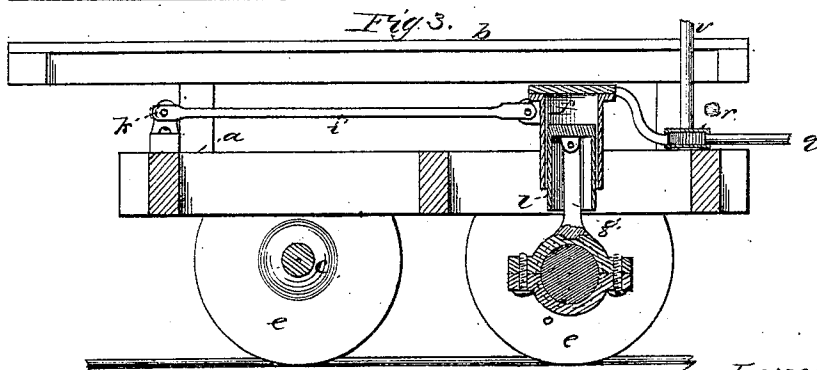
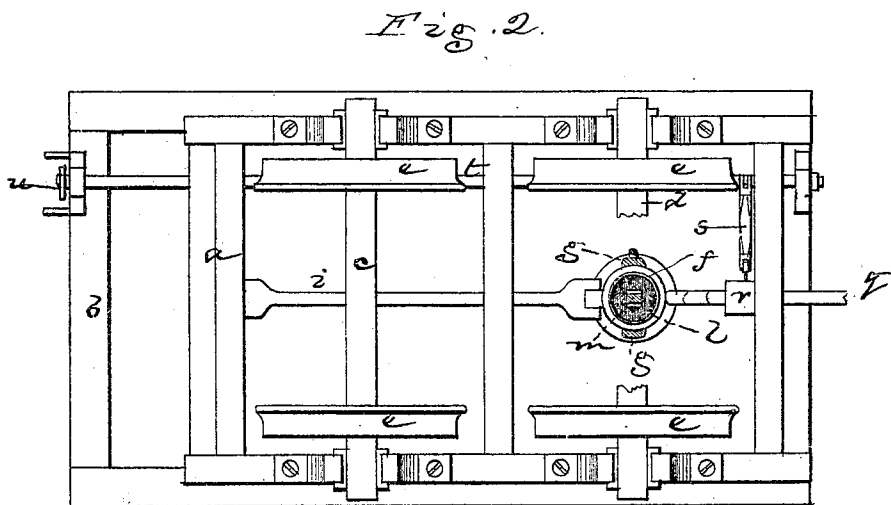
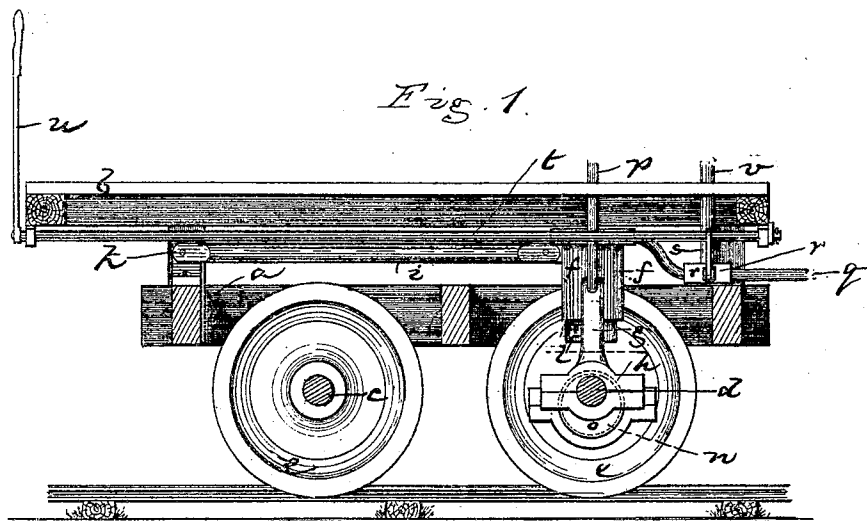


C. E. MOORE & M. L. WYMAN.
Steam and Air-Brakes for Railway Cars.
 No. 141,805. Patented August 12, 1873.



Witnesses,
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 L. H. Atwater.

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 Charles E. Moore,
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UNITED STATES PATENT OFFICE.

CHARLES E. MOORE, OF BOSTON, AND MARTIN L. WYMAN, OF MELROSE,
ASSIGNORS TO C. A. KIHLGREN, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN STEAM AND AIR BRAKES FOR RAILWAY-CARS.

Specification forming part of Letters Patent No. **141,805**, dated August 12, 1873; application filed
February 14, 1873.

