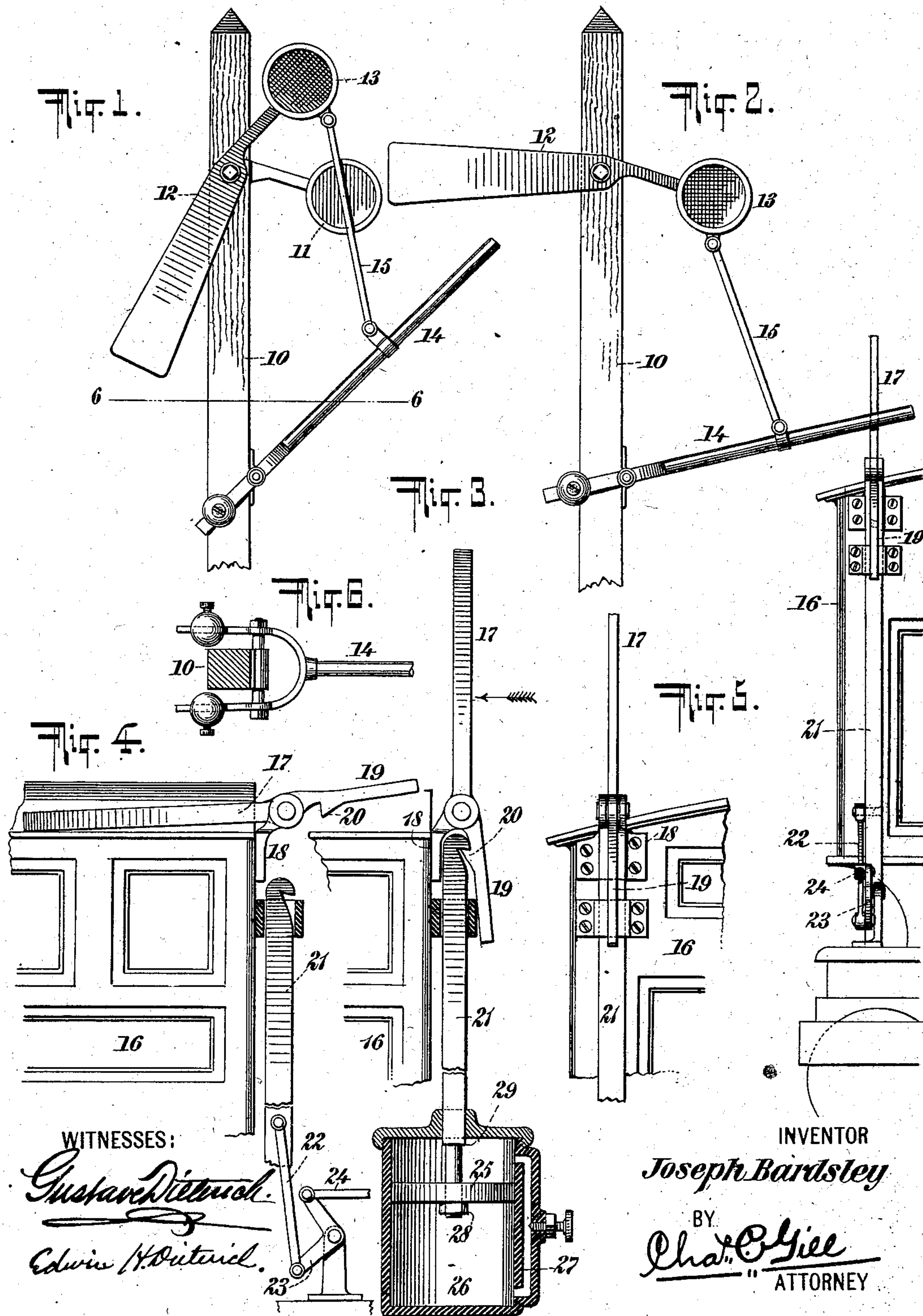


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PATENTED JUNE 9, 1903.

