April 20, 1926. 1,581,713

J. ADAMS

LOCOMOTIVE SAFETY APPLIANCE

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Fig. 1.

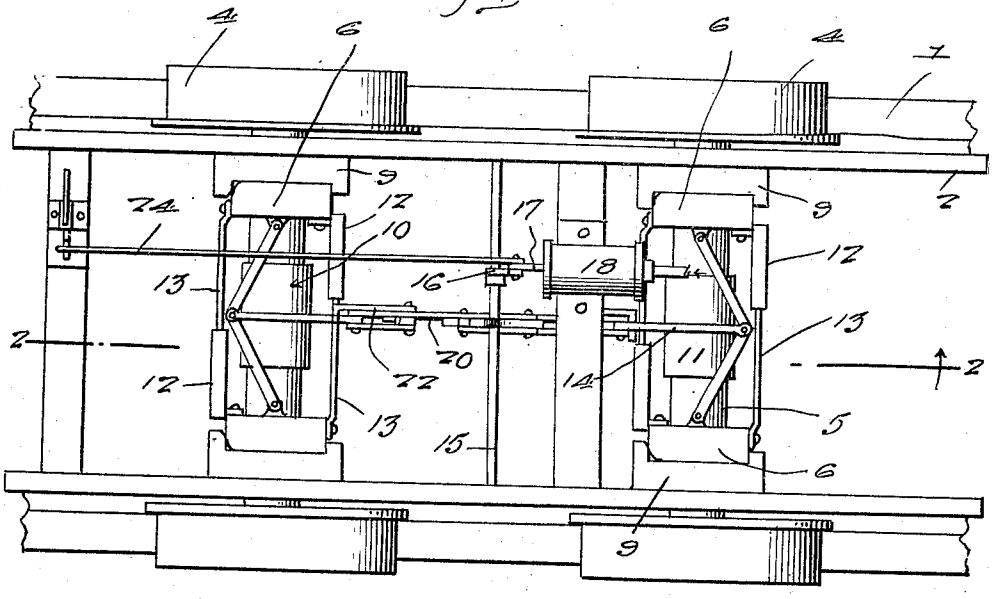
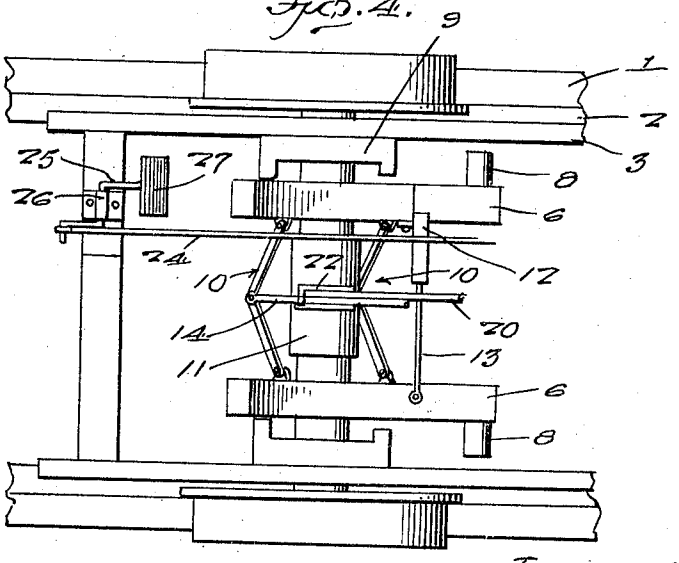


Fig. 4.



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Fig. 2.

