

(No Model.)

L. H. COLE.
CAR BRAKE.

No. 517,212.

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Fig. 1.

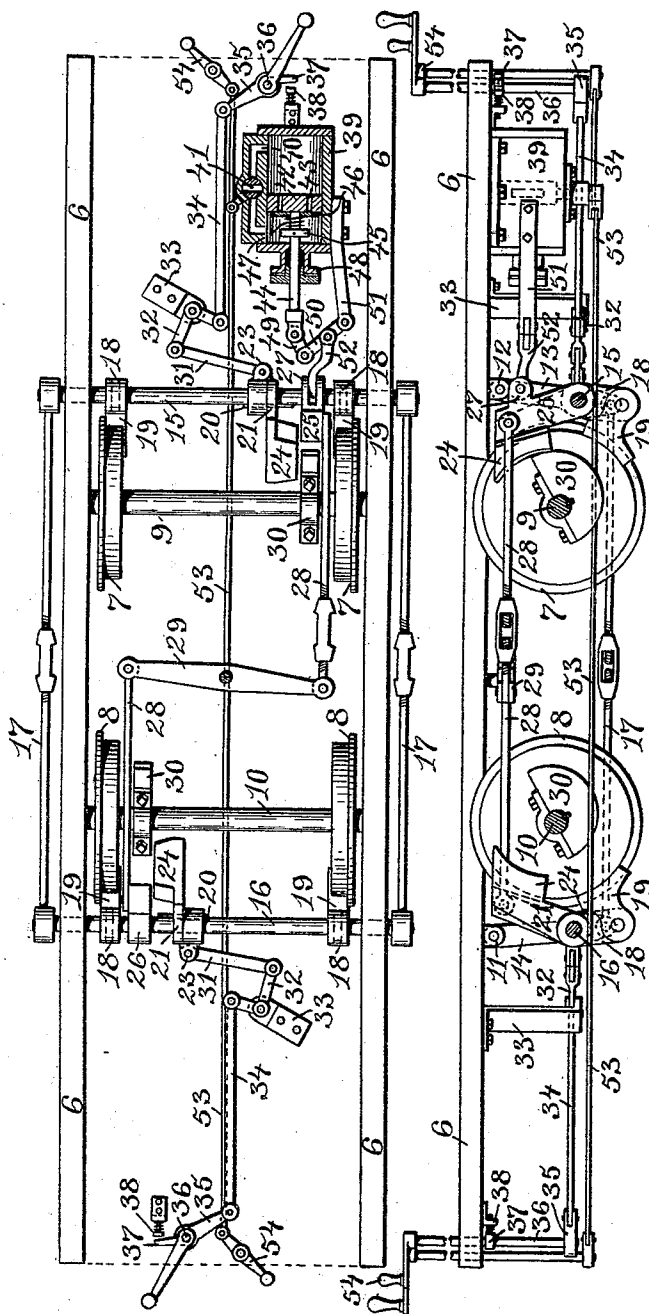


Fig. 5.

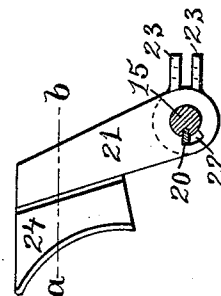


Fig. 4.

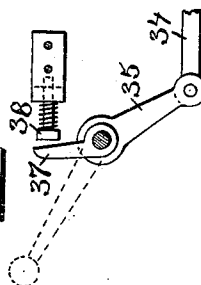


Fig. 3.

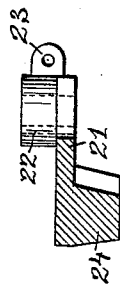


Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

LLOYD H. COLE, OF PAWTUCKET, RHODE ISLAND.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 517,212, dated March 27, 1894.

Application filed August 24, 1893. Serial No. 483,880. (No model.)

To all whom it may concern:

Be it known that I, LLOYD H. COLE, of the city of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Brakes; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to improvements in car-brakes.

The object of the invention is to so construct a car-brake that but a small pressure on the brake-handle will be necessary to apply the same.

Another object of the invention is to provide mechanism by which the brakes may be held in contact with the car-wheels without exerting a continuous pressure on the brake-handle.

Still another object is to so construct and arrange a positive car-brake that it may be operated by intermittent pressure.

Another object is to provide a simple device for releasing the brake.

The invention consists in the combination with a positively-applied brake of an intermittent operating mechanism.

The invention also consists in the peculiar construction and arrangement of the operating mechanism.

The invention further consists in the peculiar device for holding the brakes in position against the wheels.

Still further the invention consists in the brake-releasing mechanism.

The invention also consists in the manner in which the brakes are supported and connected, and also in such other novel features of construction and combination of parts as will hereinafter be more fully described and pointed out in the claims.

