

(No Model.)

L. C. POWERS.
STORE SERVICE BUFFER.

No. 413,790.

Patented Oct. 29, 1889.

Fig. 1.

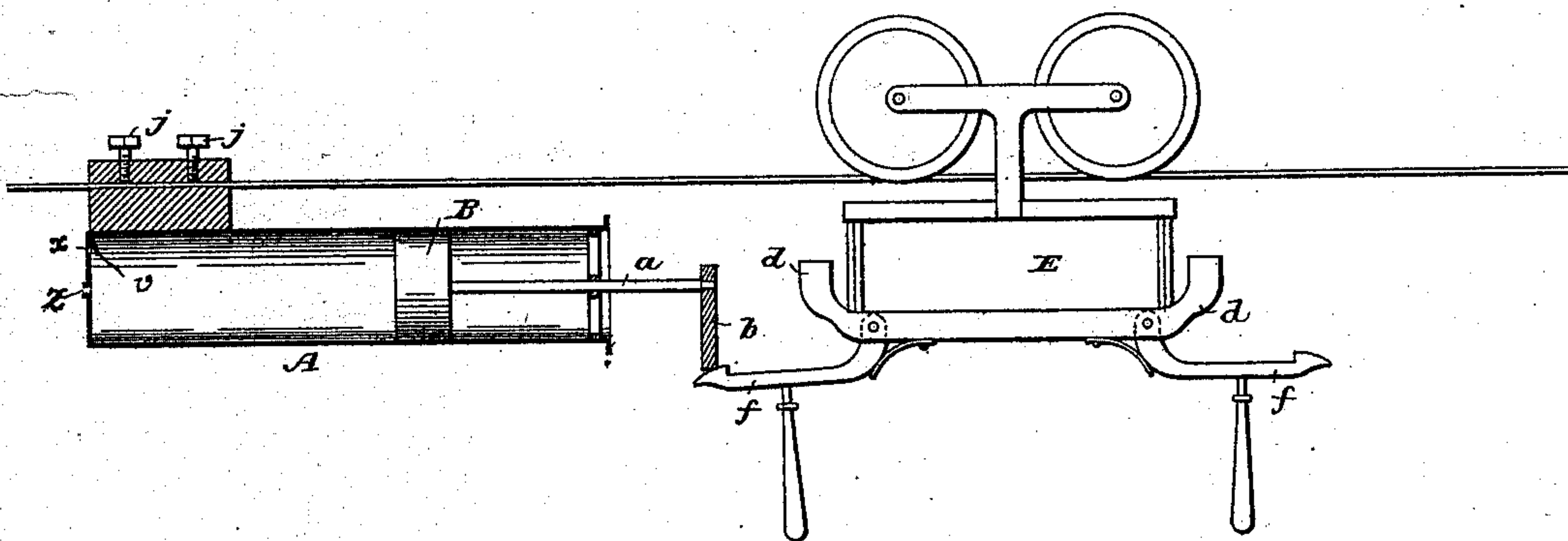


Fig. 2.

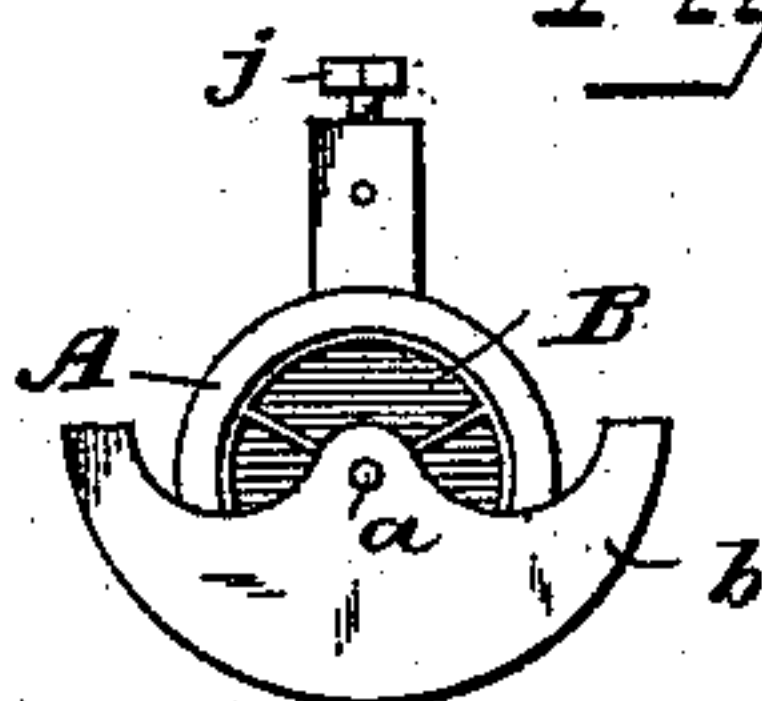


Fig. 3.