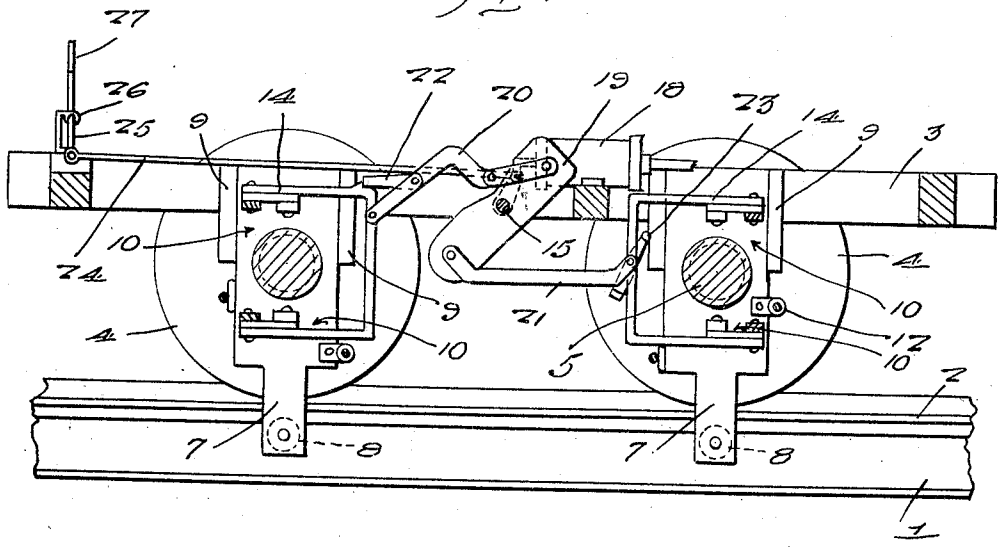
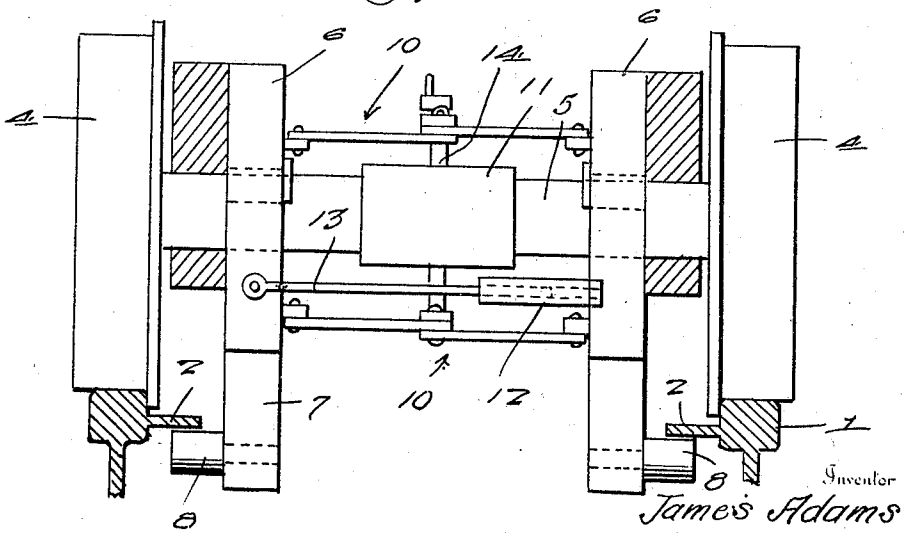


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES ADAMS, OF FORT MADISON, IOWA.

LOCOMOTIVE SAFETY APPLIANCE.

Application filed September 9, 1925. Serial No. 55,320.

To all whom it may concern:

Be it known that I, JAMES ADAMS, a citizen of the United States, residing at Fort Madison, in the county of Lee and State of Iowa, have invented certain new and useful Improvements in a Locomotive Safety Appliance, of which the following is a specification.

This invention relates to an improved railway safety appliance for use in connection with locomotives, trains, cars, and other kinds of railway rolling stock, and it has for its principal object to provide a novel means for preventing the train from being derailed by jumping the track at dangerous points.

Briefly, the invention has reference to a track wherein the rails are provided, on their inner sides, with inwardly extending horizontal guard flanges, together with a cooperating mechanism which is mounted upon the underframing of the cars, and including means for engaging the guard flanges to prevent jumping from the rails.