Figure 1 represents a top view of a car-truck showing a plan view of the improved brake-apparatus. Fig. 2 represents a side elevation of the same. Fig. 3 represents a cross-sectional view of the cam-wedge and its arm, taken on a line *a-b* Fig. 5. Fig. 4 shows a detail view of the device for retarding the action of the brake-handle. Fig. 5

represents a detail view of the cam-wedge and its arm mounted on the brake-shaft.

Similar numbers of reference designate corresponding parts throughout.

In the drawings 6—6 are the side beams of a car-truck, or of the car-body, the flooring between which is removed to show the construction and arrangement of the brake.

7—7 and 8—8 are the ordinary car-wheels mounted on the shafts 9 and 10.

The brackets 11 and 12 are secured to the side-beams 6—6 and pivoted to these brackets are the arms 13 and 14 in bearings in the lower ends of which the brake-shafts 15 and 16 are journaled, the ends of these shafts are connected by the adjustable side-rods 17—17.

Depending from and rigidly secured to the brake-shafts 15 and 16, opposite the faces of the wheels, are the brake-arms 18—18 on which are mounted the brake-shoes 19—19 the concave surfaces of which may be brought to bear on the periphery of the wheels when the shafts 14 and 15 are rotated in a direction away from the wheels, also that when one of the shafts 15 or 16 is forced away from the corresponding pair of wheels the brake-shoes 19 of the other shaft will be the more firmly brought into contact with the wheels to which they appertain. The shafts 15 and 16 are furnished with longitudinal keys 20, and mounted on these shafts are the arms 21—21 the bearings in which have segmental extension-slots 22—22 to receive the keys 20, the arms 21 being thus free to reciprocate along the shafts and to a slight extent determined by the segmental slots and the keys are free to rotate thereon,—the bases of the arms have the ears 23—23, and to the upper ends are fastened the blocks 24—24 having a wedge-shape cross-section and a concave outer surface, as more clearly indicated in Figs. 3 and 5. On the shafts 15 and 16 are also rigidly secured the brake-levers 25 and 26 having the ears 27—27 at their lower portions,—to the upper ends of these levers are pivoted the adjustable rods 28—28 which are pivoted at their inner ends to the opposite ends of the cross-arm 29 supported on a central pivot, thus the throwing back of the lever 25 will operate, through the rods 28—28 and the cross-arm 29, to throw back the lever

26 to partially rotate the shaft 16 and to positively apply the brakes to the wheels 8—8, the throwing back of the lever 25 tending to similarly operate the brakes of the wheels 7—7.

Rigidly mounted on the wheel-shafts and rotatable therewith are cams, as 30—30, these are located opposite the brake-levers 25 and 26 in such position that the blocks 24 carried on the arms 21 may be interposed between the cams and the levers by moving the arms 21 along the shafts 15 or 16,—this movement is accomplished by means of a system of levers connecting with a brake-handle.

In the drawings the lever 31 is pivoted to the ears 23 of the arm 21 and to one arm of the bell-crank 32 pivoted to the bracket 33, the other arm of this bell-crank is in turn pivoted to one end of the rod 34, the other end of the rod being in like manner secured to the arm 35 carried at the lower end of the vertical brake-shaft 36 provided at its upper end with the usual wheel or handle. On this shaft 36 is also mounted a stop-arm 37,—when the shaft is rotated sufficiently to move the arm 21 to a position where the cam begins to act on the wedge-block, this stop-arm is brought against a spring-buffer 38, suitably supported, and thus any further movement of the brake-handle must be made against the pressure of the spring, by this means the sudden interposition of the wedge-block between the cam and the brake-lever will be prevented. As the wedge-blocks are interposed between the cams 30 and the brake-levers 25 or 26, the pressure of the cams on the blocks throws these and the brake-levers backward, rotating the brake-shafts and bringing the brake-shoes 19 in contact with the wheels,—it is obvious that as the wedge-blocks are advanced farther between the cams and the brake-levers the brake-shoes are forced into more intimate contact with the wheels until the shoes bear against the wheels sufficiently to stop the rotation of the same.

