3 Sheets—Sheet 1.

L. GRIESER.

CAR-BRAKE.

No. 171,933. Patented Jan. 11, 1876.

Fig. 1.

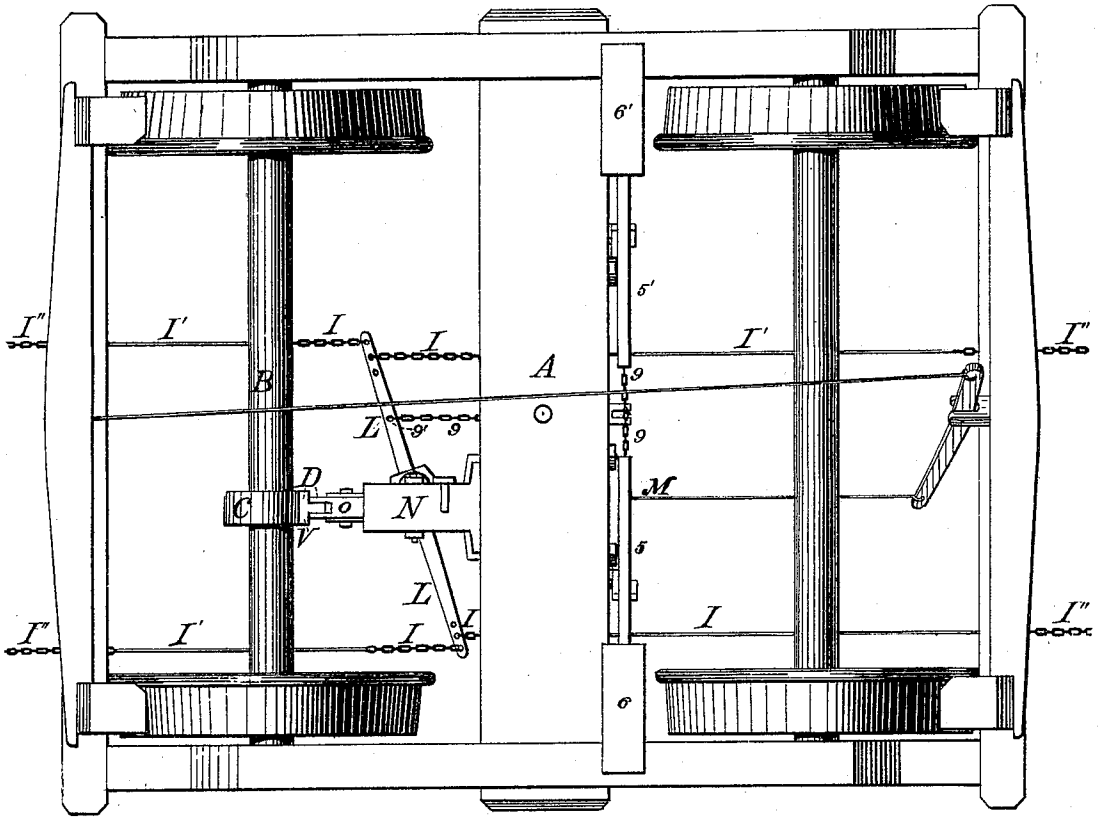
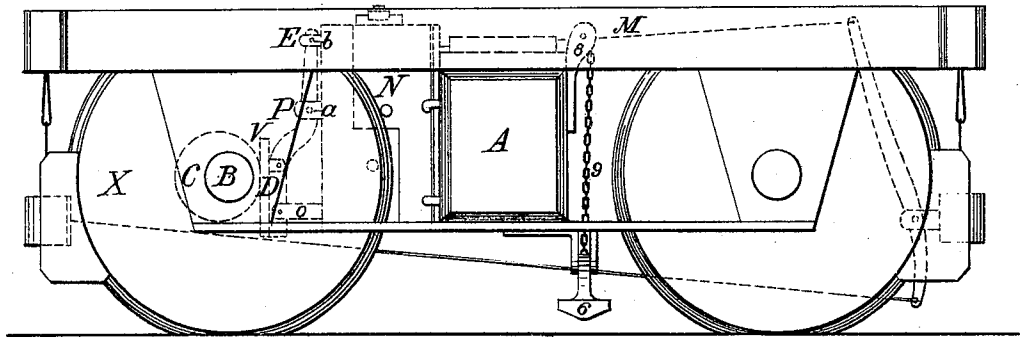


Fig. 2.



