No. 662,476. Patented Nov. 27, 1900.

S. L. TERRY.

AUTOMATIC PRESSURE RELIEF MECHANISM FOR RAILWAY AIR BRAKES.

(Application filed Oct. 4, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

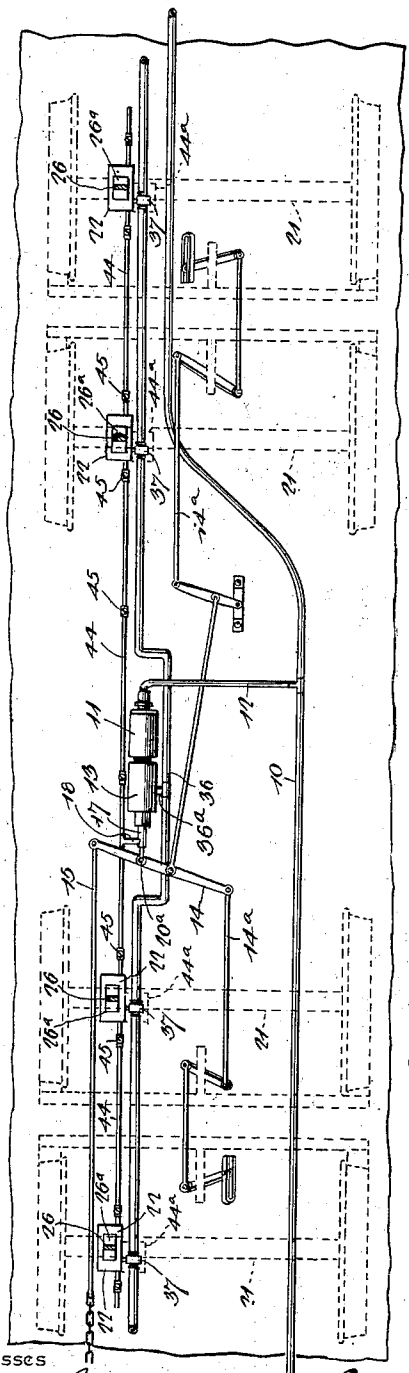


Fig. 6.

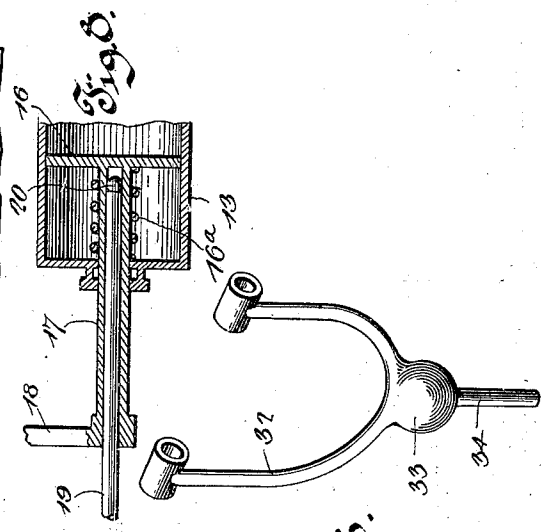
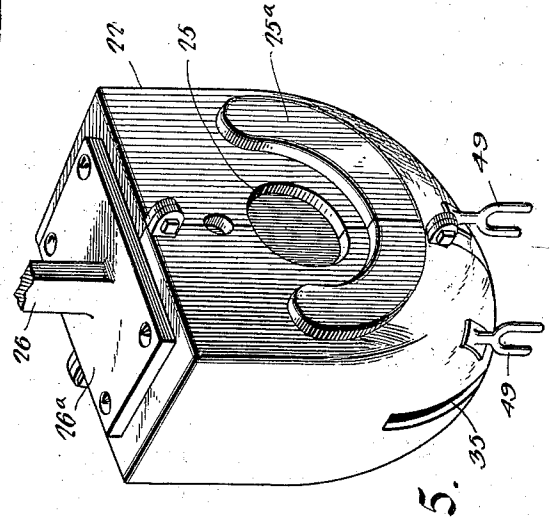


Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

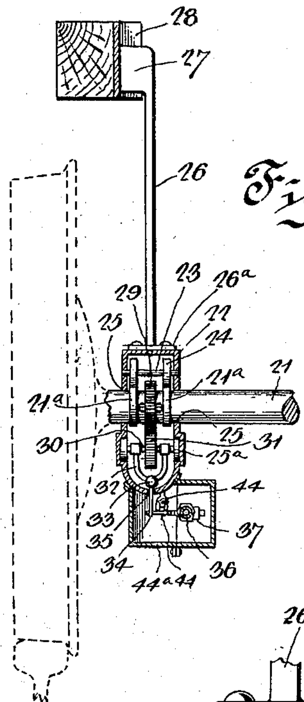

Fig. 2.

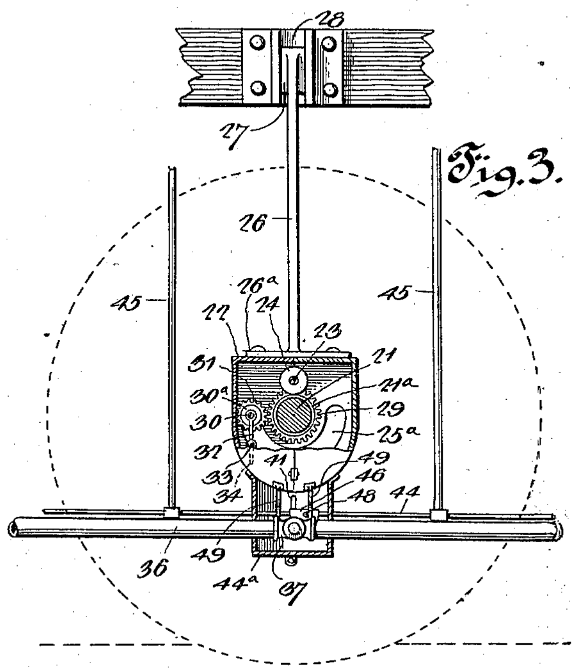

Fig. 3.

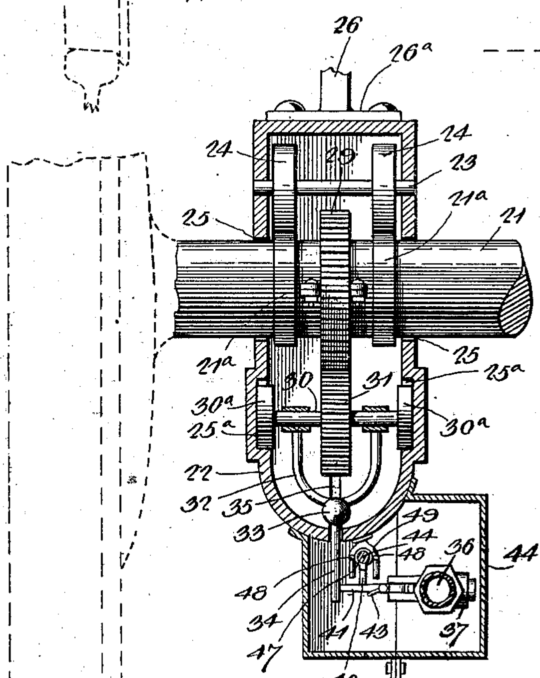

Fig. 4.

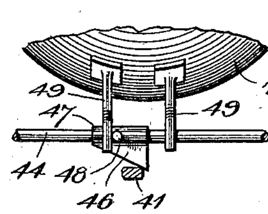

Fig. 9.

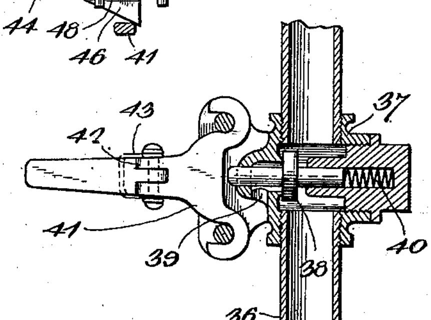

Fig. 7.

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UNITED STATES PATENT OFFICE.

