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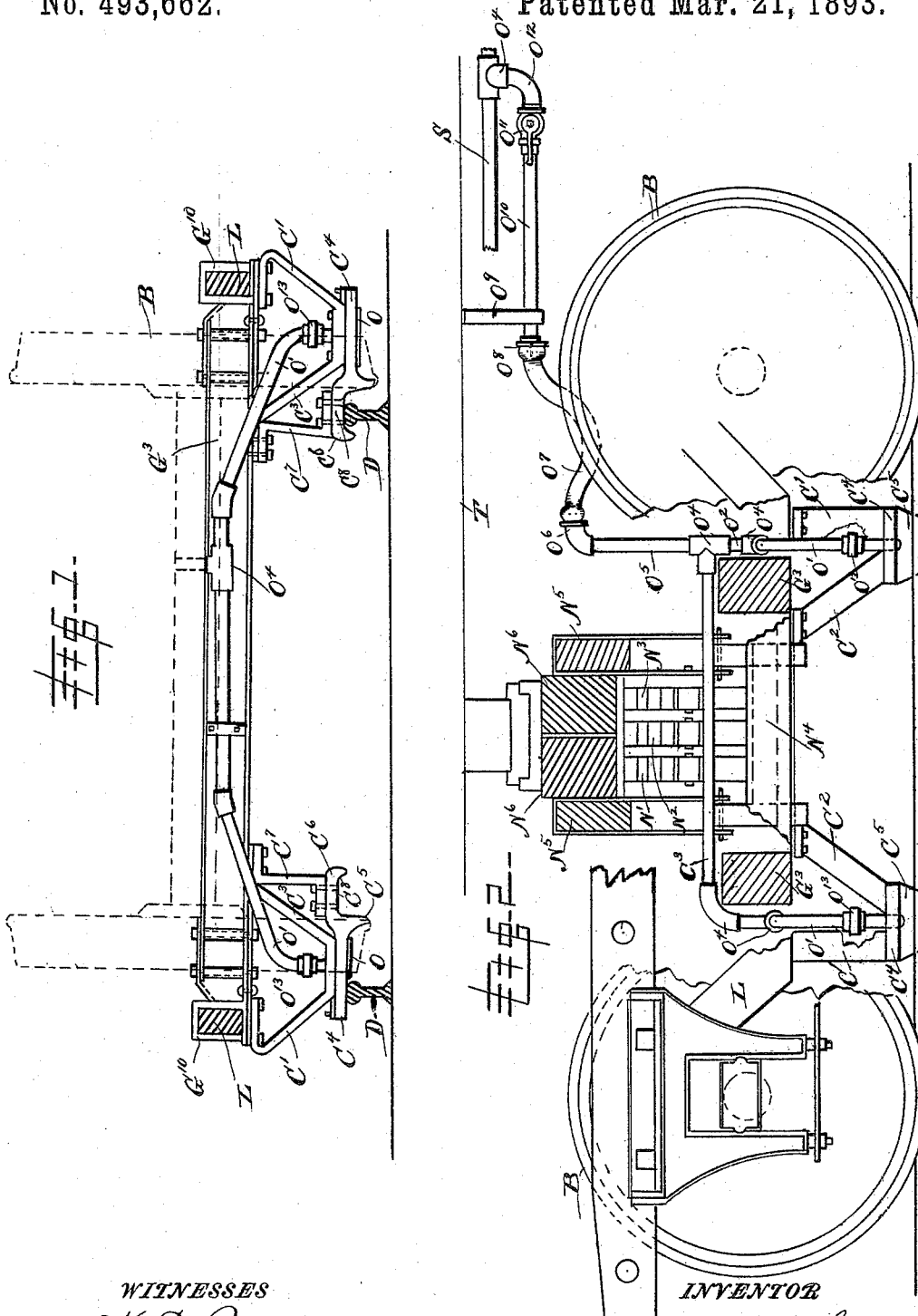
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R. J. SPEARING.

SAFETY SHOE AND BRAKE ATTACHMENT FOR CAR TRUCKS.

No. 493,662.

Patented Mar. 21, 1893.



