

J. W. McKELVEY.
 AUTOMATIC TRAIN STOP.
 APPLICATION FILED JULY 13, 1911.

1,037,504.

Patented Sept. 3, 1912.
 2 SHEETS—SHEET 1.

Fig. 1.

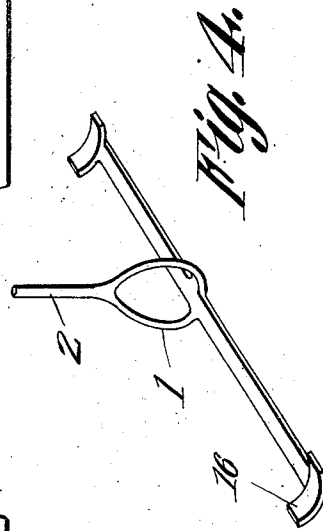
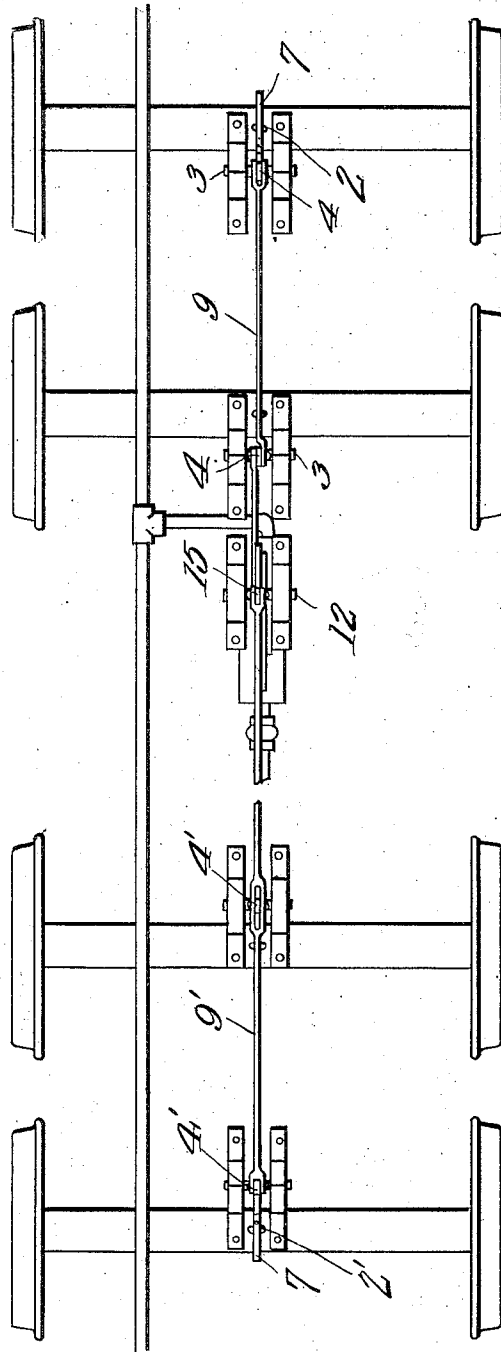


Fig. 4.