J. BARDSLEY.
AUTOMATIC SAFETY APPLIANCE FOR RAILROADS.
APPLICATION FILED FEB. 11, 1903.

NO MODEL.



UNITED STATES PATENT OFFICE.

JOSEPH BARDSLEY, OF MONTCLAIR, NEW JERSEY.

AUTOMATIC SAFETY APPLIANCE FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 730,219, dated June 9, 1903.

Application filed February 11, 1903. Serial No. 142,831. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BARDSLEY, a citizen of the United States, and a resident of Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Automatic Safety Appliances for Railroads, of which the following is a specification.

The invention relates to improvements in automatic safety appliances for railroads, and has special reference to signal mechanism, my invention comprising means whereby if an engineer should fail to observe and regard the danger-signal the brakes may be automatically applied and the cars brought to a stop.

In accordance with my invention I preferably connect with the danger-signal glass or pane a movable arm and provide the locomotive with means normally in the path of said arm when the danger-signal is set adapted to contact therewith should the engine pass by the signal and effect the application of the brakes.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of signal apparatus having the red glass or pane connected with the movable arm to be projected into the path of a part carried by the engine or train when the signal is set to indicate danger, Fig. 1 illustrating the said arm in its upper inoperative position. Fig. 2 is a like view of same, illustrating the danger-signal as having been set and the said arm turned to its operative position, Fig. 2 also illustrating a portion of a locomotive equipped with a lever carried in the path of said projecting arm. Fig. 3 is an enlarged side view, partly broken away, of the cab and lever carried thereby, with a checking-cylinder shown in section for controlling the speed of an operating-rod by which the brake-valve mechanism may be operated, Fig. 3 illustrating the parts in their normal at rest position. Fig. 4 is a like view of a portion of same, illustrating the lever carried by the cab as having been tripped to set the valve-operating mechanism in motion. Fig. 5 is a detached front elevation of a portion of the cab and illustrating the lever carried thereby

in its operative position, and Fig. 6 is a section on the line 6 6 of Fig. 1.

In the drawings, 10 designates the usual post or standard of a semaphore, upon which is mounted the usual light-casing 11 and the usual pivoted arm 12, carrying a pane of glass 13, adapted when in line with the casing 11 to display a danger-signal.

Upon the post 10 I mount a movable arm 14 and connect this arm by means of a link 15 with the frame of the pane 13. When the pane 13 is in its upper position, the arm 14 will be in the position represented in Fig. 1 and perform no function; but when the pane 13 is in line with the casing 11, as shown in Fig. 2, the arm 14 will be projected laterally toward the track and assume a position in line with a movable part carried by the cab of the locomotive, so as to contact with and operate the same in case the engineer should fail to observe or disregard the signal. In the present instance I equip one edge of the cab 16 with a pivoted lever 17, adapted to extend upwardly, as shown in Figs. 2, 3, and 5, in the path of the arm 14 when the latter is in its lower position. The lever 17 is pivotally secured to a bracket 18 and is provided with a section 19, adapted when the lever 17 is in a vertical position to extend downwardly and by means of a tooth 20 engage a notch in the upper end of a vertically-movable rod 21 and lock the latter in its upper position, as shown in Fig. 3. Upon the contact of the lever 17 with the arm 14 of the signal apparatus the said lever will be turned over upon the top of the cap 16, as shown in Fig. 4, and the section 19 thereof will be tripped from the rod 21 and permit the latter to descend. The movement of the rod 21 is utilized for actuating the mechanism by which the brake-valve may be turned to effect the application of the brakes, and in the present instance I connect the rod 21 by means of a link 22 with one arm of a bell-crank lever 23, the other arm of the lever having pivotally connected with it a rod 24, by which the brake-valve or the valve in the brake system may be operated, said valve not being illustrated herein, since it is of usual form and construction and may be disposed at any convenient point in the brake