SAMUEL L. TERRY, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWELVE TWENTY-FIFTHS TO J. W. MASTIN, OF DENVER, COLORADO, AND GEORGE C. MASTIN, OF OAK PARK, ILLINOIS.

AUTOMATIC PRESSURE-RELIEF MECHANISM FOR RAILWAY AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 662,476, dated November 27, 1900.

Application filed October 4, 1899. Serial No. 732,529. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. TERRY, a citizen of the United States, residing at No. 4,731 State street, in the city of Chicago, in the State of Illinois, have invented a new and useful Automatic Pressure-Relief Mechanism for Railway Air-Brakes, of which the following is a specification.

My invention relates to an automatic pressure-relief mechanism for railway air-brakes or, as it may be termed, "a device for preventing flat wheels on railway-cars;" and primarily the invention is designed to release the air-pressure in the piston-cylinder of the brake mechanism when the brakes are applied to retard or to arrest the train.

A further object of the invention is to relieve the brake-pressure and prevent flattening a car-wheel when the latter ceases to turn for any cause whatever in the service or in the running of the train.

A further object of the invention is to so arrange the relief mechanism that it will not open the relief valve or valves when the train is standing at rest at a station or other place and the brakes are undergoing the usual test preliminary to starting the train in service.

A further object is to provide a relief mechanism which shall be wholly automatic, simple and reliable in service, will permit inspection and repairs of the several elements, and will enable the brake to be applied by hand with ease and freedom.

With these ends in view the invention consists in the combination, with a brake-cylinder of an ordinary air-brake mechanism, of a relief-pipe having a series of relief-valves normally closed and located adjacent to each of the series of wheel-axles of a railway-car, a trip mechanism controlled by each axle and adapted to actuate the relief-valve when the wheel or axle ceases to turn, and means actuated by the brake mechanism to preliminarily move an element of a relief-valve in the path of the trip mechanism.

The invention further consists in the novel combination of mechanisms and in the construction and arrangement of the various parts for service, which will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated a preferred embodiment thereof in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a partial plan view of an ordinary brake mechanism with my improved pressure-relief mechanism associated operatively therewith. Fig. 2 is a sectional elevation in the plane of a car-wheel axle, illustrating the improved trip mechanism and a relief-valve in active relation to the axle, the trip mechanism being shown in its lowered position to engage with the relief-valve when the axle ceases to turn for any cause. Fig. 3 is a sectional elevation in a plane at right angles to the car-wheel axle, showing the parts of Fig. 2 in their working positions when the axle is in motion. Fig. 4 is an enlarged sectional elevation of the parts of the trip mechanism and the relief-valve in the position shown by Fig. 2. Fig. 5 is an enlarged detail perspective view of the trip-mechanism casing removed from the axle. Fig. 6 is a detail perspective view of the weighted yoke and arm forming one element of the wheel-driven trip mechanism. Fig. 7 is a detail sectional view, on an enlarged scale, of one of the relief-valves. Fig. 8 is a detail sectional view illustrating a part of the ordinary piston brake-cylinder, showing the sleeve connection between the brake-piston and the relief-valve-actuating rod. Fig. 9 is a detail of the cam for actuating the valve lever or arm previous to opening the valve by the trip mechanism.

The same numerals of reference are used to indicate like and corresponding parts in each of the several figures of the drawings.

Referring more particularly to Fig. 1, the numeral 10 is used to designate the ordinary train-pipe of an air-brake mechanism which includes the pressure-reservoir 11, the latter having operative connection through a triple valve and branch pipe 12 with the train-pipe. As is usual with railway air-brakes a piston-cylinder 13 is connected operatively with the pressure-reservoir by the triple valve, and this brake piston-cylinder actuates a brake-lever 14, the latter having operative connections, as 14^a, with the brake-beams which

carry the brake-shoes to be applied against the wheels of a railway-car. It is also usual to equip the air-brake mechanism with rod and chain connections 15 between the brake-lever 14 and the vertical hand-operated shaft on the car, said shaft not being shown.

