

(No Model.)

E. D. GRAFF.
RAILWAY APPLIANCE.

No. 441,483.

Patented Nov. 25, 1890.

Fig. 1.

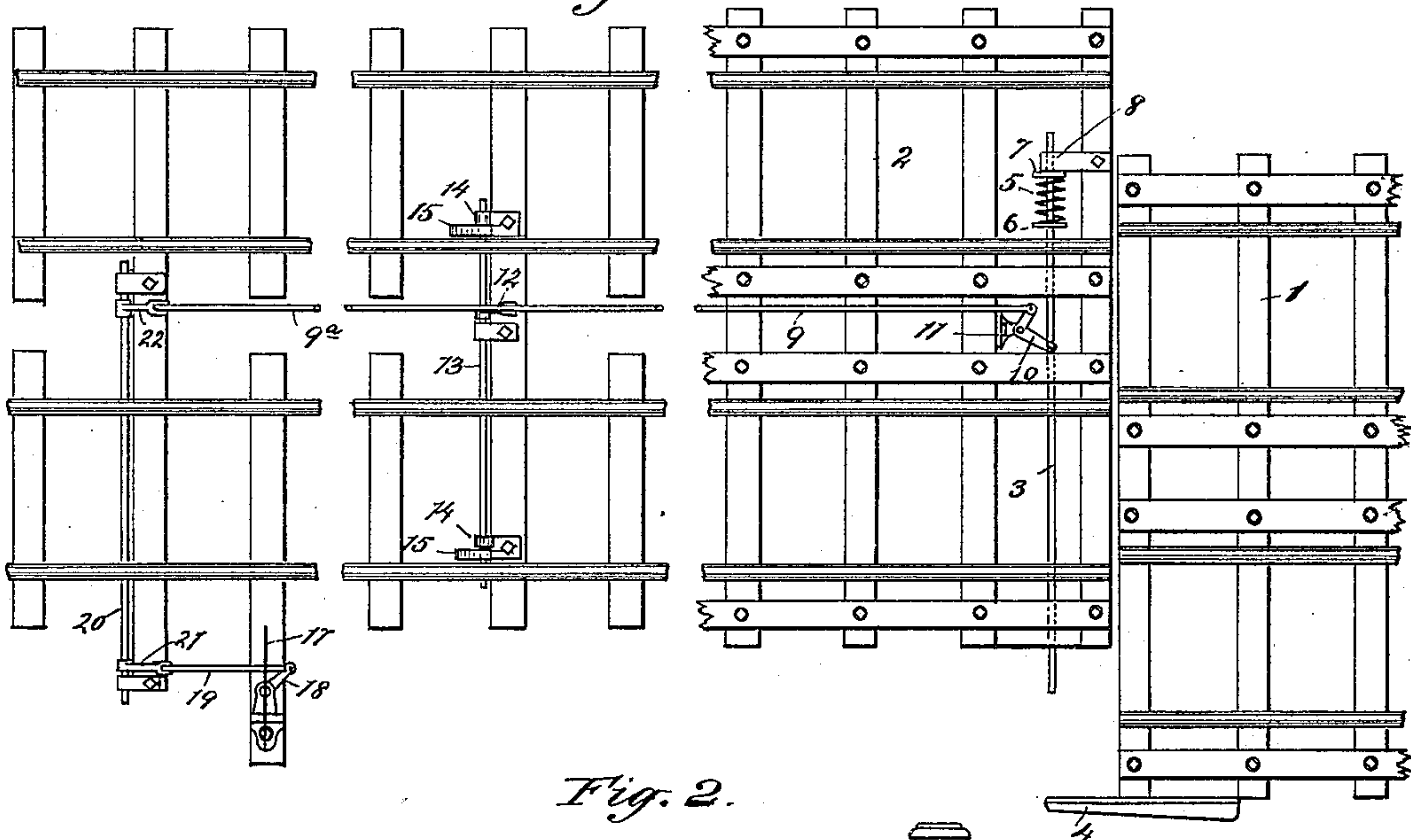


Fig. 2.