Witnesses

J. P. Comer
L. H. Wilcox

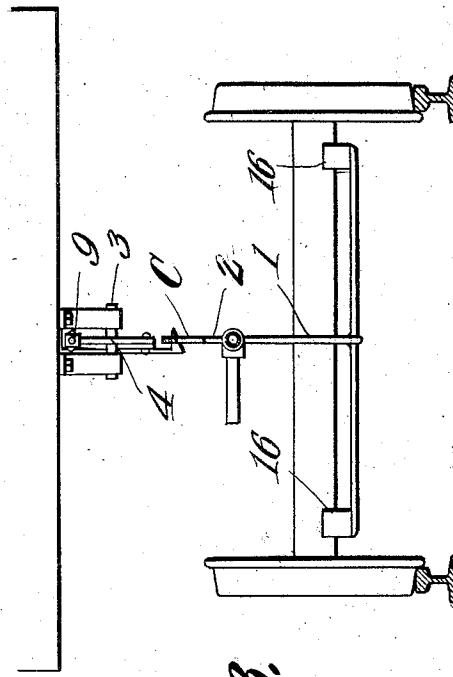
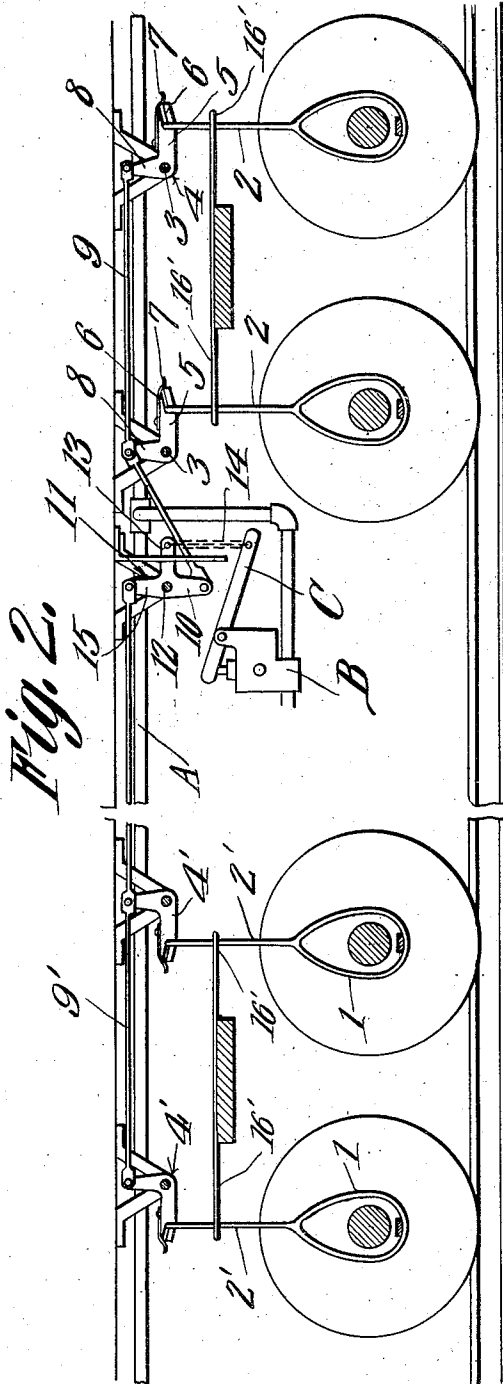
James W. McKelvey Inventor,
 by *C. A. Snow & Co.* Attorneys.

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Witnesses
J. G. Gorman
J. H. Wilson

James W. McKelvey
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 Attorneys.

UNITED STATES PATENT OFFICE.

JAMES W. McKELVEY, OF LAWRENCEVILLE, GEORGIA.

AUTOMATIC TRAIN-STOP.

1,037,504.

Specification of Letters Patent.

Patented Sept. 3, 1912.

Application filed July 13, 1911. Serial No. 638,355.

To all whom it may concern:

Be it known that I, JAMES W. McKELVEY, a citizen of the United States, residing at Lawrenceville, in the county of Gwinnett and State of Georgia, have invented a new and useful Automatic Train-Stop, of which the following is a specification.

The present invention relates to improvements in automatic train stops, the primary object of the invention being the provision of means disposed in operative relation to the axles of the car trucks at each end of the car, so that when the wheels, or any one of them leave the track, or in any way change their relative position to the rails, due to broken axles or broken or spreading rails, the air-brake system will be set, and the entire train brought automatically to a halt, thus resulting in a saving of life and property.

To carry this invention into effect, an air relief valve of an approved type is disposed in the train pipe of the air brake system and has a series of links and levers connecting its stem to axle operated devices, disposed at the truck ends of the car, so that the movement, that is any undue movement of the wheels on the axles, or any one of them, out of track engaging position, will cause the axle to pull down upon its respective device, which in turn will operate the relief valve to release the air to the atmosphere, and thereby "set" the brakes, and bring the entire train to a halt. The devices connected operatively to the triple valve and the axles, are flexible loop connections or reach rods, adapted to surround loosely the axle, and yet be held against turning by two oppositely disposed spring arms, which are adapted to stand longitudinally of and below the axle and have their terminals straddle the axle, as and for the purpose to be more particularly set forth.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings: Figure 1 is a plan view of the apparatus. Fig. 2 is a side elevation

of the complete apparatus as applied to a single railway car, a portion of the train pipe of an air brake system being shown. Figs. 3 and 4 are detail views of various parts of the apparatus.

Referring to the drawings, A designates the train pipe of an air brake system, having connected thereto a relief valve B, of an approved type, whose crank arm C, is operably connected to the respective axle encircling loops 1, which are carried by their respective reach rods 2, so that the said loops are normally out of engagement with their respective axles, and whereby should the wheels leave the track to cause a relative changing of the axle to the car body, due to a broken axle, spreading rails, or any other cause, such action will pull down upon the reach rod 2 causing the crank arm C to be actuated. This action will operate the relief valve B to permit the air to escape from the train pipe A and automatically set the brakes.