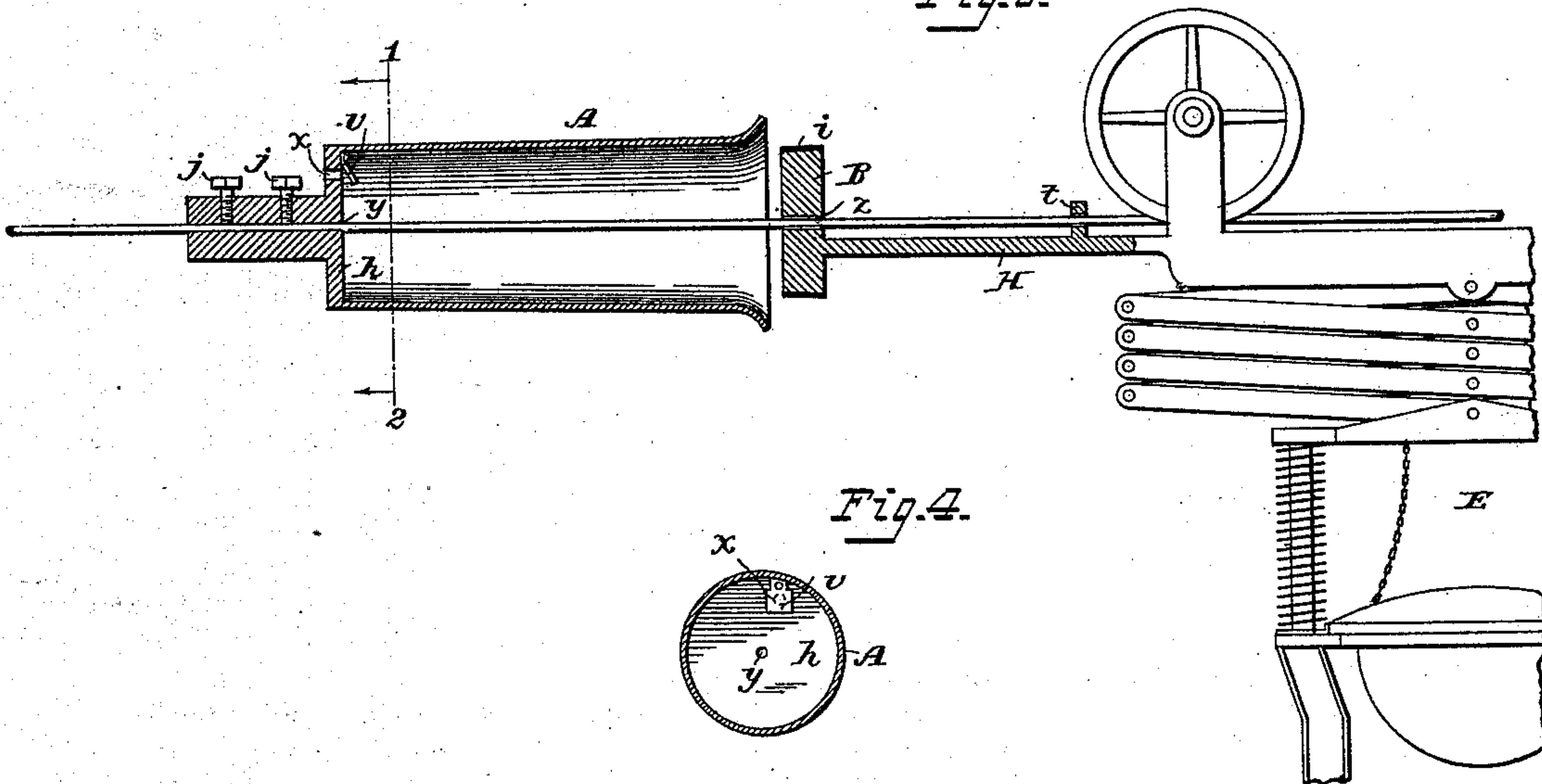
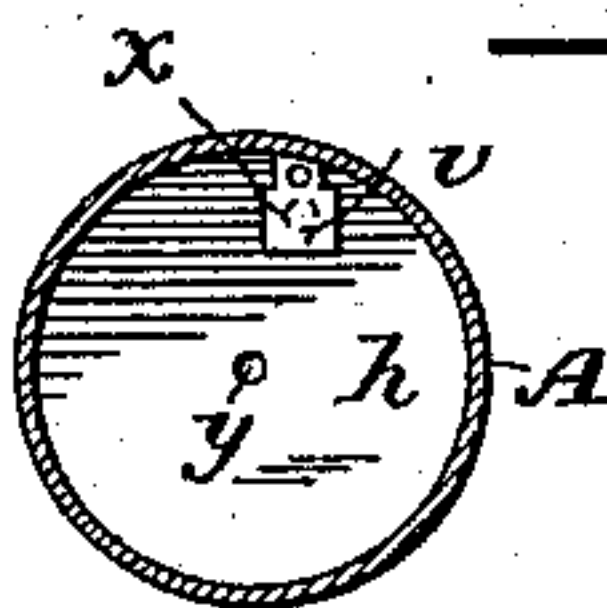


Fig. 4.



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UNITED STATES PATENT OFFICE.

