

T. McBRIDE.
Hydraulic Car Brakes.

No. 166,397.

Patented Aug. 3, 1875.

Fig. 1

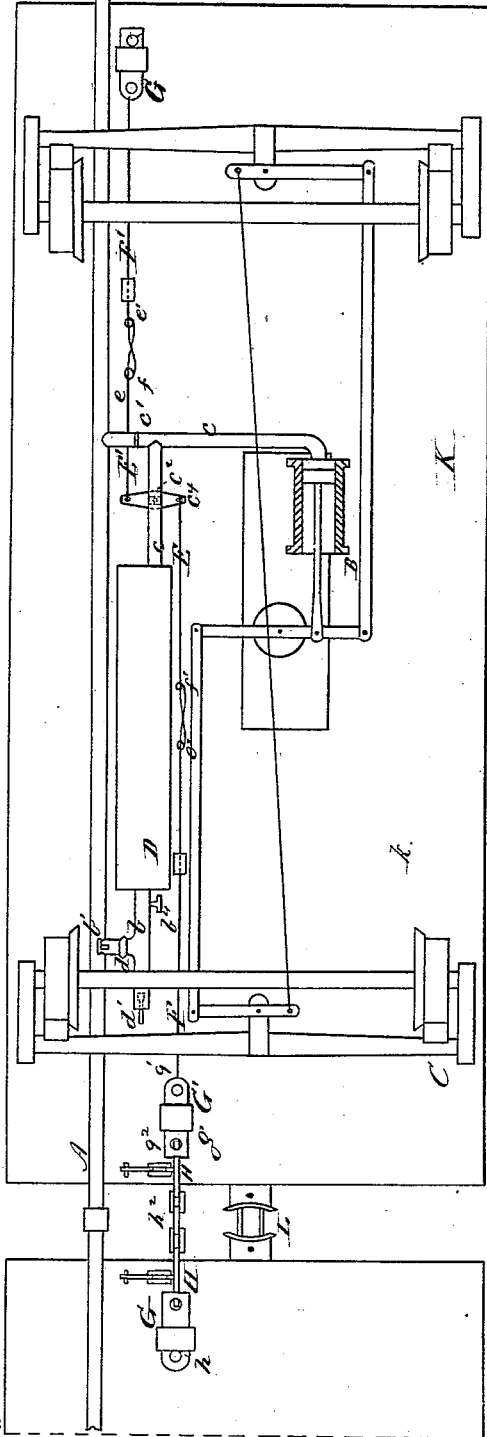


Fig. 2

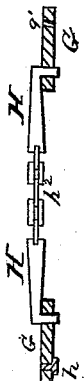


Fig. 3



Witnesses

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UNITED STATES PATENT OFFICE.

THOMAS McBRIDE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN HYDRAULIC CAR-BRAKES.

Specification forming part of Letters Patent No. 166,397, dated August 3, 1875; application filed December 14, 1874.

To all whom it may concern:

Be it known that I, THOMAS McBRIDE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in the Hydraulic Car-Brake; and I do hereby 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 pertains to make and use it, reference being had to the accompanying drawings which form part of this specification, in which—

Figure 1 is a plan view of my invention. Figs. 2 and 3 are details.

The object of my invention is to provide means, in connection with a hydraulic or other power brake, for preventing accident by the disconnections (owing to the breakage of the coupling) of one or more cars from the locomotive.

My invention consists in the novel construction, combination, and arrangement of parts, as hereinafter fully set forth, having reference particularly to devices for compressing air, and storing up the same in a vessel, whence it can be automatically or otherwise released, for the purpose of putting on the brake on the disconnected car without communication with the engine.

In the accompanying drawing I have illustrated means for carrying my invention into effect.

In said drawing, A and B are, respectively, the conveying tube and cylinder, described and shown in my patents of February 10, 1874, and July 12, 1874, by means of which the pressure of the locomotive-boiler is exerted upon a column of water or non freezing fluid, for the purpose of putting on the brakes C. D is a cylinder or other air-chamber, communicating with said tube and brake-cylinder by means of pipes *b* and *c*. A check-valve, opening toward the chamber D, is shown at *d*, and *b*¹ and *b*⁴ are stop-cocks. *c*¹ is also a stop-cock, and *c*² is a similar device, having a stem, *c*³, which may extend up through the floor *k* of the car, and a lever or cross-head, *c*⁴, to the opposite extremities of which are attached the ends of cords or chains E E', terminating in rods *e*, and having eyes or loops *e*¹ *e*². F F' are also rods, having eyes or loops *f* *f*' at their in-

ner ends, and attached to plates G G', which slide longitudinally in ways or guides *g*, and are provided with holes *g*¹ *g*² *g*³ *g*⁴, for the reception of pins or bolts *h* *h*¹. H are hooks, connected by a chain, *h*².

