

No. 798,742.

PATENTED SEPT. 5, 1905.

C. H. MARTIN.  
AUTOMATIC TRAIN SIGNAL.  
APPLICATION FILED DEC. 20, 1904.

2 SHEETS—SHEET 1.

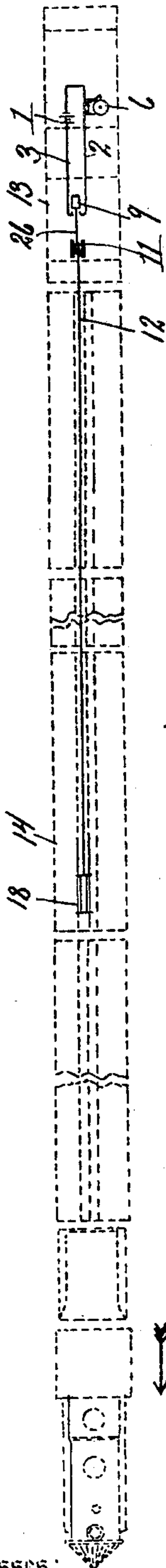


Fig. 1.

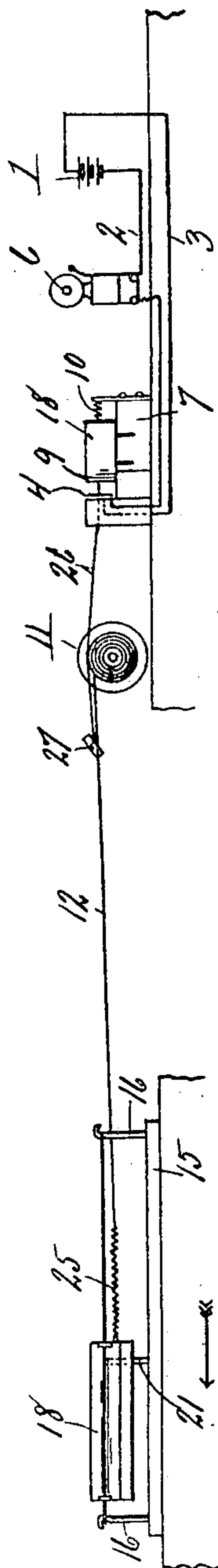


Fig. 2.

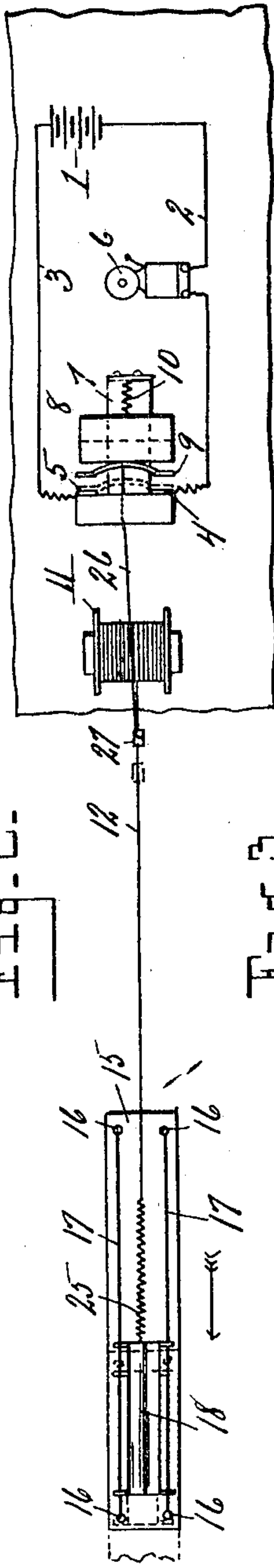


Fig. 3.