LURAY C. POWERS, OF SOMERVILLE, ASSIGNOR TO THE LAMSON CASH RAILWAY COMPANY, OF BOSTON, MASSACHUSETTS.

STORE-SERVICE BUFFER.

SPECIFICATION forming part of Letters Patent No. 413,790, dated October 29, 1889.

Application filed August 24, 1885. Serial No. 175,191. (No model.)

To all whom it may concern:

Be it known that I, LURAY C. POWERS, a citizen of the United States of America, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Store-Service Buffers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention is a pneumatic buffer for store-service apparatus, constructed, as fully set forth hereinafter, so as to gradually arrest the motion of the car without noise or sudden shocks.

In the drawings, Figure 1 is a longitudinal section illustrating one form of buffer in which my invention may be embodied; Fig. 2, an end view of the buffer, Fig. 1. Fig. 3 is a section illustrating another form specially adapted for wire ways. Fig. 4 is a cross-section on the line 1 2, Fig. 2.

The essential features of the invention used in connection with a store-service car and track are a tube, case, or cylinder A and a piston or diaphragm B. The cylinder is suitably arranged adjacent to the track and the piston is arranged to be suddenly moved in the cylinder by the car as it reaches the end of the route, so as to gradually compress the air, the resistance of which gradually stops the car, and also acts to prevent the sudden withdrawal of the piston and rebound of the car.

In Fig. 1 the cylinder A is arranged below or at one side of the track, and the piston B slides back and forth in the cylinder, a contracted port or opening *z* at the rear end of the cylinder restricting the flow of the air, so that the piston cannot move quickly without compressing or expanding the air. The piston-rod *a* carries a curved cross-bar *b*, with which engages a spring-catch-handled lever *f* on the car E, and which is struck by a bumper *d* of the car. As the bumper *d* strikes the cross-bar *b* the piston is forced suddenly into the cylinder, and the air therein is compressed and a portion forced out through the opening *z* until the car is stopped, after which the expansion of the air tends to throw out the piston and the car; but it cannot rebound, as the catch *f* locks it to the bar *b*. When the

car is to be sent to the other end of the line, pressure is applied to the handle of the lever until the piston is drawn out, and the lever is then tilted from connection with the bar and the car propelled onward.

I prefer when a wire way is used to mount the cylinder and piston on the wire, and it is best to connect the piston to the car, as shown in Fig. 3. In this case the cylinder A is open at the front and expanded so as to properly guide the piston B into the cylinder, which piston is carried by an arm H projecting from the car, and has a peripheral packing *i*. The cylinder has a rear head *h*, in which is an opening *y* for the passage of the wire way, to which the cylinder is secured by set-screws *j* or otherwise, and to the port *z* is fitted a valve *v*, opening inward.

The small port or passage *z* is either in the head of the cylinder, as shown in Fig. 1, or in the piston B around the wire way, where the way passes through the piston, or the latter may be slightly smaller than the bore of the cylinder, so that as the piston enters the cylinder the air will escape and allow the piston to move inward, but so slowly as to gradually arrest the movement of the car, but without any sudden shock. The valve *v* closes as the piston enters the cylinder; but when pressure is applied to force the car away from the cylinder the valve opens wide and the air can enter the cylinder freely, thereby permitting the piston to pass quickly outward. Although the air is compressed to resist the first impact of the car, it thereafter escapes until there is no pressure to cause the piston to rebound.

In order that the arm H may be properly supported and the piston maintained in position in respect to the wire, I provide the arm with a guide-eye *t*, through which the wire passes.

To render the arrest of the piston more gradual, I in some instances make the cylinder slightly tapering and widest at the mouth, so that the air will at first escape freely and then gradually become throttled.

Without limiting myself to the precise construction and arrangement of parts shown, or the application of the buffer to any special form of car and track, I claim—

1. In a store-service apparatus, a track, a cylinder supported adjacent to the track, and a piston arranged to be moved along the cylinder by a cash-car traveling on the track, 5 and a port arranged to permit a limited escape of the air from the cylinder on the sudden movement of the piston therein and its continued escape thereafter until there is no pressure upon the piston, substantially as 10 described.

2. The combination, in a buffer for store-service apparatus, of a cylinder, a piston arranged to be moved along the cylinder by the movement of the car to compress the air 15 therein, a port for the continuous limited escape of the air from the cylinder, and a valve hung to permit the free entrance of the air on the return movement of the piston, substantially as described.

20 3. The combination, with the way of a store-service apparatus, of a cylinder mounted

thereon and provided with a port and valve, and a piston moved by the car and adapted to said cylinder, and provided with a piston-rod extending parallel with the way and car, 25 rying a cross-bar for engaging with the car, substantially as described.

4. The combination of a car provided with a catch, a way, and an air-buffer cylinder supported adjacent to the way and provided 30 with a piston, with a piston-rod parallel to the way, a port to permit the escape of air from the back of the piston, and a cross-bar on the piston-rod adapted to be engaged by the catch, substantially as described. 35

In testimony whereof I affix my signature in presence of two witnesses.

LURAY C. POWERS.

Witnesses:

CHARLES E. FOSTER,

EDWIN C. GILMAN.