If no provision was made to hold the brake-shoes in place against the wheels when once applied, the action of the brakes would be but momentary and would result in a series of disagreeable jars,—the holding-device must be automatic in its action, and, for this purpose, I use a cylinder 39 in one wall of which is a passage 40 opening into the cylinder at each end and controlled by a simple rotatable valve 41, within the cylinder 40 is a piston-head 42 having perforations 43 and mounted on the inner end of the piston-rod 44. Secured to the piston-rod is the collar 45, and movable on the rod between the collar and the piston-head is the disk 46 which, when pressed against the piston-head by the coiled spring 47 closes the perforations 43 therein and prevents the fluid, with which the cylinder is filled, from passing through these from the forward end of the cylinder to the rear portion thereof. The piston-rod extends through the stuffing-box 48 and is connected

by the pivoted-link 49 with the lever 50, the opposite end of this lever being pivotally supported by the arm 51 which extends from the cylinder, while to the center of the lever 50 is pivoted the bent-arm 52 connecting with the brake-lever 25 or 26 to the ears 27 of which it is pivoted; it will, therefore, be seen that as the piston-head is pushed back by the throwing back of the brake-lever, the fluid contained within the cylinder will pass through the perforations of the piston-head, forcing the disk 46 back against the action of the spring, when this backward movement ceases the spring will press the disk 46 back into place and the piston-head will be held in place, the brakes thus being held in contact with the wheels through the connections with the piston-rod.

When it is desired to release the brakes the valve 41 is operated by the connecting-rod 53, the handle 54 and their connections, to turn the valve and open the passage 40 through which the fluid may pass from one end of the cylinder to the other, allowing the piston-head 42 to be drawn toward the forward end of the cylinder by the overbalancing of the brake-shoes, or by springs when necessary.

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

1. In a car-brake, in combination, car-wheels, a rotatable cam, brake-shoes carried by a rotatable support, and a device mounted on said support and adapted to be acted upon by the cam.

2. In a car-brake, in combination, car-wheels, a suspended rotatable shaft, brake-shoes carried by the shaft, and a device for holding the shaft against backward rotation when the shoes are applied to the wheels.

3. In a car-brake, the combination with car-wheels, the axle on which the wheels are mounted, and a cam operated by the rotation of the wheels, of a shaft rotatable in bearings, brake-shoes carried by the shaft and adapted to be applied to the wheels by the rotation of the shaft, and a device carried by the shaft and adapted to be acted upon by the cam.

4. In a car-brake, the combination with car-wheels, brakes mounted on a rotatable shaft, and a device for intermittently moving the brakes toward the wheels, of automatic means for holding the brakes in position, as described.

5. In a car-brake, the combination with the wheels, the shaft or axle on which the wheels are mounted, and a cam also mounted on the wheel-shaft, of a shaft mounted in bearings, brakes carried by the shaft, an arm, keyed to the shaft against independent rotation, adapted to be reciprocated along said shaft and to be acted upon by the cam, a second arm rigidly fastened to the shaft, a device for holding this arm against forward movement, and means for releasing the holding-device.

6. In a car-brake, as a means for holding the brakes in position, the combination with

a brake-shaft, and an arm rigidly secured thereto, of a piston-rod connected with said arm by pivoted levers, a cylinder, having a passage connecting its end portions and a valve for closing the passage, in which the piston-rod moves, a perforated head mounted on the piston-rod within the cylinder, and an automatic-valve for closing the perforations in the head.

7. In a car-brake, the combination with car-wheels mounted in pairs on shafts, of arms pivotally secured to a frame, shafts rotatably secured in bearings in said arms, brakes carried by the shafts, side rods connecting the arms, and means for rotating either or both of the brake-shafts, as described.

8. In a car-brake, the combination with the side-frames 6—6, the wheels 7—7 and 8—8 mounted on the shafts 9 and 10, and the cams 30—30 also mounted on said shafts, of the depending-arms 13 and 14 pivoted to brackets depending from the frames, the shafts 15 and 16 journaled in bearings at the lower portions of these arms, the brake-arms 18 rigidly secured to the shafts opposite the wheels, the brake-shoes 19—19 secured to the brake-arms, the brake-levers 25 and 26 rigidly mounted on the brake-shafts, the arms 21—21 furnished

with the wedge-blocks 24—24 reciprocally mounted on the brake-shafts, and means for reciprocating these arms 21, as described.

9. In a car-brake, the combination with the shafts 15 and 16 rotatably mounted, and brakes carried thereby and adapted to be applied by the rotation of the shafts, the cylinder 39 having the passage 40, the valve 41 for closing the passage, the rod 53 for operating the valve, the piston-rod 44 working through a stuffing-box in the end of the cylinder, the perforated-head 42 on the inner end of the piston-rod, the disk 46 movable on the piston-rod, the collar 45 and spring 47 for pressing the disk against the head 42, the cross-lever 50 pivotally connected with the outer end of the piston and with the support 51, the rod 52 pivoted at one end to the lever 50, and the arm 25 rigidly mounted on the brake-shaft 15 to which the other end of the rod 52 is pivoted, as described.

In witness whereof I have hereunto set my hand.

LLOYD H. COLE.

Witnesses:

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M. L. MAHONEY.