In accordance with my invention the brake mechanism is employed to actuate means in active relation to one or a series of relief-valves in a manner to position the latter on the application of the brake in the path of a wheel-actuated trip mechanism, and in this connection the brake piston-cylinder is peculiarly constructed for its piston to have a limited travel independently of the piston-rod for the purpose of properly actuating the relief-valve rod. The piston 16 of the brake-cylinder is provided with an elongated sleeve 17, which plays through the usual stuffing-box, and said brake-piston is returned to its normal position on release of the brake-pressure by a spring 16^a, as is usual. This sleeve is formed with an upwardly-extending arm 18, the latter adapted to be made fast with an endwise-movable rod which carries cam devices in active relation to a movable element on the relief-valve, as will hereinafter appear. The piston-rod 19 is loosely fitted in the piston-sleeve 17, so that the piston-rod is capable of a limited movement independently of the piston-sleeve on the operation of the usual hand appliances for the application of the brake, and between the piston and the end of the piston-rod is interposed a bearing-ball 20, which minimizes the friction on the end of the piston-rod, the outer end of said rod being attached pivotally at 20^a to the brake-lever.

Each axle 21 of the car is provided with bearing-collars 21^a, and on this axle is mounted the casing 22 for the trip mechanism, said trip mechanism being housed or contained within the casing in active relation to the axle. The casing 22 is divided transversely in a vertical plane for ready application to the axle, said casing being of cast-metal or of stamped sheet-metal construction and its members being bolted or otherwise firmly united together. The sectional casing 22 is sustained loosely on the axle by means of an idle spindle 23, having the wheels or rolls 24, said spindle being journaled in the upper part of the casing and above the axle for the rolls 24 thereon to ride upon the collars 21^a of the axle, whereby the casing is loosely supported on the axle and is prevented from displacement thereon, because the spindle and its wheels take up the motion of the axle. The casing is provided in its opposite sides with the coincident axle-openings 25, which loosely receive the axle, and said casing is furthermore provided with the arc-shaped slots or guideways 25^a. These guideways are concentric with the axis of the axle-opening; but in lieu of making the guideways in the form of slots they may be formed by grooves produced in the opposing faces of the side walls. (See Fig. 4.) The casing is retained in position on the axle by means of a guide-hanger 26, which is connected slidably with a part of the car-truck, so as to permit of the necessary vibration or play, such slidable connection being effected by means of a slide 27, fitting in a guideway 28. The hanger 26 has a flanged or enlarged foot 26^a, which is bolted firmly to the upper side of the casing 22, while the slide 27 is confined in the guideway 28, so as to move freely in a vertical direction, but is prevented from moving laterally in either direction, the guideway being fastened firmly to a beam of the car-truck, as shown by Figs. 2 and 3.

The trip mechanism for the operation of the relief-valve is combined with each axle of the car in a manner to release the air-pressure in the brake mechanism should the wheels on that particular axle cease to turn or rotate for any reason whatever—such, for example, as the application of the brake-shoes under excessive pressure—whereby I am able to attain the prime object of this invention—*i. e.*, to obviate the formation of flat surfaces on the car-wheel. One element of the trip mechanism is a master-gear 29, which may be of sectional construction adapted for ready application to the axle, as shown by Fig. 4, or said master-gear may be solid and secured in any suitable way to the axle. Another element of the trip mechanism is a spindle 30, which is provided at its ends with the wheels or rollers 30^a, the latter fitting loosely in the arc-shaped guideways 25^a, so as to loosely support the spindle in place and permit it to travel freely in the casing under certain conditions and in a path concentric with the axle 21. This spindle is connected operatively with the axle by means of a gear 31, which meshes with the master-gear 29, whereby on the rotation of the axle when the car is in motion the gear 31 and the spindle will be maintained in the elevated position shown by Fig. 3 and at the upward limit of the arc-shaped guideway on one side of the axle, thus withdrawing the trip mechanism from active relation to the relief-valve. Another element of the trip mechanism is a yoke 32, which is loosely sleeved on the spindle between its supporting-wheels 30^a and the gear 31, and this yoke is provided with a counterpoise or weight 33 and with a depending trip-arm 34, said trip-arm adapted to project through a slot 35, which is formed in the curved bottom of the loosely-supported casing 33. When the car is in motion and the axle is rotating, the frictional engagement of the master-gear 29 with the gear 31 will elevate the counterpoised yoke and the spindle within the casing 22 up to the upper extremity of the arc-shaped guideway on one side or the other of the axle, according to the direction in which the axle is turning; but as the spindle is revolubly supported within the casing by its wheels 30^a the motion of the gear 31 under the influence of the master-gear effects no other purpose than to hold the trip-