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CAR-BRAKE.

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Fig. 3.

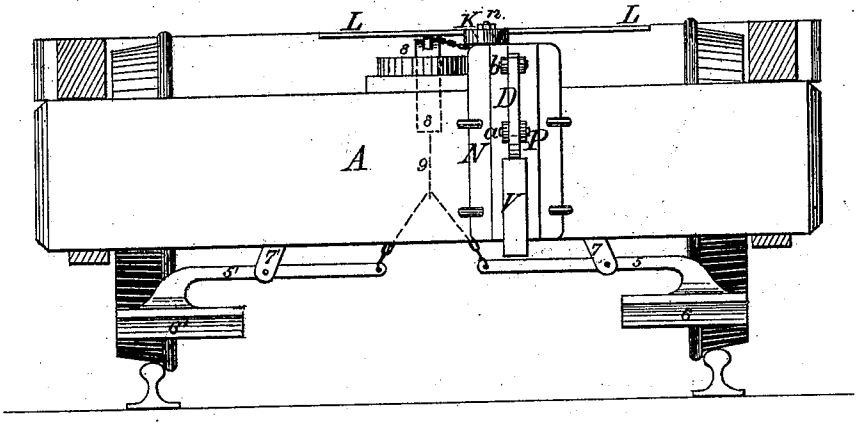


Fig. 4.

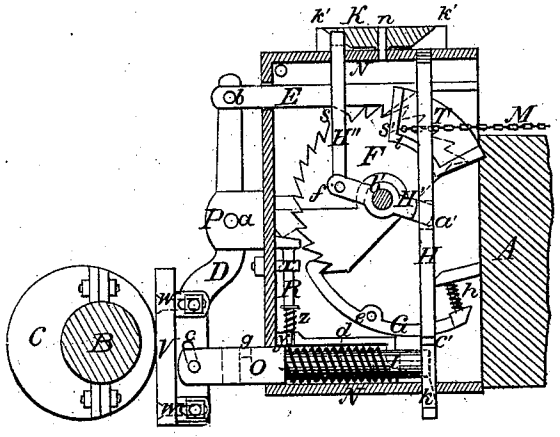


Fig. 5.

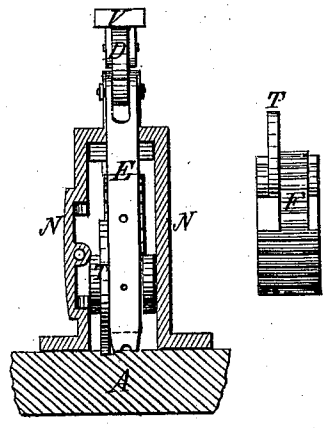
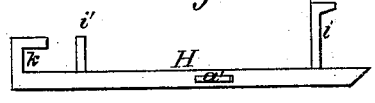


Fig. 6.



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3 Sheets—Sheet 3.

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CAR-BRAKE.

No. 171,933. Patented Jan. 11, 1876.

Fig. 7.

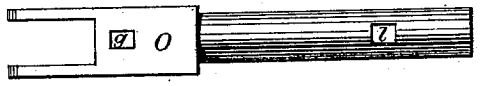


Fig. 8.

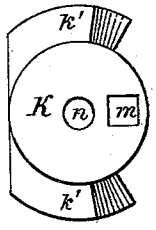


Fig. 9.

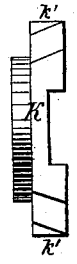


Fig. 10.

Fig. 12.

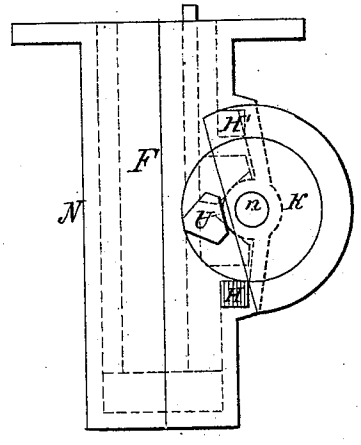
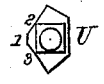


Fig. 11.