WITNESSES

W. E. Bowen
J. W. McLeary.

INVENTOR

Robert J. Spearing
By John J. Maltby, Jr. Attorneys

(No Model.)

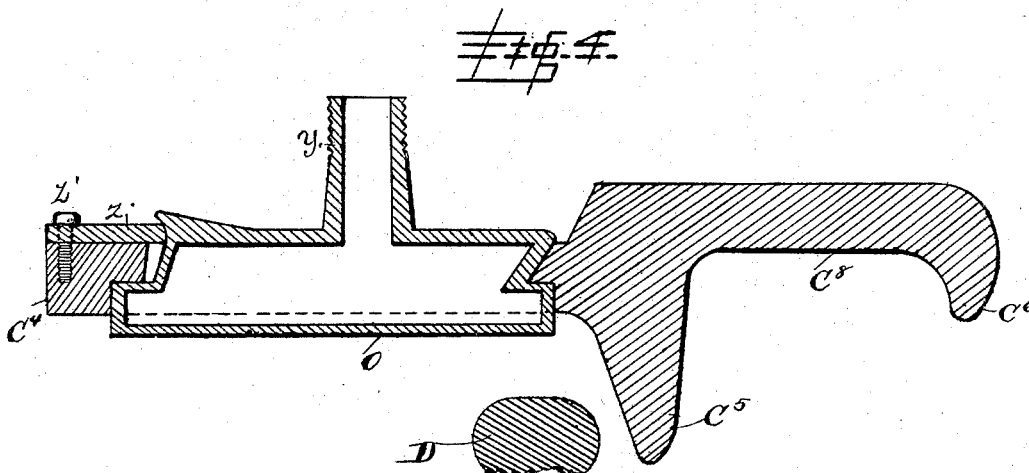
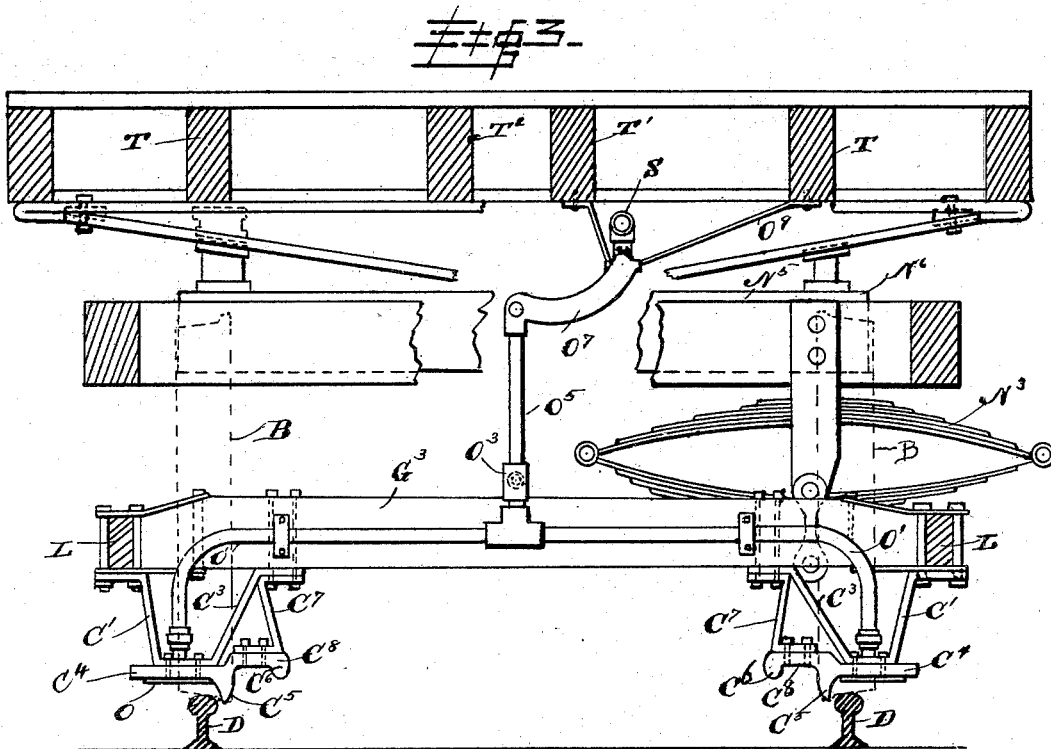
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J. M. Cleary.