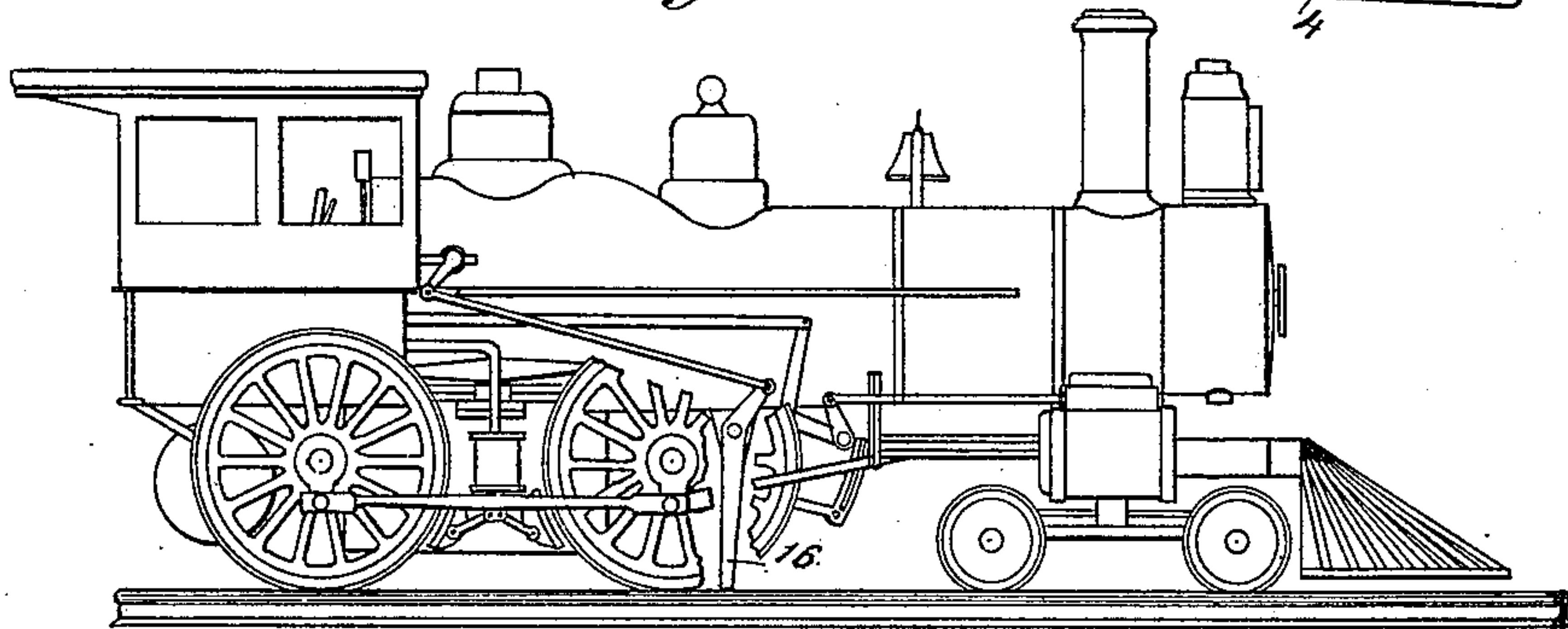


Fig. 3.