In order to operably connect the respective reach rods 2, to the crank arm C, the shaft 3, carrying the bell-crank levers 4, is provided, the rear extending arm 5, of said lever, being slotted as at 6, to slidably engage the upper end of the reach rod 2, which is normally held within the slot by means of the spring 7. The other arm 8, of the bell-crank lever is connected by the long link or rod 9, to the lower arm 10, of the T-shaped or double bell-crank lever 11, carried by the transverse shaft 12, the center arm 13, thereof being operably connected by means of the rod or link 14 to the crank C. By this means it will be seen that the axle pulling down upon its respective loop and reach rod will operate through the bell-crank levers the crank C, and thereby open the relief valve B, to permit the air to escape to "set" the brakes. This construction is applicable to the right-hand end of the car and truck as viewed in Fig. 1, but where used with the axles at the left hand end, the reach rods 2', are connected to the bell-crank levers 4', the links or rods 9', being extended and connected to the upper arm 15 of the double-bell-crank lever, so that the relief valve will be operated by the relative disarrangement of the axles at the left hand end of the car, thus providing a complete system of levers and links, to control the "setting" of the brakes, due to the de-arrangement of any of the wheels or axles of the car or train.

The reach rods 2 and 2' are properly held against too great swinging movement by means of the arms 16', which also should the upper ends of the said reach rods become
 5 disengaged, will permit the said reach rods to slide downwardly and be engaged in said brackets to prevent the lower ends of the reach rods from striking the ties or other
 10 projections upon the roadbed, the hooked ends of the reach rods being so disposed as to engage their respective arms 16' and thus retain the reach rods in elevated position.

From the foregoing description taken in connection with the drawings, it is evident
 15 that the air-brake system will be automatically set to stop the car or train, due to the relative changes of the wheels and axles to the rail, so that in the event of the spreading of a rail, or the displacement of any one
 20 of the axles or wheels, that the encircling loop and its respective reach rod will actuate the various crank levers and simultaneously the relief valve, as before described, thus operating the air-brake system, and
 25 bringing the train to a halt.

What is claimed is:

1. The combination with the air-brake system, of means for automatically operating the same due to derailment or the like,
 30 said means comprising a relief valve, a lever, a double-bell crank lever operably connected to said lever, a bell crank lever to each axle operably connected to said double bell-crank lever, and a series of axle encircling means, one to each bell-crank lever
 35 disposed to encircle an axle and be operated by any downward displacement of its axle.

2. The combination with an air-brake system having an auxiliary reservoir, and a relief-valve connected thereto, of a double-
 40 bell crank lever having one arm operably connected to said relief-valve, a bell-crank lever disposed above each axle and operably connected to one of the remaining arms of
 45 the double bell-crank lever, a loop encircling each axle and normally below and out of contact therefrom, and a reach rod attached to each loop and the proper bell-crank lever for operating the lever when
 50 pulled upon and to be disengaged therefrom when pushed too far upon.

3. The combination with an air-brake system having an auxiliary reservoir, and relief-valve connected thereto, of a series
 55 of levers and links disposed in operable relation thereto and the respective axles at each end of a car, a loop encircling but out of contact with its respective axle, and a rod connecting each loop to a lever, whereby
 60 the relief-valve is operated when the loop is pulled upon and is released therefrom when the loop is pushed upon to too great an extent.

4. The combination with an air-brake system having a relief-valve, of a lever con-
 65 nected to said valve, a three-arm lever having one arm operably connected to said lever, bell-crank levers, one above each axle, links connecting said bell crank levers to the remaining arms of the three-arm lever,
 70 and connections between the axles and the respective bell-crank levers for actuating the respective levers and the relief-valve upon the lowering of the axle.

5. The combination with an air-brake system having a relief-valve, of a lever con-
 75 nected to said valve, a three-arm lever having one arm operably connected to said lever, bell-crank levers, one above each axle, links connected to each bell crank lever and
 80 operably connected to the other arms of the three-arm lever, a loop encircling but out of contact with each axle, and a reach rod suspending its loop from the respective bell-crank lever.
 85

6. The combination with an air-brake system having a relief-valve, of a lever con-
 90 nected to said valve, a three-arm lever having one arm operably connected to said lever, bell-crank levers one above each axle, means connecting said bell-crank levers to the remaining two arms of the three-arm
 95 lever, a loop encircling each axle, means carried thereby to prevent the turning of the loop with relation to the transverse position of an axle, and a reach rod carrying each loop and operably connecting the same to the proper bell-crank lever.

7. The combination with an air-brake system having a relief valve, of a three-arm
 100 lever journaled below the car and having one arm operably connected to the relief-valve, a bell-crank lever, one above each axle, means for operably connecting said bell-crank levers to the remaining two arms
 105 of the three-arm lever, and means flexibly supported from the remaining arm of each bell-crank lever and disposed to be actuated by its respective axle when the said axle is caused to lower relatively to the
 110 rails.

8. The combination with an air-brake system and a car having two trucks, and a valve disposed to control the system, of
 115 means, one to each axle of the two trucks operably disposed to its respective axle and the valve for permitting any axle to operate the valve to set the air-brake.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES W. McKELVEY.

Witnesses:

F. B. OCHSENREITER,
 LENA WILLSON.