To all whom it may concern:

Be it known that we, CHARLES E. MOORE, of Boston, Suffolk county, and MARTIN L. WYMAN, of Melrose, Middlesex county, all in the State of Massachusetts, have jointly invented an Improvement in Railway-Car Brake Mechanism; and we do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of our invention sufficient to enable those skilled in the art to practice it.

United States Letters Patent No. 127,332, dated May 28, 1872, were granted to Carl Fogelberg for an improvement in steam and air brakes for railway-cars. In such patent the brake-levers of a car are operated through the pressure of a piston which is actuated by compressed air, the air being condensed by the action of another piston of the cylinder, this second piston being worked by a cam or eccentric upon one of the axles.

In our invention we use a piston (to actuate the brake-levers) having its pressure imparted by compressed air condensed by an axle-actuated air-pump piston, in the same or substantially the same manner as is described and embraced in the said patent 127,332, and our invention may be considered as an improvement upon the Fogelberg invention. Fogelberg attaches his pump-cylinder to the car-truck, while his pump-piston is actuated by the axle, and as between the axle and the truck there are relative vertical movements, or the truck rises and falls upon its journal-springs, the play of the piston is irregular. To remedy this we mount the pump-cylinder upon the axles by a yoke and axle-boxes, and connect it by a link to one of the cross-beams at the opposite end of the car-truck, to preserve its upright position, thereby bringing the cylinder to such a fixed relation to the axle that the movements of the piston, effected from the same axle, are always regular as relates to the cylinder.

In Fogelberg's construction the air to enter the cylinder is taken in at the bottom of the cylinder, and is necessarily accompanied with a great amount of dust, so that, notwithstanding a screen is placed over the open end of

the cylinder, which is itself objectionable, the piston is clogged and injured by accumulations of dust.

To obviate this we connect the pump-cylinder with the interior of the car, so that, by a suitable pipe, air enters the cylinder directly from the car; and we also so arrange the mechanism that when the air is not compressed to operate the brake-levers, it is forced into the car, thereby tending to create a circulation and purification of the air.

Our invention consists in the novel features thus generally described.

The drawing represents a car-truck and sufficient of the pump mechanism to enable our improvements to be readily understood.

Figure 1 shows the truck in sectional elevation. Fig. 2 is a reversed plan of it.

a denotes the frame of a car-truck; *b*, part of the floor of a car resting upon two such trucks. *c d* denote the two axles, and *e* the wheels. *f* is the pump-cylinder, supported upon two arms, *g*, of a yoke or frame, which, by boxes *h*, is mounted upon the axle *d*. At the upper end of this cylinder is jointed one end of a link, *i*, which, extending horizontally over the truck, is jointed at its opposite end to a projection from the car-truck frame, as seen at *k*, this connection keeping the cylinder poised in position. *l* denotes the pump or trunk piston, having a rod, *m*, jointed to the under side of its head, the lower end of this rod carrying an eccentric strap, *n*, which encompasses the eccentric *o* on the axle *d* between the boxes *h*. In the piston-head may be placed a suitable air-inlet valve, opening upward, to admit air as the piston descends; or the cylinder may have a side opening just above the lowest point of descent of the piston-head for ingress of the air to be compressed; but to either of such provisions for admission of air, we prefer the connection to the cylinder of a pipe extending from the interior of the car. For this purpose we use a pipe, *p*, extending from the car above the floor, as seen in Fig. 1, down to the side of the cylinder, turning and passing into the cylinder just above the lowest point of movement of the piston-head. The compressed air passes to the brake-operating cylinder through a con-

ducting pipe, *q*, and connected with this pipe is a valve-box, *r*, having a valve connected by a link, *s*, with a brake-rod, *t*, which rod is operated to actuate the valve by a vertical handle, *u*. Leading from the pipe *q* is a pipe, *v*, that extends up into the car.

When the valve is in normal position, the air compressed by the pump-piston is forced into and through the pipe *q* and pipe *v*, up into the car, its return being prevented by a suitable valve; but when the brakes are to be applied, the brake-lever is turned and the valve shifted, shutting off communication with pipe *p*, and establishing communication with the brake-cylinder.

By these means the pump may be utilized at all times, except when the brakes are to be applied, to draw air from the car and force air into the car.

We claim—

1. In combination with the car-truck, the

pump-cylinder supported directly upon or with respect to the axle, and held by the link-connection, substantially as shown and described.

2. In combination with the pump-cylinder, the trunk-piston *l*, connected to and operated by the eccentric upon the axle, substantially as shown and described.

3. In combination with the air-compressing pump and the pipe *q*, the pipe *v* and the valve-box *r*, the pipe *v* conducting the compressed air into the car, and the pipe *q* leading the air either to the cylinder for operating the cylinder-piston or to the pipe *v*, by means of the valve operated by the link *s*, brake-rod *t*, and lever *u*, substantially as shown and described.

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CHARLES E. MOORE.

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