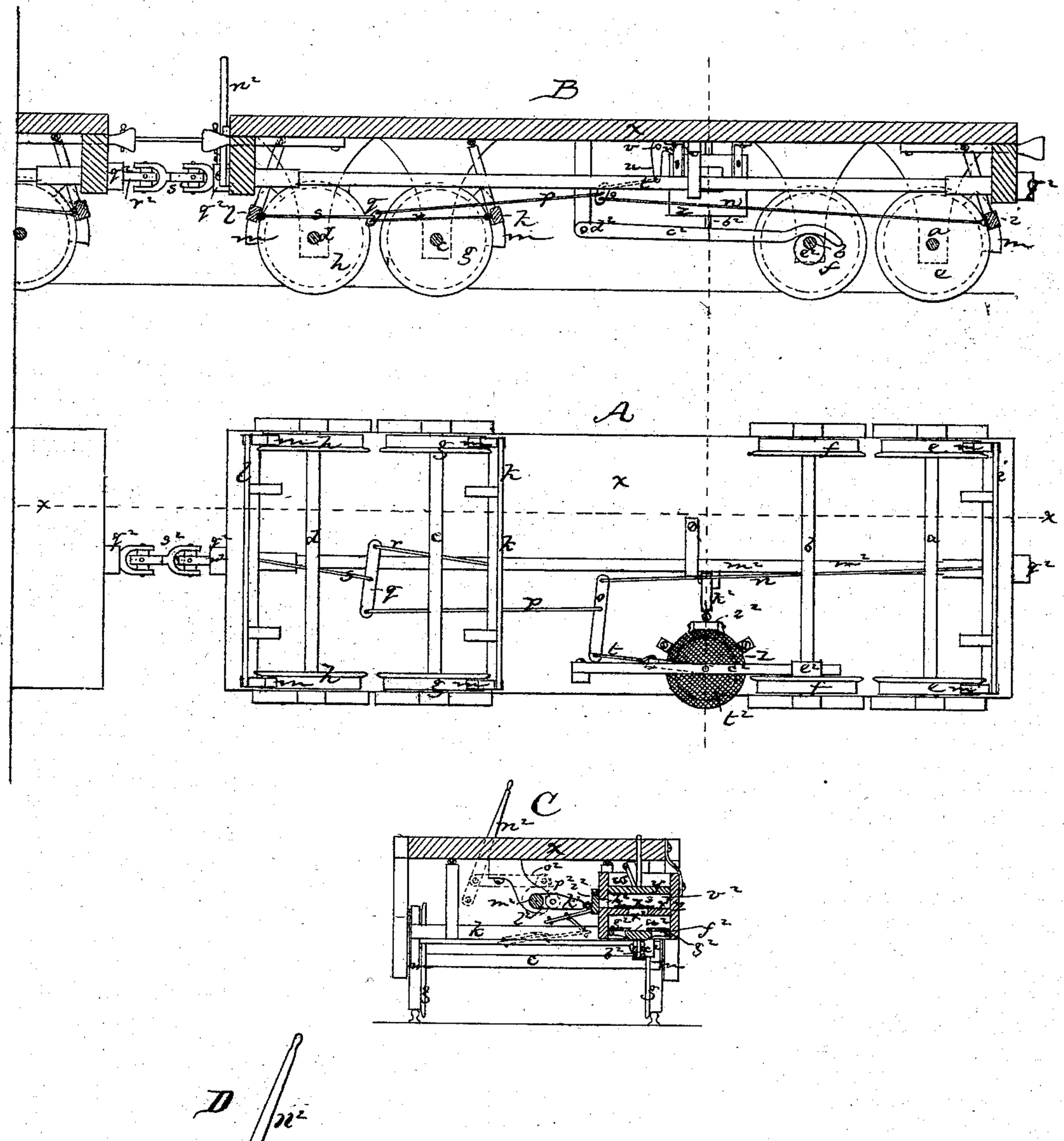
C. FOGELBERG.

Improvement in Air-Brakes for Railway-Cars.

No. 127,332. Patented May 28, 1872.



Witnesses.
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127,332

UNITED STATES PATENT OFFICE.

CARL FOGELBERG, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN AIR-BRAKES FOR RAILWAY CARS.

Specification forming part of Letters Patent No. 127,332, dated May 28, 1872.