INVENTOR,

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Robert J. Spearing
By
his Attorneys
John J. Halsted & Son.

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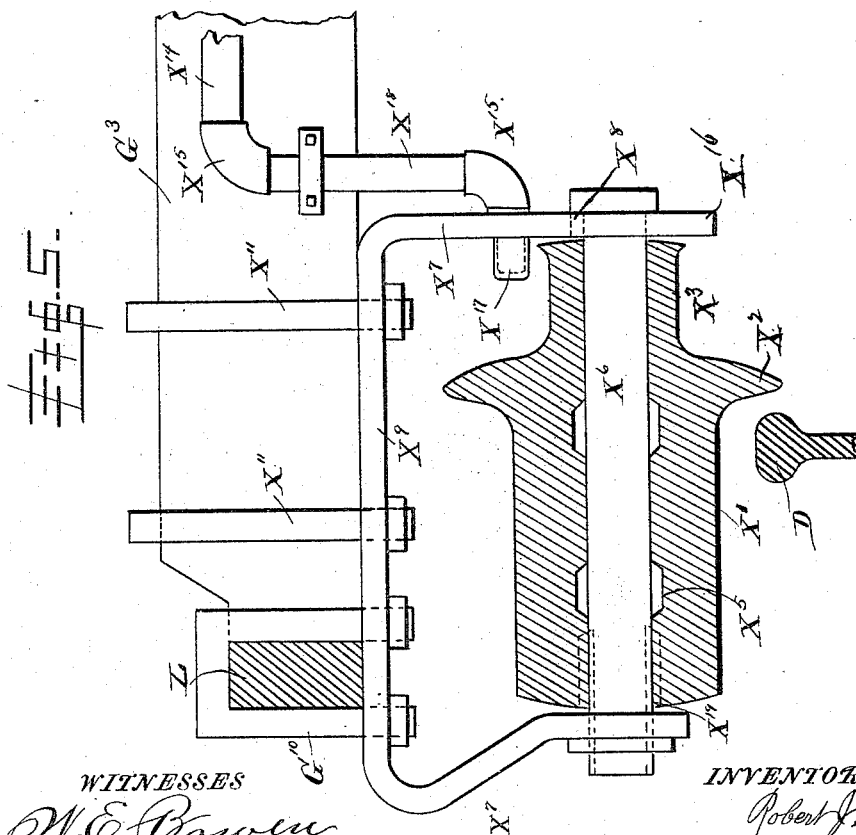
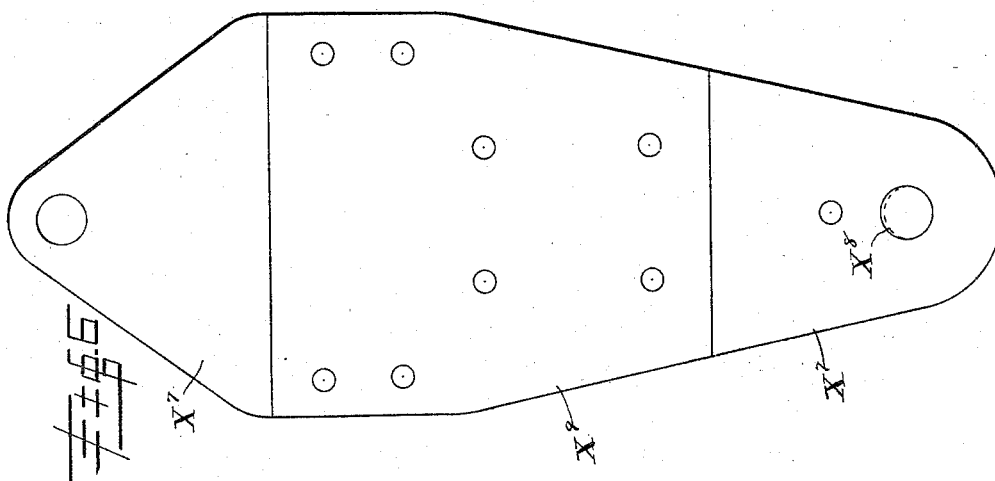
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W. E. Bowen
R. V. McElroy

INVENTOR

Robert J. Spearing
By
John J. Halsted for.

