

(No Model.)

2 Sheets—Sheet 1.

E. SAVAGE.
RAILWAY CAR BRAKE.

No. 419,362

Patented Jan. 14, 1890.

Fig. 1.

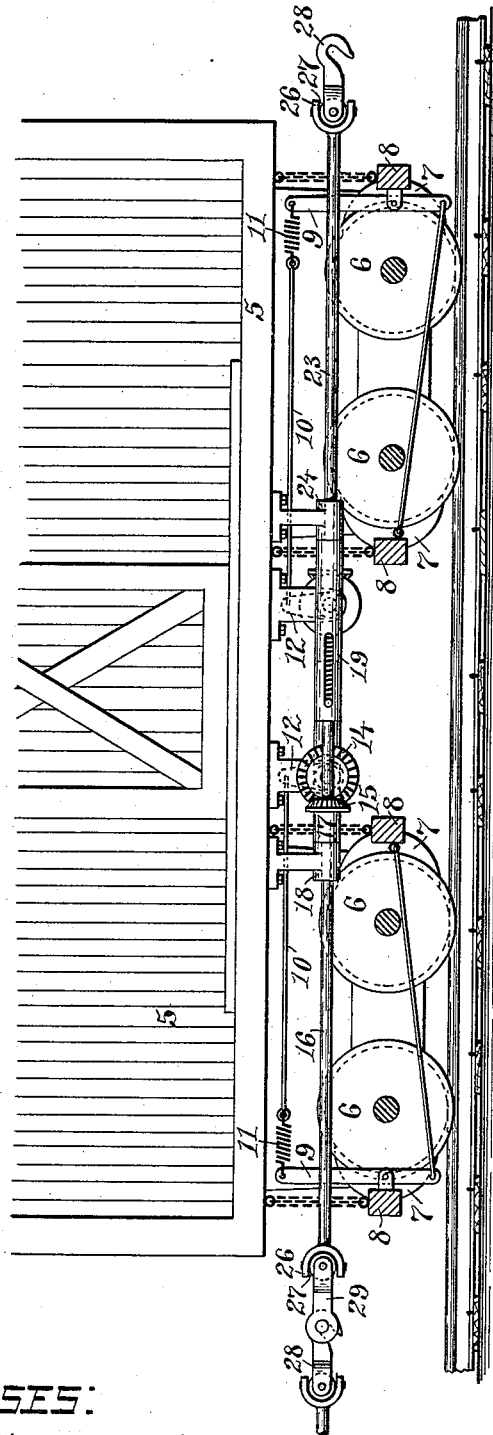
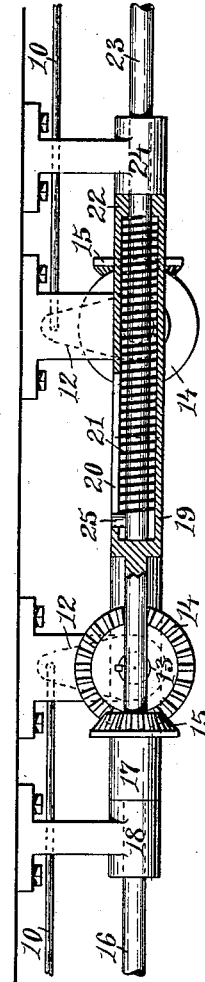


Fig. 2.



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Atty's.

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Fig. 3.

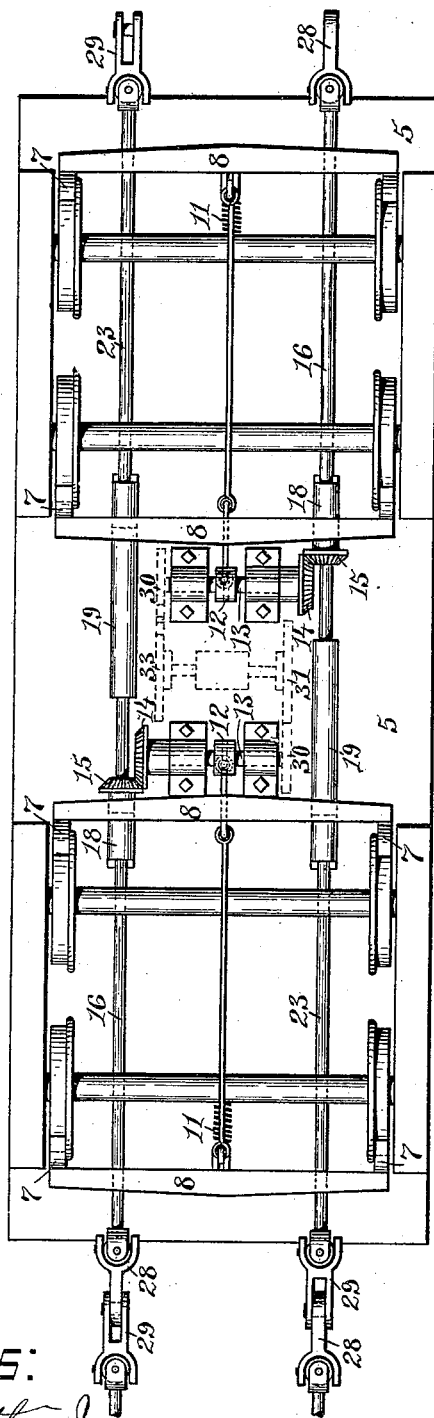
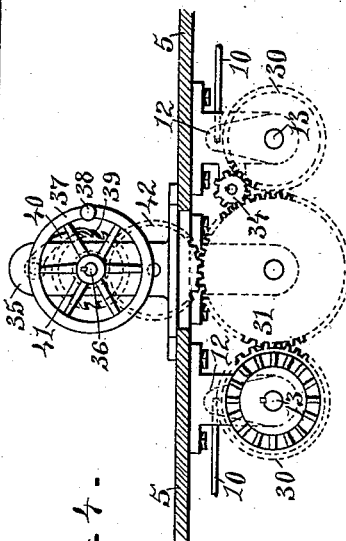