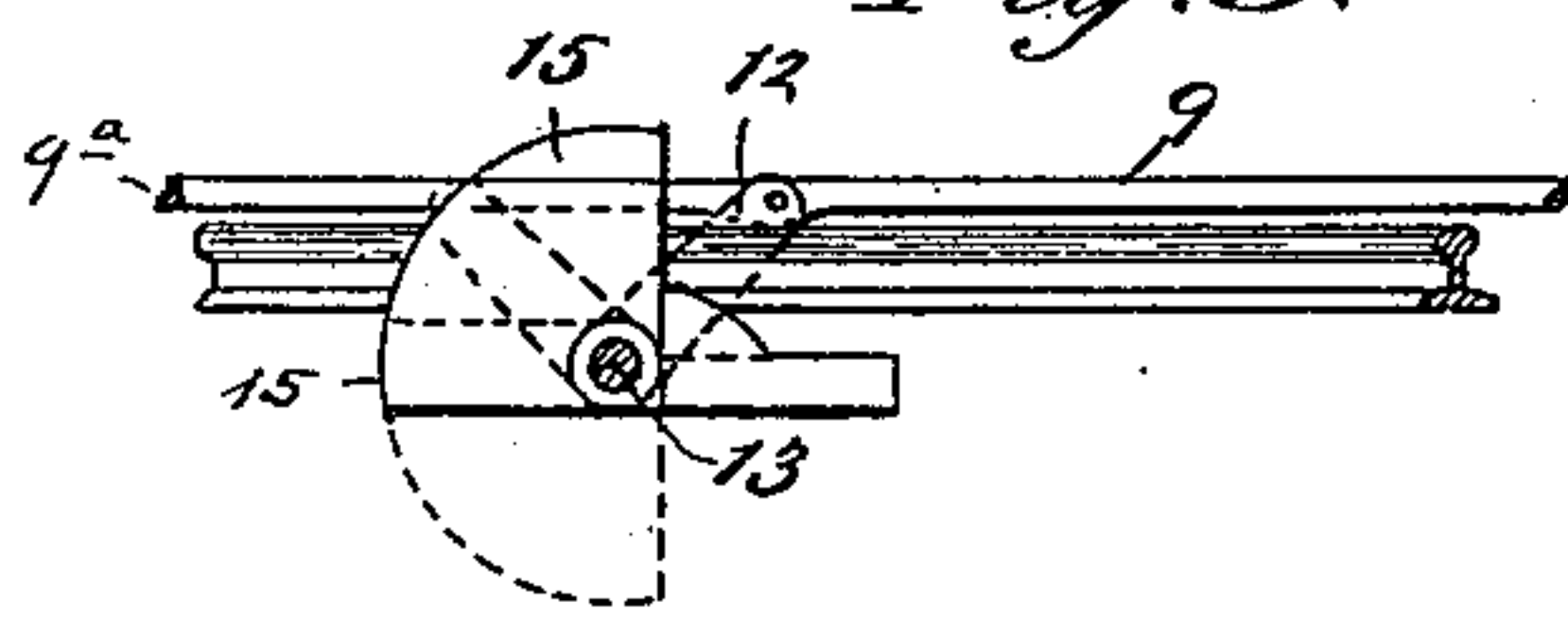
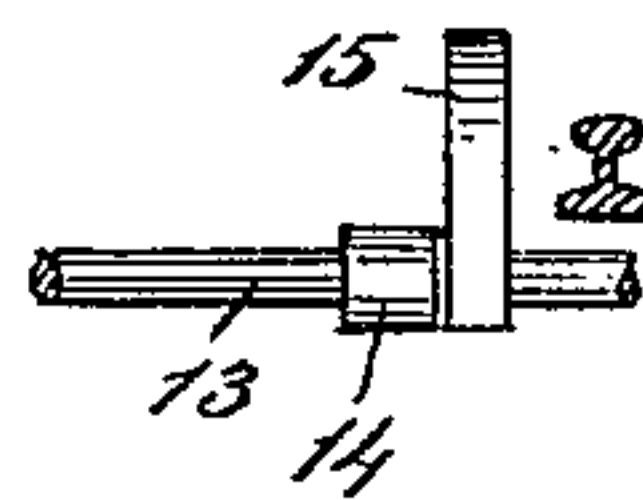


Fig. 4.



WITNESSES:

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EDWIN D. GRAFF, OF NEW YORK, N. Y.

RAILWAY APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 441,483, dated November 25, 1890.

Application filed July 23, 1890. Serial No. 359,682. (No model.)

To all whom it may concern:

Be it known that I, EDWIN D. GRAFF, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Railway Appliances, of which the following is a specification.

My invention relates to improvements in railway appliances, and more particularly to certain mechanical devices whereby accidents may be prevented on railroads, which occur by reason of railway-trains running into open draw-bridges. As is well known, many accidents occur on railways at draw-bridges because of the inadvertence of the train-men and their non-observance of set signals or a failure on the part of signal-men to display signals; and the object of my invention is to render certain the stopping of a train on its approach to an open draw-bridge without relying upon the vigilance of the engineer, the train-men, or others.

My invention consists in the features of construction or combination of devices hereinafter more fully described, and particularly pointed out in the appended claim.

In the carrying out of my present improvements I may employ certain features of the invention for which I filed an application for patent May 19, 1890, Serial No. 352,358.

In my said application I have shown a lever or series of levers upon the locomotive and cars which upon derailment of the train or a portion thereof will contact with the ground or other natural obstruction and automatically set in operation the brake system. According to my present invention certain obstructions or blocks are caused to be placed in the path of these actuating-levers by the movement of the draw of the bridge and to thus insure the operation of the brakes and stoppage of the train.

In the accompanying drawings, Figure 1 is a plan view of a portion of a draw-bridge and the approach thereto, the roadway being broken away and condensed to illustrate the several parts of my invention. Fig. 2 is a side elevation of a locomotive partly broken away, showing the manner in which the brake system of the train is automatically actuated. Fig. 3 is a side view of part of the means by

which the brakes of the train may be set, and Fig. 4 is a sectional view taken longitudinally of the track of the mechanism shown in Fig. 3.

In the several views the same part will be found designated by the same numeral of reference.

1 is a portion of the draw or swinging part of a railway-bridge, and 2 is the approach or shore portion of the bridge.