arm away from the relief-valve, one position of the trip mechanism when thus elevated being shown by Fig. 3. If the axle ceases to rotate for any cause whatever, the master-gear will of course stop, and thereby permit the trip device to be lowered to the position shown by Figs. 2 and 4, owing to the weight or gravity of the counterpoise 33 on the yoke. At this stage in the operation the gear 31 is free to travel around a part of the toothed circumference of the stationary master-gear, while the spindle is directed by the guideway in its travel within the casing, the trip-arm 34 moving freely in the slot 35 until the trip device reaches a position perpendicular with respect to the axis of the car-axle. At this time the trip-arm is lowered into position to engage with an arm of the relief-valve for the purpose of opening said relief-valve to reduce the pressure in the reservoir associated with the brake-cylinder, provided, however, the relief-valve has a movable element thereof disposed in the path of the trip mechanism preliminary to the lowering of the trip mechanism to its operative position.

Under some circumstances I may employ a relief mechanism in connection with each car-wheel axle; but to reduce the number of parts, and thereby simplify the mechanism, a single brake-cylinder may be employed for each car, as usual, the brake mechanism shown by Fig. 1 being common to all the axles on the car. Under this embodiment of the invention I employ a single relief-pipe 36, which is arranged contiguous to the series of trip devices which are in active relation to the series of car-axles. This relief-pipe 36 has a branch connection 36^a with the brake-cylinder. In the relief-pipe 36 is interposed a series of valve-casings 37, one of said casings being placed adjacent to each trip device and said relief-valve being shown in detail by Fig. 7. Within the valve-casing is slidably fitted the relief-valve 38, which is held normally to its seat, so as to close the relief-port 39, by means of a spring 40. The valve is adapted to be forced from its seat, so as to open the port through the medium of a jointed or two-part valve-arm 41, one member of which is in active relation to the valve-spindle, so as to operate on the latter when the valve-arm is moved in one direction or the other under the influence or action of the trip mechanism. Normally the valve-arm is free from the spindle of the valve, so that the latter may be closed by its spring, as shown by Fig. 7. The two parts of the valve-operating arm are joined together, as at 42, and against the free member of this valve-arm acts a spring 43 of any suitable character, the latter serving to hold the valve-arm in a condition where it is normally free or out of the path of the trip mechanism and is interposed into the path of a cam on a valve-actuating rod 44. This valve-actuating rod 44 extends lengthwise of the car in close relation to the relief-pipe 36, said rod passing through a suitable casing 44^a, supported on and below the casing 22 of the trip mechanism. Said rod 44 is fastened securely to the arm 18 of the piston-sleeve, so as to be moved endwise, by the brake-piston when the latter is actuated to apply or release the brakes, and this endwise-movable rod is fitted slidably in hangers 45, suitably secured to the car-trucks or a part of the car itself. A series of cams 46 are carried by this rod, so as to have a limited movement therewith, each cam being provided with a friction-sleeve 47, which engages with the rod with sufficient frictional contact to move therewith except when arrested by suitable stops on the casing 22. The cam has its friction-sleeve fitted on that part of the valve-rod which passes through the casing 44^a, so that the cam lies adjacent to the relief-valve, but is out of the path of the trip mechanism. This cam is provided with pins or studs 48, and the rod passes through stop-guides 49, depending from the casing 22 within the casing 44^a. A movement of the valve-rod in one direction causes the cam to travel therewith until its pins or studs strike one hanger, and a movement of the valve-rod in the other direction effects a like play of the cam until arrested by its studs impinging against the other hanger, whereby the cam is capable of a limited movement between the stop guides or hangers 49. The free arm of the jointed valve-lever is interposed in the path of the cam by the action of the spring 43, so that the valve arm or lever will be out of the way of the trip mechanism even though the latter be lowered to its operative position; but when the valve-rod is moved by the application of the brakes the cam serves to depress or move the valve-lever into the path of the trip-arm, so that when the trip is lowered its arm 34 will strike the valve-lever and open the valve against the tension of the spring.