UNITED STATES PATENT OFFICE.

ROBERT J. SPEARING, OF SHERBROOKE, CANADA.

SAFETY-SHOE AND BRAKE ATTACHMENT FOR CAR-TRUCKS.

SPECIFICATION forming part of Letters Patent No. 493,662, dated March 21, 1893.

Application filed February 10, 1891. Serial No. 381,001. (No model.)

To all whom it may concern:

Be it known that I, ROBERT J. SPEARING, of Sherbrooke, in the county of Sherbrooke, Province of Quebec, Dominion of Canada, have invented a new and Improved Safety-Shoe and Brake Attachment for Car-Trucks, of which the following is a full and clear description.

My improved invention may be classed among those railway appliances used to automatically apply the brakes and to prevent derailment of the train.

The object of my invention is to prevent the overturning of railway cars, when derangement of truck or track occurs, and prevent the loss of life and property that often occurs before the train can be stopped in case of such accident, and to provide for the setting of the brakes with absolute certainty.

In my present invention I have provided a specially designed closed frangible air or fluid chamber to be connected to the extension of the air brake pipe system, and means of carrying such extension closer to the rail and to the base of the car wheels than has heretofore been done with any device of this class. This chamber is located in the safety shoe close to the wheel and to the rail, and projecting a little below the under face or surface of the shoe, and so as to be practically an integral part of said shoe: and to which chamber the brake-pipes are connected and in which they terminate. This terminal, closed chamber is thus protected from damage or breakage from any cause other than a direct contact with the rail. Without such chambered shoe, it will be seen that it would be impracticable, if not impossible to carry the pipes down so near to the rail and wheel and to protect them there, without continual risk of interruption by breakage and consequent improper setting of the brakes. I provide in my improved safety shoe an aperture in which to carry and protect this air or fluid chamber in a horizontal position at right angles with the rail and extending sufficiently over at each side of the rail to insure the opening of this chamber in case of accident to the rails, wheels or parts of truck. This terminal air chamber and the pipes extending thereto afford substantial protection to the air brake system from interference or dis-

ability from any point other than underneath the broad main shoe.

My improvements are adapted to be used in connection with any air, or steam brake system, whether the brakes are set by allowing the escape of air under pressure, as in the Westinghouse system, or by admission of air, or its equivalent, in connection with so-called vacuum brakes, and may be considered as an improvement on the safety attachment described in Letters Patent granted to me under No. 443,382 on the 23d day of December, 1890.

Reference being now had to the drawings, which illustrate what I believe to be the best application of my invention, Figure 1 is an elevation of part of my device, showing the position of the main and auxiliary shoes, in case of derailment of the wheels and showing my improved construction of safety shoe beam and shoe standards. Fig. 2 is a side view of my device applied to a truck, showing the arrangement of the pipes and other parts. Fig. 3 is an end elevation, showing the pipes and the main and auxiliary shoes in a normal position. Fig. 4 is a section greatly enlarged of my combined safety shoe and its terminal secured horizontally therein. Fig. 5 is part elevation and part sectional view enlarged of a flanged cylinder shoe having supports with air pipe chamber attached. Fig. 6 is a plan view enlarged of a metal plate, cut and made ready for bending to form the supports of cylinder shoes.

T¹ and T² Fig. 3 are the center sills of the car body; T, the intermediate sills.

D. is the rail, B, the wheels; L, Figs. 1 3, and 5, is the equalizing bar. N¹, N², and N³ elliptic springs. N⁴, the spring plank, N⁵ the truck transom, and N⁶, the truck bolsters, all of which are of the ordinary construction.

G³ is the safety shoe beam, which secures the opposite shoes and their flanges rigidly in place, and may be made of wood as shown in Fig. 3, or iron as shown in Fig. 1.

O is a terminal air chamber; O' is the branch pipe connected with the same.

O³ is the longitudinal pipe passing under the transom.

O⁵ is the pipe connecting those pipes which are carried on the truck, with the flexible tube O⁷.