Fig. 4.



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UNITED STATES PATENT OFFICE.

ELI SAVAGE, OF PROVIDENCE, RHODE ISLAND.

RAILWAY-CAR BRAKE.

SPECIFICATION forming part of Letters Patent No. 419,362, dated January 14, 1890.

Application filed October 31, 1889. Serial No. 328,852. (No model.)

To all whom it may concern:

Be it known that I, ELI SAVAGE, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Railroad - Brakes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

15 This invention has reference to an improvement in the construction of continuous brakes for railroad-trains.

20 The invention consists in the peculiar and novel construction of two rods each yielding lengthwise on opposite ends of each car and each connected by gears with a brake mechanism, so as to form two continuous lines of rods capable of operating the brakes on all the cars of a train.

25 The invention further consists in providing the ends of the brake-operating rods with couplings constructed to rotate with the rods and communicate rotating motion from one rod to the other to form a continuous brake-operating device extending from one end to the other of a train.

30 The invention further consists in the peculiar construction of the brake-operating rods and the connection with the couplings by which great flexibility is secured and the automatic adaptation of the continuous rods to the curves of the road and permit of the rotation of the rods to operate the brakes; and the invention further consists in the peculiar and novel construction of the operating mechanism by which the rods are rotated and the brakes are operated on the whole of the train from any one or more points, as will be more fully set forth hereinafter.

35 Figure 1 is a longitudinal sectional view of a railroad-car provided with my improved brake - operating mechanism. Fig. 2 is a view, partly in section and drawn on an enlarged scale, showing the beveled gear, connections between the rods and the brake-le-

vers, and also the sleeve-coupling connecting the two parts of each of the two rods on each car, by which the rods adapt themselves to the variations in length required when the train passes over a curve on the track. Fig. 3 is a plan view showing the two rods and their connections with the brakes of one car, and also in broken lines the gearing connecting the rods and brake mechanism with the operating mechanism. Fig. 4 is a view showing the operating mechanism in connection with the brake mechanism.

Similar figures of reference indicate corresponding parts throughout.

In the drawings, the number 5 indicates the body of a railroad-car. The usual freight-cars are shown in the drawings, the construction of the brake - rods being especially adapted to the requirements of a freight-train, in which the flexible link-coupling, by which the successive starting of the cars facilitates the starting of the whole train, is now in use. Devices of exactly the same construction may, however, be used on the close-coupled passenger-train, and also on vestibule trains.

6 indicates the car-wheels; 7, the brake-shoes; 8, the brake-bars, and 9 the brake-levers. The rod 10 connects the long arm of the brake-lever 9 with the arm 12, secured to the shaft 13. The coiled spring 11 is shown as placed between the brake-lever 9 and the rod 10. This spring may be placed at any desired point between the arm 12 and the lever 9.

The spring 11 is of such strength that only when the brakes have been brought into close contact with the wheels will the spring yield to any excessive strain, and thereby allow for any variation, wear, or stretch in the brake-operating mechanism and permit all the brakes in a train to be brought in contact with the wheels.

