P. E. DRAKE.

Railway Car-Buffer.

No. 163,165. Patented May 11, 1875.

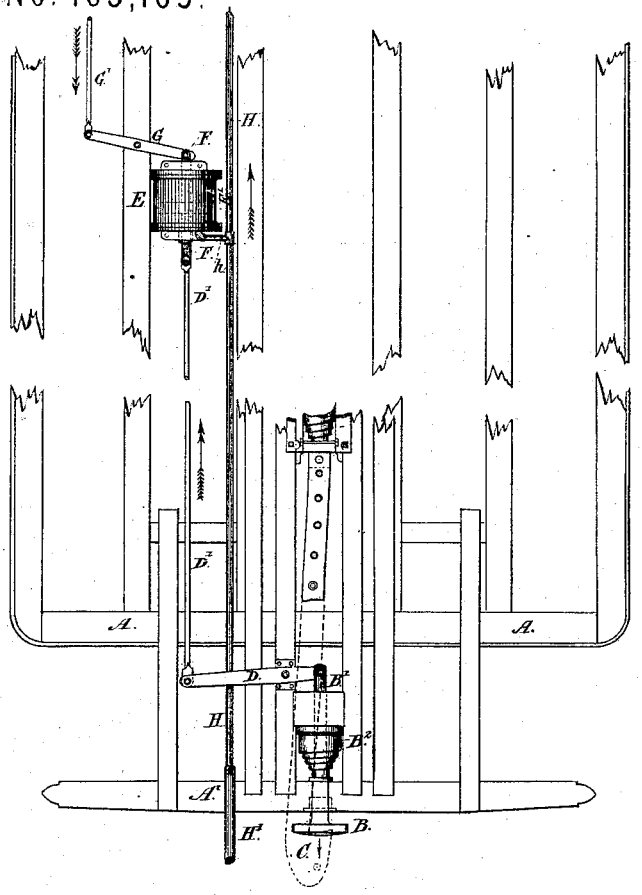

Fig. 1.

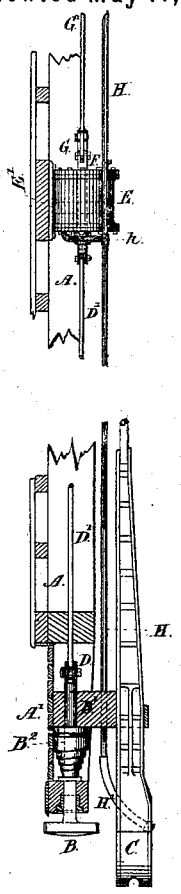

Fig. 2.

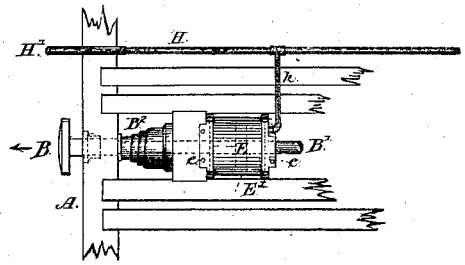

Fig. 3.

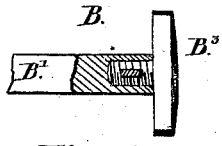

Fig. 4.

Witnesses;

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UNITED STATES PATENT OFFICE.

PRINCE E. DRAKE, OF BELLE EWART, CANADA.

IMPROVEMENT IN RAILWAY-CAR BUFFERS.

Specification forming part of Letters Patent No. **163,165**, dated May 11, 1875; application filed January 18, 1875.

To all whom it may concern:

Be it known that I, P. E. DRAKE, of the village of Belle Ewart, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Railway-Car Buffers, of which the following is a specification:

My invention relates more particularly to improvements in the construction of buffers for railway passenger-cars; and it consists in the application of an outward pushing-pressure to an ordinary buffer-head (having a stem or tail passing back underneath the car-platform) by the agency of compressed air, either acting directly on a piston attached to the buffer-stem and inclosed in a suitable cylinder or communicated by a system of levers and rods from a piston operated by compressed air in a cylinder placed in any convenient position under the car, the object being, first, to render the connection between cars, when coupled, as rigid as possible to reduce oscillation, and, second, to enable a varying pressure to be applied to the buffer-heads to suit the varying requirements of the line of the road.