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Att'y.

UNITED STATES PATENT OFFICE.

LOUIS GRIESER, OF RUSHFORD, MINNESOTA.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **171,933**, dated January 11, 1876; application filed June 18, 1875.

To all whom it may concern:

Be it known that I, LOUIS GRIESER, of Rushford, in the county of Fillmore and State of Minnesota, have invented certain new and useful Improvements in Railway-Car Brakes; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification:

This invention relates to that class of car-brakes that are operated by the revolution of the axles of the car-trucks; and it consists, first, in the construction and combination of devices whereby the brakes are operated by the revolutions of the axle of a railway-car truck, in such a manner that when the brakes have once been set the revolutions of the axle shall have no more effect, or cause any further strain upon, the chain which connects the brakes with their operating devices; secondly, in the combination and arrangement of devices whereby the braking up or off, either of the whole train, or of any one car therein, is greatly accelerated and made absolutely certain, without regard to the direction in which the train is moving; thirdly, in the combination and arrangement of devices whereby the operating-lever on the engine, or on any one car in the train, when moved so as to set the brakes, will take up, successively, the slack of coupling-chains between the cars, and thereby effect a successive and rapid setting of all the brakes throughout the entire train, from the first car to the last; fourthly, in the construction and arrangement of devices whereby the train will be braked up automatically when the wheels of any one car run over or encounter an obstruction, such as a stone, a broken rail, &c., or when the wheels of any one car break down or run off the track.

On the three sheets of drawing hereunto annexed I have represented the application of the various features of my invention, as above set forth, to an ordinary passenger railway-car; and I shall now proceed to describe the same, similar letters of reference indicating corresponding parts in all the figures.

Figure 1 represents a bottom plan of a railway-car truck. Fig. 2 represents a side elevation of one of the trucks of a railway-car. Fig. 3 represents a front elevation of Fig. 2, the wheels X and axle B having been removed. Fig. 4 represents a vertical section of the brake setting and releasing devices, which are secured to the truck. Fig. 5 is a top view of Fig. 4, and Figs. 6, 7, 8, 9, 10, 11, and 12 represent details of parts, as hereinafter more fully described.

A represents the transom or beam of a railway-car truck, to the side of which, nearest the axle B, is firmly affixed a strong iron frame, N. Vertically within this frame is pivoted the segmental rack F, which connects by chain M, secured at s', with the brakes. D is a lever, pivoted at d to the arm P, which projects from N, and pivoted at b to the hook E. G is a hook or dog, pivoted at e in the lower part of frame N, and actuated by a spring, h, pressing upon its rear end, back of the pivoting-point e. H is a vertical rod, which slides up or down in guides or bearings on one side of frame N. This rod has a hole or mortise, a', into which is pivoted one end of the double cross-lever, H′, which is pivoted on the same axle b' upon which the segmental rack F is pivoted, and whose other end is pivoted at f to the rod H″, as shown in Fig. 4. The rod H, Fig. 6, has two projecting arms or brackets, i i', and a right-angled hook, k. When H is raised by depressing H″, i engages with the under side of the hook E, and i' with the under side of the dog G, the effect of which is to release both from their hold upon F. At the same time k will engage with the corresponding slot or recess l, in the sliding bar O.

The bar O has coiled upon it the spring d, on the inside of frame N. The action of this spring is to force O out toward the eccentric C, which is placed upon the axle B whenever k is released from its hold on O at l by depressing H. R is a vertical bolt, which works in a bearing at y, and through the eye or guide in the projecting arm x, inside of frame N, and has coiled upon its lower part a spring, z, which keeps its lowermost point above the bar O when the machine is at rest; but when F revolves, the projecting lip S will strike upon

the head of R, thereby forcing the point of the bolt into the recess *g* in O, Fig. 7, so that O is retained in a position that brings the lever D and plate V out of reach of the play of the revolving eccentric C. When pressure upon the head of R is released, the spring *z* will lift it automatically out of the recess in O.