The shaft 13, to which the arm 12 is secured, is provided with the bevel-gear 14, which gear meshes with the pinion 15, secured to the fixed portion of the rods 16, which is held against longitudinal motion by the collar 17, bearing at one end against the hanger 18 and at the other end against the pinion 15 or made part of the pinion 15. The portion

16 of the longitudinal rods is provided with the tubular sleeve 19, provided with the longitudinal slit 21 and having the coiled spring 22, bearing at one end against the shoulders 5 formed by the partial closing of the end 22 of the tube 19. The longitudinal extensible rod 23, supported in the hanger 24, extends through the opening in the end 22 of the tubular sleeve 19 and through the coiled spring 10 21, and is provided with the pin 25, which extends through the slot 20 and receives the thrust of the coiled spring 21, so that, while the rod 23 may be drawn out the length of the slot 20 against the resistance of the spring 15 21, the rods 16 and 23 must in all positions rotate together. The rods 16 23, operating the brake mechanism on each car, are provided at each end with the socket 26, in which is hinged the ball 27, provided with pins projecting from the ball and journaled in the 20 socket 26 and the couplings 28 and 29, so that the part of the coupling connected with the rod can swing in every direction, the connection forming a universal joint. The coupling-piece 28 is formed into a hook. It is made of flattened cross-section, and the coupling-piece 29 is formed into a link, in which, when inserted, the hook is firmly held, so that when connected the rods of all the cars 30 in a train will turn together and yet permit perfect freedom to turn, so as to traverse curves. On each end of each car a hook 28 and a link 29 are placed. The hook is always secured to the laterally-yielding rod 23 and 35 the link to the rigid rod, or vice versa, so that each end of any car will always present the hooks opposite the links of any other car.

The brake-operating mechanism may be 40 placed on the engine-tender, on any one of the cars forming the train, or in the caboose-car, usually at the end of a freight-train, and to this purpose the car is provided with the gears shown in broken lines in Fig. 3, consisting of the gear 30, secured to the end of 45 the shaft 13 and meshing with the gear 31 on the counter-shaft 32. To the opposite end the gear 33 is secured, which, through the idle-pinion 34, communicates motion to the 50 gear 30 on the end of the opposite shaft 13, so that when the gear 31 is rotated to the right or to the left the shafts 13 are turned in opposite directions and both operate the brakes through the arms 12 simultaneously 55 to either tighten or loosen the brake.

On the platform of the car the standard 35 is secured, consisting of two side frames, in which the shaft 36 is journaled. One or both outer ends of this shaft 36 is provided with 60 the fly-wheel 37, having the handle 38. On the same shaft 36, between the bearings in the two side frames forming the standard 35, is secured the ratchet-wheel 39, and on the inner side of the standard the pawl 40 is 65 hinged, so as to engage with the ratchet-wheel

39. The pinion 41 (indicated in Fig. 4 in broken lines) is secured to the shaft 36 and meshes with the gear 42, secured to a shaft journaled in the standard 35, and this gear 42 meshes with and communicates motion 70 to the gear 31, and through the same operates the brake mechanism of the car, and when this car is connected with other cars to form a train operates, by means of the rods 16 23, all the brakes on the train. 75

I do not wish to confine myself to the exact form of mechanism for operating the longitudinal rods 16 23 shown in Fig. 4, as the same may be changed in various ways and other means substituted for imparting rotating motion to the rods 16 23, and steam-power or an electric motor may be used to operate all the brakes on a train simultaneously, while the connections between the cars are sufficiently flexible to permit the locomotive 85 to start the cars of a freight-train coupled by the ordinary link successively, and the train can pass over any practical curves on the road.

The connections on both sides of each car 90 with the rods 16 and 23, each drawing when the train is passing over a curve on one of the coiled springs 21, gives a stability to a freight-train that has never been secured heretofore, and which secures the same freedom from oscillation as is secured in the vestibule-train, thereby greatly reducing the resistance to the strain of the locomotive and securing a steadier train. 95

Having thus described my invention, I claim 100 as new and desire to secure by Letters Patent—

1. The combination, with the body of a railway-car, of the rods 16 and the rods 23, the sleeve 19, the spring 21, and the hooks 28 and links 29, connected with the rods by a 105 universal joint, as described.

2. A brake-operating and coupling device for railroad-cars, the same consisting in the rods 16 and 23, the sleeve 19, provided with the slot 20, spring 21, and pin 25, the hanger 110 18, sleeve 17, and hanger 24, and the hooks 28 and links 29, secured to the rods by a flexible joint, as described.

3. The combination, in a railroad-car-brake-operating device, with the body of the car 115 and the two longitudinally-extending and coupled rods 16 and 23, of the beveled pinion 15, the bevel-gear 14, the shaft 13, the arm 12, rod 10, spring 11, and brake-lever, as described. 120

4. In a train of railway-cars, the combination, with each car, of the two rods placed one on each side, each having capacity of longitudinal extension resisted by a spring, a gear secured to each rod, and mechanism 125 intermediate between the gear and brake-levers, the rods of each car being coupled to the rods of the adjoining cars by a coupling connected with the said longitudinal rods by a ball-and-socket connection, as described. 130

5 5. The combination, with the brake-operating mechanism, substantially as herein described, of the gears 30, 31, 33, and 34 and mechanism for operating the brakes on a train of cars simultaneously through the above-mentioned gears and brake mechanism, as described.

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

ELI SAVAGE.

Witnesses:

JOSEPH A. MILLER,
M. F. BLIGH.