system. When the tripping member 17 is in its vertical or operative position, it supports the rod 21, and when the member contacts with the arm 14 and is turned over upon the cab it releases the rod 21, and the latter being then left unsupported will descend and impart motion to the mechanism for operating the brake-valve. It is desirable that in case of air-brake systems the exhaust-valve should not be too suddenly opened, and hence I provide means for regulating and controlling the descent of the rod 21, and consequently the movement of the valve-operating mechanism. In Fig. 3 I illustrate the lower end of the rod 21 as carrying a piston 25 within a checking-cylinder 26, having a controlled by-pass 27 for the passage of the liquid to be placed within said cylinder from one side to the other of the piston 25. The piston 25 has a loose connection with the rod 21, the lower end of said rod being adapted to slide through said piston to a limited extent without regard to the movement of the piston. The piston 25 is confined on the lower end of the rod 21 between a nut 28 and a shoulder 29, and that portion of the lower end of the rod 21 intermediate the nut 28 and shoulder 29 is adapted to pass freely through an aperture in the center of the piston 25. When the tripping member 17 strikes the rod 14 and is caused to release and leave unsupported the rod 21, the latter may quickly descend until the shoulder 29 strikes the upper surface of the piston 25, and then the rod 21 will continue its descent more slowly because of the fact that the piston 25 will retard the movement of said rod, said piston 25 being checked in its movement by the liquid below the same within the cylinder 26, which liquid upon the descent of the piston 25 will be compelled to escape upwardly through the restricted by-pass 27. During the first or substantially unrestrained part of the descending movement of the rod 21 the valve for applying the brakes will be partly opened, and during the continued movement of the rod 21 under the restraint of the checking liquid the said valve will be fully opened.

I do not limit the invention in every instance to the special tripping member 17 nor to the employment of the checking-cylinder 26, but I regard the employment of said tripping member and said cylinder in the form presented as furnishing a desirable means to be carried by a locomotive or car for coöperation with the arm 14, mounted upon the post 10 and connected with the semaphore.

The arm 14 projects laterally from the post 10 when the signal is set to indicate danger, and this arm being mounted upon the post 10 at a considerable elevation from the ground may always be relied upon, since it is out of the way of meddlers and not likely to be deranged or rendered inoperative by contact with any stone or other object, which were the arm near the track-rails might be thrown against it by the moving train. By

reason of the fact that the arm 14 does project laterally said arm affords an extended contact-surface for the tripping member 17. Cars and locomotive-cabs vary in width, and my purpose in having the laterally-projecting arm 14 is that said arm when in its lower position will be in the path of the tripping member 17, whether the cab or car carrying said member be wide or narrow.

In the employment of the invention the tripping member 17 will normally stand in position in which it is shown in Figs. 2 and 3, so that in the event that the engineer for any cause should fail to see or regard a signal set to indicate danger the said member 17 will assuredly strike the arm 14 and be turned over upon the cab, thereby releasing the rod 21 and permitting the latter to descend and set in motion the mechanism for applying the brakes to bring the train to a stop.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In signal mechanism having the movable semaphore, a movable part connected with said semaphore and adapted to project when the signal is set to indicate danger, combined with a part projecting from a locomotive or car in the path of said movable part when in its operative position, mechanism whereby when the said two parts come in contact the brakes will be applied, and means for controlling the application of the brakes, whereby they are first applied with partial force and then with full force; substantially as set forth.

2. In signal mechanism having a movable semaphore, a movable part connected with said semaphore and adapted to project when the signal is set to indicate danger, combined with a part projecting from a locomotive or car in the path of said movable part when in its operative position, mechanism whereby when the two parts come in contact the brakes will be applied, and means comprising a liquid checking-cylinder for controlling the application of the brakes, whereby they are first applied with partial force and then with full force; substantially as set forth.

3. In signal mechanism having the movable semaphore, the contact-arm pivotally mounted on the post of same, and the link connecting said arm and semaphore so that said parts may move in unison and said arm be projected laterally when the signal is set to indicate danger, combined with a part projecting from a locomotive or car in the path of said contact-arm when the latter is in its operative position, and mechanism to be set in motion by the contact of said part with said arm for applying the brakes; substantially as set forth.