The operation is as follows: The jointed valve-lever is held out of the path of the trip-arm in the path of the cam. With the train at rest the brake may be operated without changing the position of the lever or the relief-valve, because the axle 21 is not turning for the master-gear to lift the trip mechanism. Hence the trip-arm is lowered, as shown by Fig. 4, and the rod 44 may be moved by the brake, it being necessary in this system that the lever of the relief-valve shall be interposed in the path of the trip-arm before the latter is lowered. With the train running the brakes may be applied to retard the motion of the train or to arrest the same, and under these conditions the automatic relief mechanism becomes operative to release the pressure in the brake-cylinder on the application of the brakes and in the event of excessive application of the brake-shoe to the wheels on any one axle of the car for the purpose of preventing the formation of flat surfaces on the car-wheel. When the axles are rotating, the master-gears on several axles operate so that

the spindles of the trip mechanisms are raised in the manner described for the elevation of the trip-arms out of the path of the relief-valve levers, the position of the trip mechanism being shown in Fig. 3. In setting the brakes a reduction of pressure is made in the train-pipe leading from the main reservoir on the locomotive, which causes the excess of pressure in the auxiliary reservoir to force the piston of the ordinary triple valve down, and thereby move the slide-valve down of said triple valve, so as to allow the air in the auxiliary reservoir (now of greater pressure than that in the train-pipe) to pass directly into the brake-cylinder and apply the brakes. This is so well known that I have not considered it necessary to show the construction of the triple valve, and, as equally well known, when the pressure in the train-pipe is again increased above that in the auxiliary reservoir the piston in the triple valve is forced up, moving the slide-valve to its former position, opening communication from the train-pipe to the auxiliary reservoir, and permitting the air in the brake-cylinder to escape, thus releasing the brakes. It sometimes happens, however, that when it is sought in the ordinary manner to apply the brakes a wheel becomes locked by the action of the brake-shoes thereon, and it is the especial purpose of my invention to overcome this objection in order to overcome flattening of the wheels. At the period of setting the brakes the piston 16 actuates the sleeve 17, the arm 18, and the valve-rod 44, whereby said rod is moved in order to operate the cams in a manner to move the valve-levers into the path of the trip devices, said actuation of the valve-levers taking place at the period of initial movement of the brake mechanism, so that the cams and valve-levers assume their proper working positions before the brakes are fully applied. Now should either axle become locked or cease to rotate, the master-gear 29 on the non-rotating axle will stop and the weight 33 of the trip will pull the lever to a position below the axle, the gear 31 and the spindle 30 of the trip rotating freely during the downward travel of the weighted yoke. The lever of the relief-valve having been interposed in the path of the trip by the valve-rod and the cam, the trip-arm 34 on the descent of the trip mechanism strikes against the valve-lever and moves the valve to its open position, thus opening the port 39 and relieving the pressure in the brake-cylinder. It is to be understood, however, that the brake mechanism is not wholly released from the wheels throughout the car or the train; but this relief mechanism acts to relieve the excessive application of the brake-shoes on the wheels of a particular axle against which the shoes may be applied so forcibly as to skid the wheels and produce flattened faces on the wheels. The release of the brake mechanism reverses the movement of the rod 44 to retract the cams from the valve-levers and permit the springs thereof to become active in moving the valve-levers out of the path of the trip-arms; but the trip devices are not returned to their elevated positions until the axles become rotative through the motion of the train.

It is to be observed that the trip devices and the levers of the relief-valves are operative in either direction, so that the well-known custom of reversing the car end for end does not affect in any way the operation of my automatic pressure-relief mechanism.

