J. RAMSEY, Jr.
Car-Brake.

No. 204,372. Patented May 28, 1878.

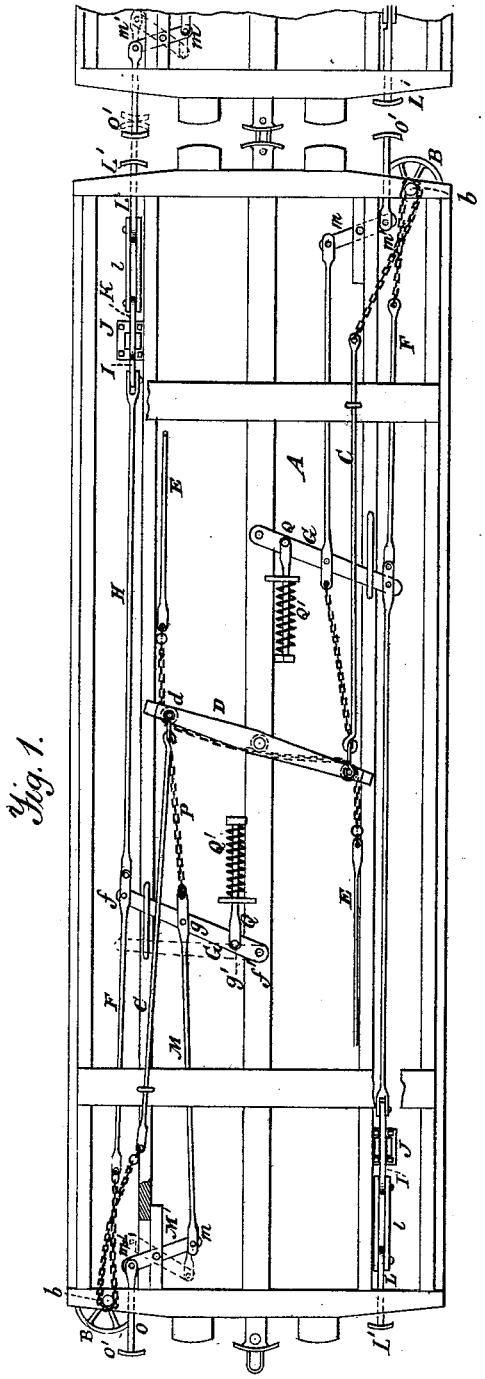

Fig. 1.

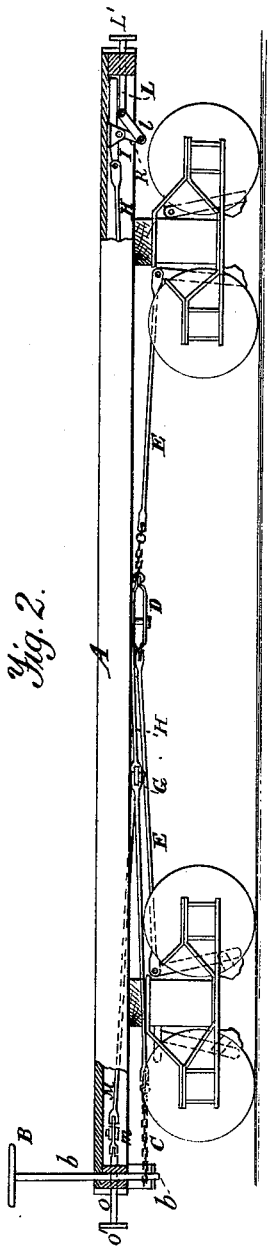

Fig. 2.

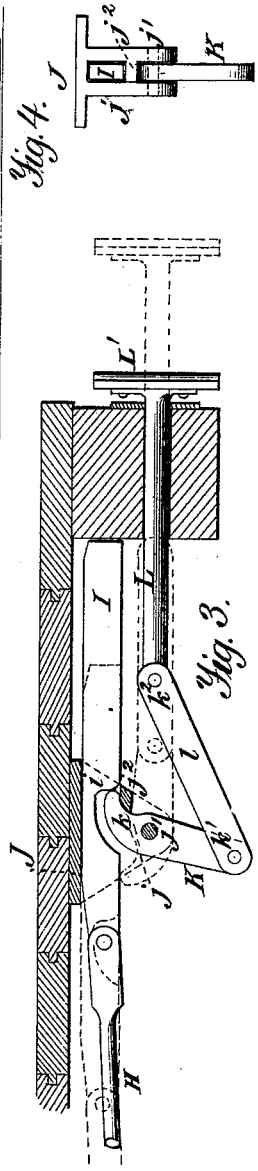

Fig. 3.