More specifically, the mechanism on the underframing embodies pairs of depending arms which are mounted for rotation and sliding on the wheel axle, these arms being provided at their lower ends with outstanding rollers, which are adapted to be disposed beneath the guard flanges so as to hold the car to the track on dangerous curves, bridge crossings, and the like.

An advantage is derived from the utilization of a mechanism which is such as to be brought into play, or thrown out of use at the discretion of the engineer, the control for the mechanism being located in the engineer's cab, and there being an indicating device also located there, so that the engineer may positively know when the device is set for operation or when it is disposed in an inoperative state.

The operation of the device is rendered positive and practical through the use of a piston and cylinder control which may be operated either by air or steam taken from the train supply.

The particular details and their relative arrangement and association will become clearly evident from the following description and drawing.

In the accompanying drawings forming a part of this application, and in which like numerals are employed to designate like parts throughout the same:

Figure 1 is a top plan view of an appliance constructed in accordance with the present invention showing its position on a wheel supported under frame, and showing the relation to the rails.

Figure 2 is a central longitudinal section taken approximately upon the plane of the line 2—2 of Figure 1 looking in the direction of the arrow.

Figure 3 is a vertical section showing certain of the details more plainly.

Figure 4 is also a top plan view showing the relation of the parts when the same are disposed in an inoperative state.

Referring to the drawings in detail, the reference characters 1 designate the rails, these are of ordinary construction except that the treads are provided on their inner faces with inwardly extending horizontally disposed guard flanges 2. The car under framing is designated by the reference character 3, the supporting wheels by the reference characters 4, and the axles by the reference characters 5.

In accordance with the present invention, I provide opposed pairs of depending arms 6, these being located adjacent the inner flanged sides of the wheel. These arms are pivoted between their ends upon the axles 5. They are not only adapted for oscillation about the axles, but are intended to slide in and out on the axles for a purpose to be hereinafter described. These arms are provided at their lower ends with reduced portions 7 carrying rotatable rollers 8, which are adapted to be disposed beneath the flanges 2, when the device is used for safety reasons. It will be noted particularly from Figure 2 that these arms are intended to be disposed between confining flanges 9 on the guide members which are attached to the frame 3.

Disposed between each pair of arms 6 are superposed toggles 10, one toggle being located above the axle, and the other toggle being located below the axle. This is plain from Figure 2. In this connection I would call attention to the enlargement 11 on the central portion of the axle which serves to limit the inward sliding movement of the arms 6 when they are drawn toward each other by a contraction of the toggles. I would also call attention to the sleeves 12 and rods which are carried by these arms and are arranged in telescoping relation to maintain the arms in their proper alignment during their operation. Moreover, it

should be noted that a yoke 14 has its arms connected to the two toggles to cause simultaneous operation of the same. These yokes are intended to move in a horizontal plane for a time, after which they are rocked about the axle for swinging the arms 6 to the inoperative state shown in Figure 4.

Novel means is provided for operating the yokes and toggles. The means preferably comprises an oscillatory rock shaft 15 which is journaled in appropriate bearings between the two different pairs of arms. There is a crank arm 16 on the central portion of this rock shaft, and a piston rod 17 is connected with this. The piston rod extends into a cylinder 18 in which a double acting piston (not shown) is located. As before intimated, this piston is adapted to be reciprocated by air or steam obtained from the train supply. In practice, it is contemplated that the supply line will be located in the engineer's cab, and that there will be a valve there so that the engineer can control this when circumstances require. Also mounted rigidly on the central portion of this rock shaft is a crank 19 with which links 20 and 21 are connected (see Figure 2). The link 20 is located at the top of the structure, being connected with the upper end of the crank 19, and with the upper portion of the left hand yoke. It will be noted that a stop 22 is rigidly fastened to this link 20 and bears upon the upper arm of the yoke. Attention is also called to the peculiar shape of this link, especially the right angular central portion thereof, the link 21 is also of special construction, and this is pivotally connected to the intermediate portion of the remaining yoke. The point of pivot is below the axis of rotation of the complemental arms 6. Adjacent this pivot is an appropriate stop 23. In this connection it is to be stated that these stops 22 and 23 are to prevent possible retrograde rotation of the yokes, although this is, ordinarily, not likely to happen.