Changes may be made in the form and proportion of some of the parts while their essential features are retained and the spirit of the invention is embodied. I do not therefore desire to strictly confine myself to the precise construction shown, reserving the right to vary therefrom.

In the operation of the brake when the train is standing still the trip device is lowered, as heretofore described, while the jointed arm of the valve-lever is raised in engagement with the cam on the valve-rod. As the valve-rod is moved endwise on the application of the brakes the cam is held at rest by engagement with the valve arm or lever, the latter being confined at rest by the lowered trip-arm, so that the valve-rod can slide through the friction-sleeve of one cam.

In making a "station stop," in which it is usual to release the brakes when the train comes to a standstill, the relief mechanism has no effect whatever on the brake mechanism because the trip does not descend until the wheels are at rest, and a short interval must elapse after the stop before the trip descends, during which interval the brakes are released, so that the valve-rod will move the cam to a position where the valve-lever will be free and will be held by its spring out of the path of the trip.

Having thus described the invention, what I claim is—

1. In a fluid-pressure railway-brake, the combination with a brake mechanism, of a relief-valve communicating with an element of said brake mechanism, a trip mechanism driven by a car-axle to normally assume an inoperative position relative to the relief-valve mechanism, and means controlled by the brake mechanism to position an element of the relief-valve in the path of said trip mechanism, said trip mechanism being actuated automatically on the stoppage of the car-axle to open the relief-valve, substantially as described.

2. In a fluid-pressure railway-brake, the combination of a brake mechanism, a relief-valve mechanism communicating with an element of the brake mechanism, an axle-actuated trip mechanism, and devices, connected to and operated by the brake mechanism, in operative relation to said relief-valve and in the path of an element of the trip mechanism,

for actuation thereby, and to operate the relief-valve on the stoppage of the car-axle, substantially as described.

3. In an automatic pressure-relief mechanism for fluid-actuated brakes, the combination with a brake mechanism, of a relief-valve communicating with an element of the brake mechanism, an axle-actuated trip mechanism normally held by the rotation of the axle in an inoperative position with relation to the valve and adapted to, under certain conditions, assume its operative position without affecting the relief-valve, and mechanism controlled by the brake to interpose an element of the relief-valve in active relation to the trip mechanism, substantially as described.

4. In a fluid-pressure-actuated brake system for railway-trains, the combination of a pressure-relief pipe connected with a pressure-chamber of the brake apparatus, a series of relief-valves for said relief-pipe, said valves having movable operating elements, a series of axle-actuated independent trip mechanisms normally carried by the rotation of the car-axles out of operative relation to said relief-valve-operating elements and adapted, when said axles cease to rotate, to actuate said relief-valve-operating elements, and means, operated by the brake mechanism, at the period of initial movement thereof, to move said relief-valve-operating elements into position for operation by said axle-actuated trip mechanisms, substantially as described.

5. In an automatic pressure-relief mechanism for fluid-actuated brakes, the combination of a relief-valve to lessen pressure on a brake mechanism, a trip mechanism normally held by the rotative action of an axle free from said relief-valve, and means actuated by the brake mechanism and at the period of the application of the brake-shoes to move an element of the relief-valve in position for engagement by the trip mechanism, substantially as described.

6. In an automatic pressure-relief mechanism for fluid-actuated brakes, the combination of a normally-closed pressure-relief valve having a movable element, a trip mechanism controlled by the rotative action of a car-axle, and a valve-positioning device engaging with the movable element of the relief-valve and connected with a part of the brake mechanism to preliminarily position said element of the relief-valve in the path of the trip mechanism at the period of the application of the brake, substantially as described.

7. In a fluid-pressure-actuated brake system for railway-trains, the combination with a pressure-relief pipe connected with a pressure-chamber of the brake apparatus, of a series of relief-valves for said relief-pipe, said valves having operating-levers, of a series of independent trip mechanisms driven by the train-axles, said trip mechanisms being carried by the rotation of the train-axles out of operative relation to the said relief-valve levers, and adapted when said axles cease to rotate, to automatically operate said relief-valve levers, and means connected to the brake mechanism, and operative at the period of initial movement of the brake mechanism, to move said relief-valve levers into position for operation by said trip mechanism, substantially as described.