To accommodate the movement of the car body, a flexible tube or pipe is used to connect the branch coming from the main pipe with those carried on the safety shoe beam; 5 branches are extended to the air chambers O. carried adjacent to the base of each of the wheels of the truck; each of the air chambers is carried in an aperture formed for that purpose in the main shoe C⁴; by this arrangement of pipes and caps thereto, the air or 10 fluid employed to operate the brake mechanism is extended to the base of each wheel and held in compression by the chambered cap, the breaking of which permits the free passage of the air through the branches and main 15 pipe, thereby setting all the brakes on the train instantly. The chambered cap is made sufficiently strong to resist the air pressure required, but its base is exposed to come in 20 contact with the rail and be opened thereby.

The chambered cap may be secured in place by inserting the neck and body at the underside of the aperture formed in the safety shoe, and bringing the shoulder formed on top of the extended ends of the chambered cap up 25 to the respective rests formed in the aperture to secure it in the precise relative position with the face of the shoe and the top of the rail; (see Fig. 4.) It is held up by the lip or 30 over projection at one end, and at the other end it is made secure by a beveled latch *z*, which is also secured by a suitable locking pin *z'*. The raised neck *y* of the chambered cap has a screw thread cut thereon, to be connected with the branch pipe by an ordinary 35 union coupling.

In order to provide the greatest protection against the overturning or wrecking of the train in case of a wheel mounting the rail, or 40 running off an open switch, as well as in case of derangement of truck or track, I have devised the raised auxiliary shoe C⁸, which may be made with or secured to the main shoe C⁴, extending beyond the flange C⁵, and formed 45 with a short flange C⁶, the lower edge of which is nearly on a line or level with the lower face of the main shoe C⁴. In case of a wheel mounting and dropping on the outside of the rail, the auxiliary shoe C⁸ will come upon the 50 rail and support the truck. The downwardly projecting flange C⁶ of the auxiliary shoe C⁸ prevents the truck from sluing around and keeps it on the rails until the train is stopped. The chamber cap in the opposite shoe C⁴ will 55 be broken as it comes upon the rail and the brake set instantly (see Fig. 1) where the position of the wheels is shown in dotted lines, one wheel having climbed the rail and dropped down at the outer side, until the inner extension, or auxiliary shoe, carried at about one 60 half of the height of the rail above the rail, comes upon and slides along the rail. The object of the auxiliary shoe, is to supplement and perfect the main shoe, and to extend its usefulness; doubling its capacity as a safety 65 attachment, and enabling it to operate in cer-

tain cases of accident where a single flanged shoe would fail; such for instance as running off an open switch:—supporting the outer wheel in case of derailment: guiding the main 70 shoe to set the brakes: and to support the wheel on the inner side. Its position also, relatively to the main shoe, namely, about one inch higher,—allows the car to be run on the rails after an accident to the wheels or axle, 75 without interfering with frogs or switch, and to pass from the main line on to a siding.

My improvements, it will be observed, are not attached to the car-body, nor to such parts of the truck which partake of the oscillations and depressions of the car; if they 80 were, they would be carried too high above the rails to come into action too late to prevent damage, as they would only act after a derailment; but as they are attached to the 85 cross-beams and equalizing bars, they are free from oscillation or depression, and I locate them so close to the wheels and rails, that they operate on the slightest derangement of truck or track, and afford prompt support, 90 and prevent derailment or damage.

As the air-chamber, to be of full value, and to perform its duty in any kind of accident for which I have devised it, must extend beyond each side of the rail, it is absolutely 95 necessary that it be protected from injury (other than direct downward contact with the rail); as for instance by ice on the road-bed, loose stones, or chance rubbish, or uneven crossings, &c.: thence I give it such protection 100 on all sides by locating it in the sole or lower face of the shoe, making it in fact a part of the same: the broad solid part of the shoe serving to frame, surround, and protect it at every side, but allowing its under face 105 to act when required, and then instantly to fracture and thus operate the brakes. The air chamber and its protecting shoe-sole are mutually dependent on each other, and are in fact one device, located so as to be the 110 practical termination of the air-brake system.