3 is a bar or rod mounted in bearings on the shore portion of the bridge to have a sliding motion transversely of the railway-track and arranged near the end of the draw or swinging portion of the bridge and projecting laterally in the path of an arm or plate 4, attached to the draw, so that in closing the draw the arm 4 will move the rod 3 in one direction.

Surrounding the rod 3 is a spiral spring 5, bearing at one end upon a disk 6, fixed upon the rod 3, and at the other end upon a disk or plate 7, lying against a guideway 8, through which one end of the rod 3 moves. It will be understood that as the draw 1 closes the arm 4 will move the sliding rod 3 in one direction, and as the draw opens the spring 5 will act to move the rod 3 in the opposite direction. This longitudinal movement of the rod 3 as the draw opens or closes is communicated to a rod 9, mounted in suitable bearings and lying parallel with the track or tracks, through a bell-crank or bent lever 10, mounted in a bracket 11, secured to some fixed portion of the track, preferably to a cross-tie, as shown.

The rod 9, running parallel with the track, is made to extend to a distance from the draw of the bridge within which the train may be easily stopped by its brakes, and it is there connected by a crank-arm 12 with a rod 13, mounted transversely of the tracks in bearings 14. Upon this rod or rock-shaft 13 are mounted trips 15, preferably one for each track, which by choice are made segmental in shape, as shown. These trips are so adjusted on the shaft 13 that when the rod 9 is moved in one direction by the opening of the draw of the bridge and by the action of the spring 5 the trips will be raised, as shown in Fig. 3 by the full lines, through the intermediate devices described, and when the rod 9 is moved in the reverse direction by the clos-

ing of the draw the trips will be lowered or depressed by said means, all as clearly shown by the dotted lines at Fig. 3.

The trip or trips 15 are so arranged upon the rod 13 with reference to the track or tracks of the railway as that when raised they will lie in the path of a pivoted arm 16, depending from the moving train, (the locomotive, for instance,) arranged to automatically actuate or set in operation the brakes of the train, the mechanism whereby said operation of setting the brakes is accomplished being described in my application hereinbefore referred to. When the trips are lowered or depressed by the closing of the draw, no contact or interference can take place between the trips and the brake-actuating arms or levers on the train, and the train is free to pass unimpeded by the safety mechanism, it being understood, as illustrated, that when the trips are in their depressed condition they lie in a plane below that in which the lowermost end of the brake-actuating arm or lever travels. When the trips are in their elevated positions, (which can only occur when the draw is open,) the said lever or arm depending from the locomotive or other part of the train, it will be understood, will come in contact with one of said trips and will be vibrated about its horizontal pivot or axis to an extent sufficient to actuate or throw into operation the air or other power brakes of the train, thus automatically arresting the train before the open draw is reached and avoiding any reliance upon the observation and attention or alertness of the engineer.

The rod 9 is preferably prolonged, as at 9^a, and connected to a suitable signal 17 in a manner such that when the draw is open the danger or stop signal will be displayed, and such that when the bridge is closed said signal will be withdrawn or obscured. By the means shown the signal will be brought to view when the trips 15 are elevated and will be hidden when the trips are lowered or moved out of operative position. The signal

is arranged in advance of the trips a suitable distance, so that the engineer may have ample time to apply the brakes in the usual way in case the bridge be open and the signal to stop be displayed, provided, of course, the engineer is watchful and has observed said signal. In the event, however, of any derangement of the signal apparatus or of a failure by the engineer to see the danger-sign the train will be automatically brought to a standstill farther on by the co-operation of the lever 16 and one of the trips or obstructions 15.

The signal 17 may be of any desired form or construction, and may be located at any suitable point along the road. In a double-track system such as shown the signal may be vertically pivoted and connected to the rod 9^a by a crank-arm 18, link 19, rock-shaft 20, and rocker-arms 21 and 22.

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

In a railway, the combination of a transverse rock-shaft 13, a crank-arm 12, and a trip 15, attached to said rock-shaft, a horizontally-arranged bell-crank 10, a longitudinally-arranged connecting-rod 9, attached to the crank-arm and to one arm of the bell-crank, a transverse rod 3, connected to the other arm of the bell-crank and protruding beyond the track, a spring operating to move said rod endwise in one direction and through the described connections to maintain the trip in an elevated position, and a draw or swinging bridge adapted to contact with the protruding end of said transverse rod and move the same endwise in the opposite direction against the tension of said spring, and also adapted through said connections to depress the trip.

Signed at New York city, in the county of New York and State of New York, this 22d day of July, A. D. 1890.

EDWIN D. GRAFF.

Witnesses:

A. M. GRAFF,
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