8. In an automatic pressure-relief mechanism for fluid-actuated brakes, a trip mechanism having a counterpoised movable trip geared to a car-axle and capable of an independent travel in a path around said axle on stoppage thereof, in combination with a relief-valve in communication with a pressure-chamber of a brake, and valve-positioning mechanism controlled by a part of the brake, to be interposed in the path of, and actuated automatically by said counterpoised trip as it moves independently of the car-axle, substantially as described.

9. In a fluid-pressure railway-brake, a trip mechanism comprising a casing loosely supported on the car-axle, a counterpoised trip guided in said casing to travel around the axle, and gearing between said trip and the axle for holding the trip in a raised position on the rotation of the axle and permitting said trip to drop on stoppage of the axle, in combination with a relief-valve in communication with an element of the brake mechanism, and means actuated by the application of the brake to position a part of the valve in the path of the trip mechanism, substantially as described.

10. In an automatic pressure-relief mechanism for fluid-actuated brakes, a trip mechanism comprising a counterpoised trip, means for guiding said trip to travel in a path concentric with the car-axle, and gearing between the trip and said axle, in combination with a relief-valve in communication with a pressure-chamber of the brake, and valve-positioning devices, substantially as described.

11. In an automatic pressure-relief mechanism for fluid-actuated brakes, a trip mechanism comprising a casing having a guideway, a counterpoised trip arranged to travel in said guideway and having a spindle, and gearing between said spindle and a car-axle, in combination with a relief-valve, and valve-positioning devices, substantially as described.

12. In an automatic pressure-relief mechanism for fluid-actuated brakes, a trip mechanism comprising a casing mounted loosely on an axle, a retainer connected to the casing and guided slidably on a part of a car-truck, and a counterpoised trip geared to an axle, in combination with a relief-valve, and valve-positioning devices, substantially as described.

13. In an automatic pressure-relief mechanism for fluid-actuated brakes, a relief-valve in communication with a pressure-chamber of a brake and having a jointed arm, combined with brake-actuated mechanism for moving an element of said arm at the period of the

application of the brake mechanism, and a wheel-actuated trip mechanism driven from the car-axle to normally assume an inoperative position during the application of the brake and movable automatically on the stoppage of a car-axle to engage the valve-arm and open said relief-valve, as set forth.

14. In an automatic pressure-relief mechanism for fluid-actuated brakes, a relief-valve in communication with a pressure-chamber of a brake, and a jointed brake-lever in active relation to said valve and having a movable arm held by a retractor out of the path of the trip mechanism, in combination with means actuated by a brake to position the valve-arm at the period of application of said brake, and a wheel-actuated trip mechanism, substantially as described.

15. In an automatic pressure-relief mechanism for fluid-actuated brakes, the combination with a brake-cylinder and its piston, of a valve-actuating rod connected and movable with said piston, a frictionally-held cam on said rod, a relief-valve having a yieldable arm in the path of said cam, and an axle-actuated trip mechanism, substantially as described.

16. In an automatic pressure-relief mechanism for fluid-actuated brakes, the combination with a piston of a brake-cylinder, of a valve-actuating rod connected operatively with said piston and movable endwise thereby, substantially at the period of the application of the brake mechanism, a normally-closed relief-valve in communication with the pressure-chamber of said brake, a cam engaged frictionally with said rod and movable a limited distance therewith and disposed in active relation with said relief-valve, and wheel-actuated trip mechanism, substantially as described.

17. In an automatic pressure-relief mechanism for fluid-actuated brakes, the combination of a valve-actuating rod connected operatively with an element of the brake mechanism, a normally closed relief-valve in communication with the pressure-chamber of said brake and provided with a yieldable arm, a cam having frictional engagement with said rod and arranged to actuate the yieldable arm without opening the relief-valve, means for limiting the travel of said cam with the valve-rod, and a wheel-actuated trip mechanism arranged to open the relief-valve on the arrestation of an axle, substantially as described.

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

SAMUEL L. TERRY.

Witnesses:
H. T. BERNHERD,
M. PERRY HAHN.