V is a steel plate, adjustably secured to the lower part of lever D, fronting axle B and eccentric C, by bolts and set-screws W, or by any other suitable means that will admit of the adjustment of the plate V in conformity to the relative positions of axle B and transom A, which is different in different cars. By this arrangement the operating devices hereinbefore described may be used, of the same size, upon any car or class of cars, by simply adjusting the plate V to meet the play of the eccentric C in all cases.

It will be perceived that when the machine is at rest—that is, when rod H″ is depressed and H raised—the plate V, lever D, and bar O are kept out of reach of the revolving eccentric by the right-angled hook *k* on H, and also that the pawl E and dog G do not engage with the ratchets on the segmental rack F; but when, in braking up the car, H is depressed, or is in the position shown in Fig. 4, its hold upon O is released, and the spring *d* will force the plate V against the eccentric, while at the same time the pawl E falls into the ratchets in F, and the dog G, actuated by spring *h*, likewise engages with the lower notches in F. The revolutions of C cause a reciprocating motion of lever D, which, being communicated to the pawl-hook E, operates F and tightens the chain M, which is secured at *s*′, and, as F revolves, rests upon the projecting flange *t*, so as to be kept always in proper line with top of transom A. By the time the chain has been sufficiently tightened, and the brakes properly set, the pawl E has reached the last notch in F, and the lip S has reached R, which it depresses into the recess *g* in O; and the machine is at rest, notwithstanding further revolutions of the axle, with its eccentric, with the brakes set. To let off the brakes, H″ is depressed and H raised, thereby reversing the operation. The hold upon F being released, it flies back, loosens the chain M, and the brakes are off.

The rods H″ and H are operated in the following manner: A circular plate or disk, K, is pivoted, at *n*, horizontally within a recess made on top of the frame N for the purpose. Fig. 8 represents a bottom view, and Fig. 9 a side elevation, of this plate. It has a circumferential broken flange, *k*′, beveled so as to engage with the beveled tops of the rods H″ and H, one of which is always covered, in its depressed position, by one of the flanges *k*′ on K. When H″ is depressed by revolving the plate K round its pivot *n*, H is released, and vice versa.

K is operated by a long double-lever, L, placed diagonally across the bottom of the car, and secured to K at the pivoting-point *n*. A bolt, U, shown in cross-section in Fig. 11, and a front elevation of which is shown in Fig. 10, projects vertically downward from plate K, to which it is firmly secured, so as to partly rotate with it. This bolt, when the machine is at rest, presents the side 1 parallel to the upward-projecting flange or offset T on F, but when K, and with it U, is turned, in setting the brakes, the beveled side 2 is presented obliquely to the front part of flange T, which, in advancing as the segmental rack F revolves, presses upon it in passing, thereby partly turning it and the plate K and lever L. Secured to lever L, on each side, are short chains I, which connect with slender rods I′, that slide in bearings fastened to the bottom of the car, two on each side, in opposite directions, and reach till near the respective ends of the car, where they connect with short chains I″, there being one rod, with its chain, on each side of each draw-head. The chains I″ are sufficiently long, so that, when the cars are coupled and the chains I″ of one car hooked onto those of the next car, they will hang slack between the cars, even when these are as far apart as the play of the coupling and link will permit. Other chains pass from the respective ends of each rod I′ up to a lever or windlass placed on the platforms of the cars, so that the rods placed under each car may be operated from either of its platforms in the usual manner. When, therefore, the operating lever or windlass on the locomotive, or on any one car in the train, is operated by the engineer or brakesman, the breaking devices of the entire train will respond, through the connecting-chains I″ and rods I′. For instance, when the brakesman operates the lever or windlass on the first car in the train (from either platform) with a desire to brake up the entire train, the double lever L of that car is moved so as to cause the partial rotation of the plate K in such a manner that its flanges *k*′ will release their hold upon rod H″, but engage with and depress H. The braking devices of that car are accordingly put into operation, in the manner hereinbefore described. Another turn will still further move the lever L, (the rod H being constantly kept in its depressed position by the circumferential flange of the plate K,) and tighten the chain between first and second car. The next turn pulls upon lever L of second car and brings its braking device in operation, tightening at the same time the chain between the second and third cars, and so on through the entire train, until all the levers L have been operated and the brakes set.