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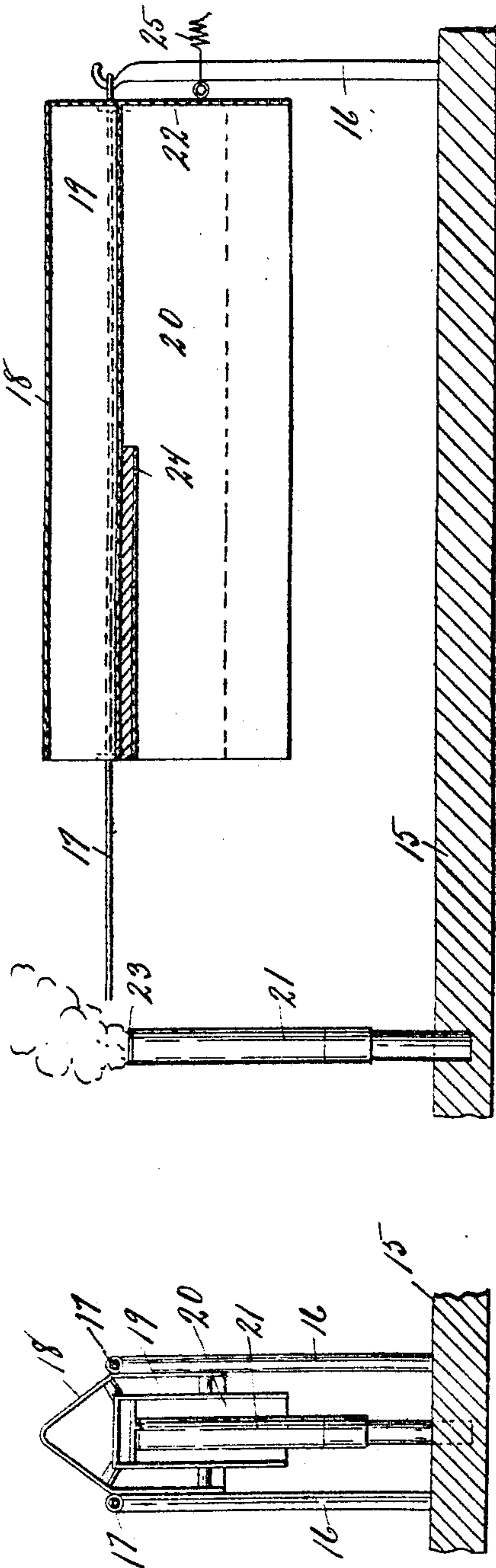


Fig. 5.

Fig. 4.

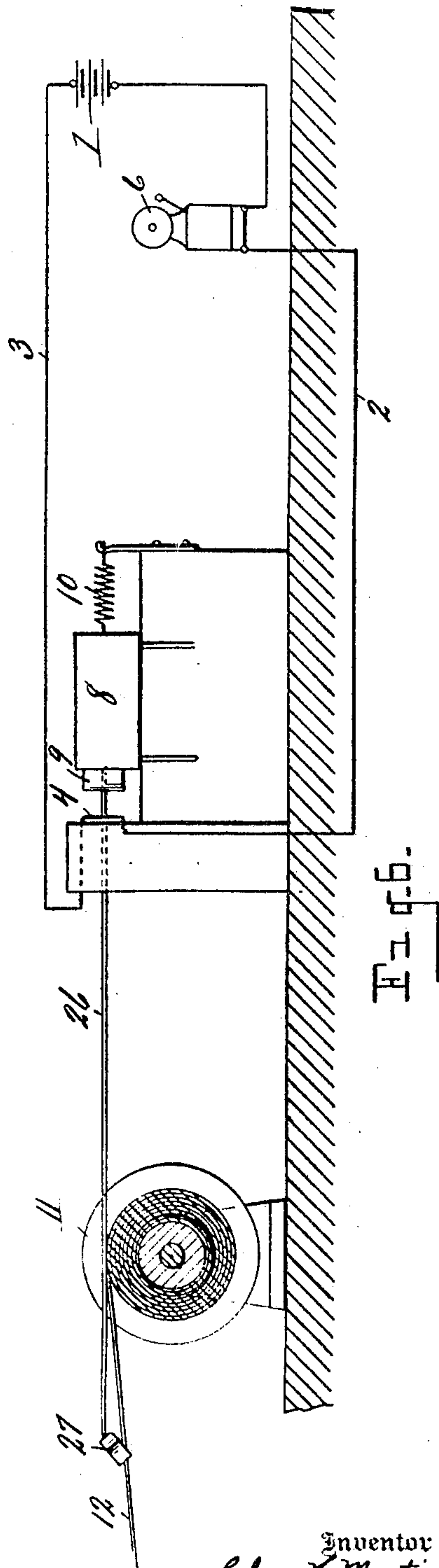


Fig. 6.