Fig. 4.

Witnesses.
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IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **204,372**, dated May 28, 1878; application filed February 13, 1878.

To all whom it may concern:

Be it known that I, JOS. RAMSEY, JR., of Bellwood, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification, and in which—

Figure 1 is a bottom view of my improved train-braking device attached to a car with an ordinary braking device. Fig. 2 is an elevation of the same. Fig. 3 is a detail view of one of the buffers used in my train-braking device; and Fig. 4 is an end view of its support, showing the means for limiting the motion of the several parts.

Corresponding parts in the several figures are denoted by like letters.

The nature of my invention consists, first, in a device attached to a railroad-car and operated by means of the ordinary brake-wheel of the same, whereby all the brakes of a train of cars are operated independently of the ordinary braking apparatus, while the ordinary braking apparatus may be also independently operated in the customary way, and alternately with the aforesaid train-brakes; secondly, of two buffers, one of which is made yielding, operating the brake, and which causes the other buffer to be so operated as to cause a similar yielding buffer of the next car to be in operating condition; thirdly, a tension-spring, which keeps the yielding buffer out, and, by its connections, causes the other buffer to be inoperative when the brakes are not to be applied; fourthly, of a device operated by and in conjunction with the yielding buffer for quickly moving the other buffer into operating position before the brakes are fully operated; and, fifthly, of a check for preventing the other buffer from becoming locked by means of dead leverage of its operating parts.

In the annexed drawings, A represents the bottom frame of a railroad-car; B, a hand-wheel of the brake; C, its draft chain or rod; D, an equalizing-lever; E, the brake-chains or rods, all of ordinary construction and in common use.

A chain, F, is attached to the brake-spindle *b* at the place where the chain D is attached, but so that it will unwind while the chain D winds up, and vice versa. The said chain F connects with lever G at *f*. The lever G is pivoted at *f'*, and is connected, by means of a rod, H, with a slide-bar, I, which slides in a slotted stand, J, and is provided with a recess, *i*, of suitable shape. The stand J is fastened to the bottom of the car, and supports between its parallel sides, by means of a pin, j^1, a lever, K, with a finger, *k*, which latter, in its normal position, occupies the recess *i* in the slide-bar I.

A lug, j^2, cast across the parallel sides of the stand J, serves to arrest the motion of the finger *k* beyond the proper limits of its forward and backward motion, and also to support the slide-bar I.

The lower end of the lever K is pivoted to one or two bars, *l*, at k^1, which bars are also pivoted at k^2 to the slide-bar L of a buffer, L'. A rod, M, is attached at *g* to the lever G, and at *m* to a lever, M', which lever is pivoted at *m'* to the slide-bar O of a buffer, O'. A chain, P, connects the levers D and G at the points *g* and *d*. The pulling-rod Q of a tension-spring, Q', is connected at *g'* to the lever G.

Operation: The brakes of each separate car are operated in the ordinary way by turning the hand-wheel B to the right, whereby the car-brakes are put on without operating the train-brake. When the train-brake is to be applied the hand-wheel B is turned to the left. In consequence of this motion the chain on rod F is wound up on the spindle *b*, and by means of the rod H moves the slide-bar I toward the spindle, and the recess *i* moves the finger *k* forward, thereby causing the bars *l* to push the sliding bar L and buffer L' out, as shown in the drawings by dotted lines. The motion of the lever K is arrested by the lug j^2 before the lever K assumes a horizontal position, in order to prevent the lever and the bars *l* from becoming locked by means of dead leverage. After the buffer L' is moved out to its full extent the slide-bar I continues mov-

ing forward, while the brakes are forced against the wheels until the desired force is applied to the brakes, during which time the finger *k* bears against the straight bottom surface of the slide-bar I, and thus is retained in its proper position.