To let off the brakes the chain on the other side of the draw-head is operated by its lever or windlass, all the levers L are moved successively in the opposite direction, the motion of the respective plates K is reversed, H is released and H″ is depressed, and the brakes are off. This braking off is accelerated by the bolt U of the first car (or truck, more properly speaking) of the train, which

is fastened to the plate K and lever L at *m*, and which, when the brakes have been set and the machine is again at rest, will present the side 3 (see Figs. 10 and 11) obliquely to the back part of the upward-projecting flange or offset T on F, so that when F flies back the back part of T will, in passing, press upon side 3 of bolt U, so as to partly turn or rotate the bolt, and with it plate K and lever L. It will thus be seen that the bolt U, by being moved in either direction by flange T, will partly rotate the lever L and operate the chains I, by which the braking mechanism upon the next car is brought into or out of action.

Pivoted in bearings 7 7′, fastened into and projecting downward from the bottom of the transom A, (see Fig. 3,) there are two levers, 5 5′, that reach to opposite ends of the transom in front of the car-wheels, where they are curved downward, so as to reach within a few inches of the track. To this lower end of each lever is secured a bevel-block, 6, (see Fig. 2,) which may be of wood, and fastened with a bolt through each bar, and so adjusted as to be carried about two and a half to three inches above the rails. No. 8 represents a bracket, having a small roller on top, and firmly secured to the side of the transom in such a position that the roller is on a level with the double lever L on the truck. A chain, 9, is fastened to L at 9′, (one on each side,) and passes over the roller, and downward, where it branches off into two chains, that connect with the respective inward ends of bars or levers 5 5′. By this arrangement, when the outward end of either of the levers 5, carrying the block 6, is raised by coming in contact with an obstruction, or with the road-bed, when a wheel or axle breaks down, it pulls down on chain 9, and moves the lever L, so as to put the braking device in instant operation, and the disabled car is braked up automatically, and applying at the same time all the brakes on the entire train by the means hereinbefore described, so that when any one car becomes disabled or runs off the track, the entire train, without regard to the number of cars, will be braked up automatically.

The several advantages of my improved car-brake, hereinbefore described, are so obvious as not to require to be pointed out or explained in detail; any one at all acquainted with the present state of the art to which my invention relates will see at a glance its numerous and important advantages, not only over the common style of brakes, but over air and steam brakes, which are uncertain of of operation, often difficult to apply properly and efficiently, and always liable to derangement from leakage of the reservoirs and connecting-tubes.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination of reciprocating lever D, with hook or pawl E and sliding bar O, substantially as and for the purpose hereinbefore set forth.

2. The combination of reciprocating lever D, sliding bar O, having spring *d* and rod H, substantially as and for the purpose hereinbefore set forth.

3. The combination of hook or pawl E, segmental rack F, dog G, and rod H, substantially as and for the purpose hereinbefore set forth.

4. The combination of segmental rack F, having lip S, with bolt R and sliding bar O, substantially as and for the purpose hereinbefore set forth.

5. The combination of rod H″, double lever H′, and rod H, substantially as and for the purpose hereinbefore set forth.

6. The combination of adjustable plate V, with reciprocating lever D, substantially as and for the purpose hereinbefore set forth.

7. The segmental rack F, having lip S and flanges *t* T, substantially as and for the purpose hereinbefore set forth.

8. The combination of the rods H″ H, plate K, and double lever L, substantially as and for the purpose hereinbefore set forth.

9. The combination of the segmental rack F, bolt U, plate K, and lever L, substantially as and for the purpose hereinbefore set forth.

10. The combination of levers 5 5′, carrying bars or blocks 6 6′, with chain 9 and lever L, substantially as and for the purpose hereinbefore set forth.

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

LOUIS GRIESER.

Witnesses:

CHARLES D. SHERWOOD,

CHAUNCEY P. RICHARDSON.