In the accompanying drawings, Figure 1 is a partial bottom view of a car, to which my improved buffer is shown as applied, the air-cylinder being placed underneath the body of the car, and the connection to the buffers at each end made by rod-and-lever connections. Fig. 2 is a section of the same. Fig. 3 shows the buffer operated by a piston attached to the stem working in a suitable air chamber or cylinder. Fig. 4 is a detail of the buffer-head.

A is a skeleton body of a passenger-car of the usual construction looked at from below. A′ is the platform; B, the buffer with the usual head, and having a stem, B^1, passing back underneath the platform-timbers. B^2 is a volute spring encircling the front portion of the buffer-stem, and confined in a fixed position by the framing of the platform. The duty of this spring consists, first, in keeping the buffer forced out a suitable distance when the cars are uncoupled, in order to receive the shock of coupling; and, second, to retain a certain amount of compression on the buffers when the air-pressure is not in use. C is the coupling-hook. E is the compressed-air cylinder, which receives compressed air through the pipes H from any convenient source. Within this cylinder, Fig. 1, is contained a piston, E′, mounted on a rigid piston-rod, F, which has bearings in each cylinder-cover. To one end of the piston-rod the tension-rod D′ is connected, to the other end the pivoted lever G. The rod D′ is attached to one arm of the pivoted lever D, which is connected at the other end with the buffer-stem B′. G′ is the tension-rod, connected to the lever G, and operating the buffer in a similar manner at the other end of the car.

The operation of this mechanism is as follows: Compressed air is admitted to the cylinder E on one side of the piston through the pipe *h* from the main distributing-pipe H, which runs the whole length of the train. The piston is forced forward in the direction shown by single-headed arrows, drawing the rods D′ and G′ toward the center of the car with a force that is regulated by the condensation of the air, and forcing the buffers out by means of the connecting pivoted levers D. This primary air force may be increased to almost any extent before it is applied to the buffers by a suitable compound lever arrangement; but it is thought that the proportion of the arms of the simple lever D will develop and transmit sufficient power for all practical purposes at small cost.

In Fig. 3 the buffer is operated directly by the compressed air acting on a piston, E′, attached to the buffer-stem B^1, and working in a suitable air-chamber, E.

In Fig. 4 is shown a buffer which has a detachable head, B^3.

Any one who is conversant with the working of railways must have observed how quickly the buffer-heads wear away under constant service. With the ordinary style of buffer, each time the head wears away, the whole buffer has to be taken out and a new one put in. My improvement then has for its object the saving of the majority of this expense by requiring the substitution of a new head only at each change.

Where practicable, I propose to avail myself of the presence and co-operation of existing mechanisms for the supply of compressed air—such as the Westinghouse and Ward air-brake pump and air-reservoir, but using a separate

air-conducting pipe leading from the main reservoir, the admission and discharge of air being completely under the control of the engineer or conductor of the train.

When these systems do not exist, or when for any reason they cannot be attached to cars, any suitable air-pump with an air-reservoir will be used from which to obtain the necessary compressed air; but it is obvious that it will be to the advantage of railway companies to work their air-brake system and compressed buffers in combination. Further, when desired, the same outward pushing force can be given to the buffers by producing a vacuum in the cylinder E on one side of the piston, which will then travel by the pressure of the atmosphere, working substantially the same as when operated by compressed air.

The principal advantages gained by my invention are, first, oscillation of the cars is reduced to a minimum; second, the pressure on the buffers can be varied to suit the curvature of the line—that is, if the train is running on a tangent, the pressure can be increased, drawing the cars rigidly together, and enabling better running time to be made. In running around curves the pressure can be reduced to allow more flexibility to the train, the "slack" being taken up as desired.

I claim as my invention—

The air-cylinder E, with piston E′ and piston-rod F, operated by compressed air in the manner described, in combination with the lever G, rod G′, rod D′, pivoted levers D, and buffers B, arranged and operating substantially as herein set forth.

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Witnesses:
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