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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC TRAIN-SIGNAL.

No. 798,742.

Specification of Letters Patent.

Patented Sept. 5, 1905.

Application filed December 20, 1904. Serial No. 237,621

*To all whom it may concern:*

Be it known that I, CLAY H. MARTIN, a citizen of the United States, residing at Jackson, in the county of Jackson, State of Michigan, have invented certain new and useful Improvements in Automatic Train-Signals; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to an automatic train-signal; and it consists in the construction and arrangement of parts hereinafter fully set forth, and pointed out particularly in the claims.

The object of the invention is to provide simple and efficient means whereby the trainmen in the way-car as well as the engineer may be advised of the breaking in two of a freight-train in time to avert a serious accident, the invention being more particularly applicable to mixed trains comprising cars equipped with air-brakes and those not so equipped. The usual practice is to put the cars without air-brakes at the rear of the train, and this invention is used to notify the trainmen of a separation of the train between the cars equipped with air and the way-car, the point where the train is most likely to break, the arrangement being such as to automatically ring an alarm-bell in the way-car and display a torch-signal upon the rear of the cars equipped with air, so as to be visible to the engineer.

The above object is attained by the operative parts illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatical view of a train, showing the application of my invention thereto. Fig. 2 is a diagrammatical view of the signal-actuating mechanism, showing the operative parts in side elevation. Fig. 3 is a similar view showing a plan view of the operative parts. Fig. 4 is an enlarged end elevation of the housing which covers and protects the torch-signal and which is provided with means for igniting said torch as it is drawn therefrom through the breaking of the train. Fig. 5 is a longitudinal sectional view through said housing and a portion of the running-board of the car upon which it is mounted,

illustrating the position of parts after the train has separated and the signal-torch has been lighted. Fig. 6 is a view, partly in section, showing the alarm-bell circuit, the spring-actuated circuit-closer, the cord attached to the circuit-closer, and the train-cord which is wound upon a spool and leads to the housing inclosing the torch-signal.

In mixed trains composed partly of cars equipped with air and partly non-air cars provided with the ordinary hand-brake mechanism the train is made up with the air-equipped cars forward and connected so as to be controlled from the locomotive in the ordinary manner. The non-air cars are placed at the rear of the train, and experience has demonstrated that in mixed trains of this character should a break occur it will in most cases occur at the coupling between the last air-car and the first car without air.

The usual manner of equipping a mixed train with this improved signal mechanism is to mount the housing containing the torch-signal upon the last of the air-equipped cars and to place the alarm-bell signal in the way-car at the rear of the train, running the connecting-cord over the tops of the intervening non-air cars to the movable housing containing the torch-signal. It is not necessary to include in the scope of the operation of the apparatus the air-equipped cars, for should a break occur in that part of the train the severing of the train-pipe will automatically set the brakes, and thereby give notice to the engineer and train-crew of the accident; but without this signal apparatus a break in the train in the rear of the last air-car might not be noticed by the engineer nor by the train-crew in time to avert an accident.

Referring to the characters of reference, 1 designates an ordinary battery having the circuit-wires 2 and 3 leading therefrom and terminating at the terminal plates 4 and 5. Included in the circuit formed by said wires is an electrical alarm-bell 6. Mounted to slide upon a support 7 is a block 8, carrying a spring circuit-closer 9, whose opposite ends are adapted upon a movement of the block 8 to come into contact with the terminal plates 4 and 5, thereby closing the battery-circuit and causing a ringing of the bell 6. Attached to the block 8 is a spring 10, which is adapted to return it to its normal position, whereby the circuit-closer 9 is held from contact