4. In signal mechanism having the movable semaphore, a movable contact-arm operatively connected with said semaphore, combined with a member carried by the locomotive or car and normally in the path of said

contact-arm when the signal is set to indicate danger, a rod normally supported by said member and left unsupported thereby when said member is turned from its normal position, and mechanism connected with said rod and to be set in motion therefrom for applying the brakes; substantially as set forth.

5. In signal mechanism having the movable semaphore, a movable contact-arm operatively connected with said semaphore, combined with a member carried by the locomotive or car and normally in the path of said contact-arm when the signal is set to indicate danger, a rod normally supported by said member and left unsupported thereby when said member is turned from its normal position, means for controlling the speed of movement of said rod, and mechanism connected with said rod and to be set in motion therefrom for applying the brakes; substantially as set forth.

6. In signal mechanism having the movable semaphore, a movable contact-arm operatively connected with said semaphore, combined with a member carried by the locomotive or car and normally in the path of said contact-arm when the signal is set to indicate danger, a rod normally supported by said member and left unsupported thereby when said member is turned from its normal position, means for enabling said rod when released to have a rather quick motion for a part of its stroke and then a retarded motion, and mechanism connected with said rod and to be set in motion therefrom for applying the brakes; substantially as set forth.

7. In signal mechanism having the movable semaphore, a movable contact-arm operatively connected with said semaphore, combined with a member carried by the locomotive or car and normally in the path of said contact-arm when the signal is set to indicate danger, a rod normally supported by said member and left unsupported thereby when said member is turned from its normal position, the piston connected with said rod, the cylinder receiving said piston and having the by-pass for the liquid to be placed in said cylinder, and mechanism connected with said rod and to be set in motion therefrom for applying the brakes; substantially as set forth.

8. In signal mechanism having the movable semaphore, a movable contact-arm operatively connected with said semaphore, combined with a member carried by the locomotive or car and normally in the path of said contact-arm when the signal is set to indicate danger, a rod normally supported by said member and left unsupported thereby when said member is turned from its normal position, the piston having a loose connection with said rod so as to allow the rod when released to have a limited movement regardless of said piston, the cylinder receiving said piston and having the by-pass for the liquid to be placed in said cylinder, and mechanism connected with said rod and to be set in motion therefrom for applying the brakes; substantially as set forth.

9. In signal mechanism having the movable semaphore, the movable contact-arm connected with said semaphore and adapted to project laterally when the signal is set to indicate danger, combined with the pivoted latch member carried by the locomotive or car in the path of said contact-arm when the latter is in its operative position, the operating-rod normally supported by said latch member and left unsupported thereby when said member is turned from its normal position by striking said contact-arm, and mechanism connected with said rod and to be set in motion therefrom for applying the brakes; substantially as set forth.

10. In signal mechanism having the movable semaphore, the movable contact-arm connected with said semaphore and adapted to project laterally when the signal is set to indicate danger, combined with the pivoted latch member carried by the locomotive or car in the path of said contact-arm when the latter is in its operative position, the operating-rod normally supported by said latch member and left unsupported thereby when said member is turned from its normal position by striking said contact-arm, means for controlling the speed of movement of said rod, and mechanism connected with said rod and to be set in motion therefrom for applying the brakes; substantially as set forth.

11. In signal mechanism having the movable semaphore, the pivoted arm connected with said semaphore and adapted to drop laterally with respect to the path of a train and thus be caused to project when the signal is set to indicate danger, combined with a part projecting from the upper part of a locomotive or car in the path of said pivoted arm when the latter is in its operative position, and mechanism to be set in motion by the contact of said part with said arm for applying the brakes; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 10th day of February, A. D. 1903.

JOSEPH BARDSLEY.

Witnesses:

CHAS. C. GILL,
ARTHUR MARION.