fig. 1 of the drawings.

In practice, I have found that the form of my invention, illustrated in the drawings and referred to in the above description, as the preferred embodiment, is the most efficient and practical; yet realizing that the conditions concurrent with the adoption of my device will necessarily vary, I desire to emphasize the fact that various minor changes in details of construction, proportion and arrangement of parts may be resorted to, when required without sacrificing any of the advantages of my invention, as set forth.

What I claim is:—

1. An automatic trip for train stops comprising bearing members secured to a tie, a crank shaft journaled in said bearing members, means for connecting said crank shaft to a signal, a tubular member mounted on said shaft, a rod slidably mounted in said tubular member, means carried by said rod for engaging a valve of a train line, means for normally holding said rod in its outermost position, a U-shaped spring secured to a tie and adapted to engage the side of said tubular member to form a shock absorber.

2. An automatic trip for train stops comprising bearing members secured to a tie, a crank shaft journaled in said bearing members, means for connecting said crank shaft to a signal, a tubular member mounted on said shaft, a web formed in said tubular member, a rod slidable through said web and within the tubular member, a nut secured to the lower end of said rod and adapted to abut said web to limit the outward movement of the rod, a cap slidably mounted on said tubular member and provided with an aperture to receive the rod, a spring interposed between the cap and said web to normally hold said rod in its outermost position, means carried by said rod for engaging a valve of a train line, and means for absorbing the shock to said tubular member when engaged by a train.

3. An automatic trip for train stops comprising bearing members secured to a tie, a crank shaft journaled in said bearing members, means connecting said crank shaft to a signal, a tubular member mounted on said shaft, a rod slidably mounted in said tubular member, means for holding said rod in its outermost position, means for limiting the

outward movement of said rod, a trip member pivoted to the upper end of said rod, said trip member provided with an enlarged portion adjacent its pivoted point, the free ends of the trip member being curved downwardly to form a curved upper edge to engage a valve of a train line and means for absorbing the shock to the tubular member when the said member is engaged by a train.

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

MELVIN A. CARMICHAEL.

Witnesses:
M. COPPS,
JOHN W. GODFREY.