with the terminals 4 and 5, leaving the battery-circuit normally open. Located at some point adjacent the circuit-closer is a spool 11, upon which is wound a cord 12 of such length as to extend across the cars, which may intervene between the way-car and the last car equipped with air. These parts, comprising battery, bell, and circuit-closer, with the spool 11 and the cord wound thereon, are located in the way-car (indicated at 13 in Fig. 1) at any convenient point. Upon the top of the last of the cars equipped with air (indicated at 14 in Fig. 1) is placed a suitable base 15, having four uprights 16, between which the supporting-wires 17 are strung. Mounted upon said supporting-wires to slide longitudinally is the housing 18, which is provided with a double wall forming an air-space 19 to prevent the accumulation of moisture and with an inner space 20, adapted to inclose the torch-signal 21, whereby it is perfectly protected from the weather. One end of this housing is closed, as at 22, and the other end is open, enabling it to slide over the torch-signal 21, which is securely fixed in the base 15. Upon the end of the torch-signal is a cap 23, adapted to be ignited by friction, and within the housing so positioned as to draw over the top of the cap as the housing is pulled therefrom is a friction-surface 24, adapted to ignite the cap of the torch by a rubbing contact therewith. Attached to the closed end of the housing is a coiled spring 25 of weak tension, whose opposite end is attached to the end of the cord 12, which is wound upon the spool 11. Attached to the circuit-closer 9 is a cord 26, whose opposite end is attached by a suitable clamp 27 with the cord 12. After the train has been made up the cord 12 is strung from the way-car across the intervening non-air cars and attached to the spring 25, which is coupled to the end of the slidable housing 18, under which is the torch-signal 21, which arrangement is shown in Figs. 2 and 3. Should the train separate between the car carrying the housing 18 and the way-car, the cord 12 will be drawn upon and will in turn draw upon the cord 26 to carry the circuit-closer 9 into contact with the terminal points 4 and 5, thereby closing the alarm-circuit and ringing the bell 6. As the cars separate the housing 18 will be caused to slide upon its supports 17 and will draw the friction-surface 24 over the cap 26 of the torch-signal, thereby igniting the torch and causing it to burn with a red light or any other color desired, as shown in Fig. 5. When the housing 18 has reached the limit of its movement, it is arrested by the uprights 16, when the strain upon the cord 12 will rupture the spring 25, thereby relieving the strain upon the cord 12 and enabling the spring 10 to retract the circuit-closer 9 and open the alarm-circuit.

The length of the time which the alarm-circuit is closed is sufficient to notify the trainmen in the way-car that the train has broken in two, and the burning of the torch-signal upon the last of the air-cars of the train will notify the engineer that the train has separated.

This device is very simple and comparatively inexpensive and may be readily set up for use whenever desired. When employed as illustrated herein, the breaking in two of a train of cars will be at once discovered, obviating the serious accidents which often result from that cause.

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

1. A train-signal comprising an alarm in the way-car, a flexible member extending forward along the cars of the train and attached at its forward end to one of said cars, a luminous signal upon one of the forward cars of the train and means actuated by said flexible member for sounding the alarm in the rear car and displaying said signal upon the separation of the train.

2. A train-signal comprising an electric circuit, containing an alarm-bell, and a slidable circuit-closer, a cord attached to said circuit-closer and extending along the train, its forward end being attached to one of the cars of the train, whereby upon a separation of the train, the circuit is closed to sound the alarm, and a spring for actuating the circuit-closer to open the circuit when the strain upon said cord is relieved.

3. A train-signal comprising an alarm-circuit, a movable circuit-closer in said circuit, a cord connected to said circuit-closer at its rear end, a luminous signal upon one of the forward cars of the train, means for displaying said signal, said signal-displaying means being connected with the forward end of said cord.

4. A train-signal comprising an electrical alarm in the way-car, a luminous signal on one of the cars forward from the way-car, means for displaying said luminous signal, and means actuated by the severing of the train for simultaneously actuating the signal-displaying means, and closing the alarm-circuit.

5. A train-signal comprising an audible alarm in the way-car, a combustible torch upon one of the forward cars of the train, movable means for igniting said torch, movable means for sounding the audible alarm and a cord connecting the torch-igniting means and the alarm-sounding means, whereby said signals are set upon the severing of the train.

6. A train-signal comprising an audible alarm in the way-car adapted to be actuated by a movable part, a combustible signal-torch

upon one of the forward cars of the train covered by a protected movable housing, a friction-surface in said housing adapted to ignite said torch as it is drawn thereover, a cord connecting said movable housing with the movable part of the audible alarm and spanning the intervening cars of the train.

In testimony whereof I sign this specification in the presence of two witnesses.

CLAY H. MARTIN.

Witnesses:

ELIZA J. MARTIN,  
CLARA MARTIN..