The above-said operation of the brake is effected by the turning of the hand-wheel B, whereby the lever G is swung forward, thus moving the chain P and the lever D and rods in the same direction, and forcing the brakes against the car-wheels. The buffer O′ is, by the same operation, moved in by means of the rod M and lever M′.

Every car of the train being alike provided with the above-described apparatus, the corresponding buffer of the next or following car (partly shown in the drawing) is, by the buffer L′ of the preceding car, pushed in, and by means of its lever M′ and rod M its buffer L′ and its respective brakes are operated precisely in the same manner as those of the first car. The said operation is successively repeated on each following car of the train.

It is seen from the arrangement of the connecting-points *g* and *f* on the lever G, and by the proportion of leverage of the finger *k* and the lower portion of the lever K, that a comparative small backward or inward motion of the buffer O′ suffices to move the buffer L′ out to the full extent of its stroke, and this previous to the appliance of the full power to the brakes. As soon as the brakes of one car effect a reduction of its speed, the succeeding car approaches it with unchecked speed, and instantly has its buffer O′ thrust in by the buffer L′ of the former car, and thereby has its buffer L′ moved out to the full extent of its stroke, and its brakes operated all in the same manner as those of the first car were previously operated. This described operation is successively repeated from car to car.

If the train-brake is to be released, the hand-wheel B is turned to the right until the chain F is unwound. The tension-spring Q′, which has been compressed by the operation of the train-brake, now draws the lever G back to its normal position, thereby moving the rod H and the slide-bar I backward into its normal position, leaving the recess *i* opposite the finger *k*, whereupon the lever K and rod *l* are left to return to their normal position either by their own weight or by an occasional thrust upon the buffer L′ by the buffer O′ of the neighboring car. The chain P having now no tension, the brakes assume their normal position off the wheels, according to their construction. The movement of the lever G into its normal position causes the rod M and lever M′ to push out the buffer O′, and the several buffers O′ of the train are thereby kept in contact with their opposing buffers L′. The released buffer L′ ceases to resist the opposing buffer O′ of the next car, which is moved out by its respective spring Q′, thereby releasing the buffer L′ of the said next car, and so on, and the brakes of each car become released before its respective buffer L′.

By applying the described apparatus in conjunction with a common car-brake to the tender of a locomotive, the brakes of the whole train may easily be superintended by the engineer of the train; and in case of danger he may himself immediately apply the brakes to the whole train, and thus avoid an accident.

Each car is, in practice, provided with a duplicate train-braking device, as seen in Fig. 1, arranged to operate in the opposite direction, so that the two devices are alternately serviceable when the cars are moved in one or the opposite direction, thereby avoiding the necessity of reversing the car on a turn-table.

I am aware that devices are known and used whereby the brakes of a train of cars may be automatically operated by means of the motion of the train; but the said devices must be put into operating condition separately on each car, and previous to the departure of the train, and during such operating condition the operation of the said devices is entirely beyond the control of the brakeman, and depends on the retardation and acceleration of the motor or locomotive, and hence the said automatic operation does not always answer the requirements of the proper control of the motion of the train, and the brakemen must be constantly at their posts to make up for the deficiencies of the automatic braking device.

My improved braking device is put into or out of operative condition by a single motion, and at the option of the operator, and without previous preparation of the cars.

I do not wish to be understood as confining myself to the construction of the elements composing my special brake-operating mechanism, nor to the particular mode of arranging the parts, as they may be varied.

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

1. The combination, with an ordinary brake-lever and draft-chain or rod for operating a railway-car brake, of a special brake-operating mechanism, substantially as described, and a hand-wheel connected with both brake-operating mechanisms, whereby either may be operated by the hand-wheel at pleasure.

2. On a car of a railroad-train, the yielding and brake-applying buffer O′, in combination with the abutting buffer L′, whereby the yielding buffer O′ of the following car is operated while the train is in motion, substantially as set forth.

3. The combination of the buffer O′, levers M′ G, rods H M, tension-spring Q′, and slide-bar I, constructed and operating as set forth.

4. The reciprocating bar I, having recess *i*, and the lever K, having finger *k* and connections *l*, whereby the buffer L′ is moved out