Owing to the prevalence of hard packed snow or ice along the rails in some sections of the country, and to avoid in some cases excessive friction and consequent strain on the parts of 115 the truck, I have devised a modified construction of my combined shoe forming a flanged cylinder shoe, whose convex surface presented to the rail will be similar to that of the face of my combined shoe, and which may be fixed 120 on a strong spindle X⁶, run through its center to slide along the rail, or it may be permitted to rotate on the spindle, as may be desired.

Referring to Fig. 5, X' is the cylinder shoe, having a flange X², corresponding to the flange 125 C⁵, in Fig. 1. The reduced part X³, of this cylinder corresponds to the base C⁸, of the auxiliary shoe shown in Fig. 1. X¹⁶ is that part of the anchor-plate or support X⁷. X⁹. X⁷, which projects below the face of the part 130 X⁸, of this shoe, thus serving as and constituting a flange when the shoe X'. upon com-

ing into contact with a rail, is raised in the recess X⁸. (shown in dotted lines in Fig. 5.), and which upward movement of the shoe forces it into contact with the frangible air-chamber or stop X¹⁷, (which normally is the closed terminal of the air pipe,) and fractures it, thus opening the air-pipes and instantly setting the brakes. X⁵ represents recesses in the bearing part of this shoe X', for lubricating: X⁶ is a strong bolt or spindle which extends through the center of shoe X' and supports it: or this shoe may either be loose on the spindle that it may revolve, or it may be secured to the spindle by means of a key X¹⁹, or by a pin. The anchor-plate shown in Fig. 6. when bent to the form shown in edge view in Fig. 5., is secured to the equalizing bar L. and to the cross tie beam G³ by U-shaped bars G¹⁰ and X¹¹. X¹⁵ indicates pipe elbows: X¹⁸, branch air pipes, and X¹⁴, an air pipe running along the cross-beam G³, like as shown in Fig. 1. S. is the main brake pipe carried under the car.

I am aware that a bent pipe or tube of frangible material such as glass, pottery or the like, and pendent pipes from the car body, have been proposed to be employed and so disposed about the truck or its appurtenances as to be broken or opened by coming in contact with the track or roadway, or obstructions thereon, and also that frangible bulbs have been proposed to be arranged to be broken by coming in contact with certain parts of the truck. Those I do not claim.

From the foregoing description it will be seen that the combined attachment may be adapted and applied to any form of truck, or locomotive, and may be connected with any system of automatic brakes, without departing from the spirit of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the truck of a car provided with main safety shoes described, and with the brake system and branch pipes, the terminal air-chamber connected with the branch air pipes, and located or secured in the lower face of the safety shoe which protects it and carries it close to the rail and to

the tread of the wheel, as described and for the purpose set forth.

2. In combination with a car-truck, a flanged safety shoe having a frangible air-chamber firmly located in and protected by the sole of the shoe, and extending cross-wise of the rails, and having its under side exposed, such chamber serving as the terminal for the pipe of an air brake system.

3. The flanged safety shoes as set forth, each having an air chamber secured and firmly located in and protected by the soles of the shoe, and serving as the terminal of an air-brake system of pipes, and having its under side exposed as described, combined with the truck of a car, and with strong shoe supports upholding the truck and rigidly secured to cross-beams and to the equalizing bars, all as and for the purposes set forth.

4. In a safety attachment for car-trucks, the combination with the air-brake system and with the truck of a car provided with cross-beams serving to carry branch pipes of such system and with the main safety shoes having an air-chamber in their lower faces as described, the auxiliary shoe extending inward from the flange of said main shoe, and having a flange on its inner edge, whose lower edge is nearly on a level with the lower face of the main shoe, all substantially as described and for the purpose set forth.

5. In combination with the truck of a car provided with the main and with the auxiliary safety shoes as described, a set of air branch pipes extending from the air-brake system and supported on the cross-beams as described of the truck, and terminating in air-chambers located in safety shoes, and by which they are protected and located close to the rail and wheels and whereby the pipes, shoes and chambers, cannot be separated, but are mutually dependent, all substantially as described and for the purpose set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

ROBERT J. SPEARING.

Witnesses:

D. M. McLEAN,
N. H. GREENE.