Referring to Figure 1 more particularly, a rod 24 is connected with the piston rod 17, and is intended to extend into the engine cabin. This is connected, as shown better in Figure 4, with a crank 25 mounted in a bearing 26 on the under frame. The crank carries an indicator 27 which is visible to the engineer. This indicator is supposed to show when the device is in operative position, or inoperative position, as the case may be.

The operation of the device is as follows:—Air is introduced into the piston, and the piston is driven in a direction from right to left in Figure 1. In so doing, it rocks the shaft 15 which, in turn, oscillates the larger crank 19, whereby to exert an endwise thrust upon the two links 20 and 21. Now, through the medium of the yokes 14 the toggle links, which are then extended and holding the arms 6 in vertical operative position, are caused to exert an inward pull upon the arms 6. In this way the arms are slid inwardly upon the axles 5 until they abut the enlargement 11, in Figure 3. A further thrust upon the links 20 and 21 serves to bodily swing the two yokes around the axle. Thus, with the rollers 8 withdrawn from beneath the guard flanges 2, the block-like arms 6 are oscillated in the same direction about the axles to swing them up toward the underframing. Appropriate retaining means is provided, and may be associated with the rock shaft to hold the parts in this position, at which time the desirable clearance space is provided beneath the car to prevent encountering obstructions. It should have been noted that when this operation is taking place, the rod 24 was operated to act upon the crank 25, and to swing the indicator 27, in the engine cab, to a position to indicate to the engineer that the device has been thrown out of use. By releasing the retaining latch, and reversing the direction of movement of the piston in the cylinder, the device is thrown in operation, as indicated in Figure 3 wherein the car is prevented from jumping the tracks.

It is believed that by considering the description in connection with the drawings, persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the same. Therefore, a more lengthy description is thought unnecessary.

While the preferred embodiment of the invention has been shown and described, it is to be understood that minor changes coming within the field of invention claimed may be resorted to if desired.

Having thus described the invention, what I claim as new is:—

1. In a safety appliance of the class described, a wheel supported frame, an axle beneath said frame, wheels on the ends of said axle, a pair of arms mounted for oscillation and sliding on said axle, outstanding rollers carried by the lower ends of said arms, and means mounted on said frame for successively oscillating and sliding said arms.

2. In a safety appliance of the class described, a wheel supported frame, an axle beneath said frame, wheels on the ends of the axle, a pair of depending arms journaled upon said axle for rotating and sliding, a pair of toggles connecting said arms together, a yoke, the arms of which are connected with the inner ends of the links of said toggles, a rock shaft mounted on said frame, and a connection between said rock shaft, and said yoke.

3. In a safety appliance of the class described, a wheel supported frame, an axle

disposed beneath said frame, wheels on the ends of the axle, a pair of opposed depending arms, said arms being journaled for oscillation and sliding on said axle, safety rollers carried by the outer sides of the lower ends of said arms, a pair of toggles disposed between said arms and connected therewith, a yoke having the ends of its arms connected with said toggle, a rock shaft mounted on said frame, a crank arm on said rock shaft, and a connecting link between said crank and yoke, the yoke connection of said link being eccentric with respect to the axis of rotation of said rods, whereby said arms may be oscillated to assume an inclined inoperative position.

4. In a safety appliance of the class described, a wheel supported frame, axles disposed beneath said frame, wheels on the ends of the axles, pairs of arms journaled for rotation and sliding on said axles, toggles between and connected with said arms, safety rollers carried by said arms, a pair of yokes, the arms of which are connected with said toggles, a rock shaft disposed between said yokes, connections between the rock shaft and yokes, the connections being eccentric with respect to the axis of oscillation of said arms and operating means for said rock shaft.

In testimony whereof I affix my signature.

JAMES ADAMS.