The operation of the foregoing devices is as follows: Whenever the pressure of the boiler is exerted, as described in my aforesaid patents, to put on the brakes, the air in the chamber D will be correspondingly compressed, the water from the tube A entering through the pipe *b* and check-valve *d*, and compressing the air contained in the chamber D, the cock *c*² being closed.

Whatever, then, may be the highest pressure exerted by the boiler at any time in putting on the brake, the air in the chamber D will be correspondingly compressed, and the pressure thus obtained in said chamber will be maintained, even though the boiler-pressure should subsequently be diminished, until occasion demands the employment of the air compressed in said chamber.

The operation of the tube A and cylinder B, under ordinary circumstances, will be as described in my aforementioned patents, being under such circumstances unaffected (other than that said tube furnishes means for compressing air) by the air-chamber D. As set forth in said patents, the tube A contains water or other liquid supplied from a tank, through which the boiler-pressure is exerted to move the pistons in the brake-cylinders.

The methods of applying this boiler-pressure are two well known to require specific description; sufficient to state that the method described in my patents involves the employment of a three-way valve at the junction of the main tube, which leads to the boiler, and a branch communicating with the tank. By turning said valve in one direction water from the tank is admitted to the main tube, and by turning in another direction the flow from the tank is arrested, and communication had with the boiler.

Should the car K (representing the rear car of the train) become disconnected from the locomotive or forward cars by the breaking or accidental loosening of the coupling L, the chains E F will be actuated, through the medium of the linkers H H, to open the cock *c*²,

and allow the compressed air, through the intervening column of water in the chamber D, to be exerted upon the piston B' in the cylinder B, thereby putting on the brakes. The plate G on the rear platform of such car will be prevented from moving by the pin *h*, while the adjacent plate G' on the forward platform of such car will be free to move longitudinally. The object and effect of this are as follows: When the cars disconnect by accident, it is only the car that is left behind that it is designed to have its brakes operated upon by the devices forming the subject-matter of this application. Were the linker-plates, therefore, of both platforms free to move, the brakes of the cars attached to the locomotive would be put on by this mechanism, as well as the disconnected car, which might not be desirable.

By making fast the linker-plate on the rear platform, leaving that under the front platform free to move, only the brakes of the disconnected car will be actuated upon by the special mechanism herein described. Should the linker-plates fail to operate, or should it at any time be desirable to put on the brake through this mechanism, the same may be done by hand by means of the stem *c*³ passing through the floor of the car, as already described.

The object of using the eyed rods *e* and F, instead of a single rigid rod, is to permit the cross-head *c*⁴ to operate by drawing on one end of it, the eyes of said rods permitting the free longitudinal movement of the connections on the other end of such cross-head.

After the compressed air has been used to

put on the brakes the water in the chamber D may be discharged by opening the cock *d'*, a suitable vessel being provided to receive glycerine or other non-freezing fluid when such is employed.

In some cases it may be desirable, when a portion of the train becomes detached, to put on, by this mechanism, the brakes on the last undetached car of the train, so as thereby to give notice to the engineer. This may be effected by providing the sliding plate G beneath the rear platform with a pin, so located that said plate may be drawn out only far enough when the cars uncouple to open half-way the cock *c*² beneath said car, the similar cock beneath the detached car being fully opened, as already described.

What I claim as my invention is—

1. The combination of the conveying-tube A, brake-cylinder B, and air-chamber D, communicating by means of pipes *b* and *c*, having, respectively, a valve, *d*, and cock *c*², as set forth.

2. The combination of the sliding plates G G', having suitable coupling A *h*², with the cock *c*², connected to said plates by rods or chains, substantially as described, and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 30th day of November, 1874.

THOMAS McBRIDE.

Witnesses:

WILLIAM K. FOLEY,
JOHN W. CULLIN.