To all whom it may concern:

Be it known that I, CARL FOGELBERG, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Operating Car-Brakes; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My invention relates to an improved method of operating railroad car-brakes. In my invention I connect the brake-operating levers of each car with the piston-rod of an air-pump placed beneath the car. A piston in the lower part of this cylinder is operated by a cam on one of the axles, and the piston, being forced up, presses the air above it, and the compressed air forces up a piston in the upper half of the cylinder, this piston having a rod connected with the brake-lever, so that the upward movement of the piston operates and applies the brakes. The cylinder has an opening in one side covered by a hinged valve or stopper, which, when opened, allows the air forced up by the lower piston to escape from the cylinder, while, when closed, said air is compressed by the piston, and, having no escape, forces up the upper piston and operates the brake-lever, and applies the brakes. To bring the apparatus within the control of the engineer each car-truck is provided with a rod or shaft, hung beneath it and running from end to end of the car, this rod being hung in suitable bearings, in which it can be turned. Each bar has jointed to it for each air-pump one end of a link, whose other end is jointed to the valve that controls the air-outlet passage of the cylinder. When the shaft or rod is turned in one direction the link is so operated as to close and hold closed the valve, while, when turned in the other direction, the valve is drawn away from the air-outlet, or is free to swing out therefrom. Each of the rods is so hung as to be incapable of end movement, and at the opposite ends of each are square tubular sockets or socket-pieces, into which fit the square shanks of connecting-links running from car to car or from rod to rod, each link being made in two parts, connected by a universal-joint. By these means the rods of the respective cars are all connected, and extend to the engine, where the continuous pump-valve operating rod or shaft may be operated by the engineer. It is in this construction and method of effecting the application and release of the brakes that the invention primarily consists.

The drawing represents a car embodying my invention.

A shows a bottom view of the car. B is a vertical section on the line *x x* of A. C is a vertical cross-section through the air-pump. D is an enlarged view of the operative parts shown in C.

x denotes the car-platform; *a b c d*, the four axles; and *e e*, *f f*, *g g*, and *h h*, the four pairs of wheels. *i k l* denote three brake-bars hung from the under side of the platform, and having brakes *m* suspended with respect to the wheel-treads in the ordinary manner. The brake-bar *i* is connected, by a rod, *n*, with one end of a lever, *o*, which lever *o* is connected, by a rod, *p*, with one end of a lever, *q*, the opposite end of said lever *q* being connected, by a rod, *r*, with the brake-bar *k*, while its center is connected, by a rod, *s*, with the brake-bar *l*. The outer end of the lever *o* is connected, by a rod, *t*, with the vertical arm *u* of a lever fulcrumed at *v*, said lever having a horizontal arm, *w*, through which extends the vertical stem of a piston, *y*, in the air-cylinder *z*, the rise of this piston operating the lever *u w*, and through it and the rods *t*, *p*, *s*, and *r* actuating the system of levers *o q*, and applying the brakes. The air-cylinder has two chambers, separated by a partition, x^1, in which partition is an opening, x^2, covered by a valve, x^3, opening upward. In the lower chamber is a piston, a^2, from the bottom of which extends a rod, b^2, which connects the piston with a lever, c^2, fulcrumed at d^2, the free end of the lever extending over one of the axles, and being operated by a cam or eccentric, e^2, on said axle. This lower piston has orifices f^2 covered by flap-valves g^2, said valves opening upward and admitting air to the lower chamber of the cylinder when the piston descends, and closing when the piston ascends, the piston then compressing the air above it into the upper chamber of the cylinder and elevating the piston *y*, return of the air when the piston descends being prevented by the closing of the valve x^3. Opening from the upper chamber is an air-passage, h^2, the outer side of which is covered and

closed, at times, by a hinged valve, i^2. This valve is connected, by a link, k^2, with an arm, l^2, on a horizontal rod or shaft, m^2, under the platform, said shaft being mounted and turning in suitable bearings at the opposite end of the car. When this shaft is turned in one direction the link k^2 and arm l^2 are brought into line, thereby throwing the valve i^2 against the cylinder z and closing the air-passage h^2. The action of the piston f^2 will then force air into the chamber v^2, and the compression of the air in the chamber v^2 will force up the piston and operate and apply the brakes. Turned in the other direction, the valve is drawn away from the air-opening, and the movement of the piston f^2 will then simply press the air through the air-passage h^2, and the piston y will then remain stationary and the brakes will remain out of contact with the wheel-treads. Each car has, or may have, one or more hand-levers, n^2, each connected, by a link, o^2, with an arm, p^2, extending from the shaft, so that the brakeman, by operating said lever, may turn the shaft, and thereby apply or release the brakes. Each car being provided with such a shaft, the shafts of adjacent cars are connected so as to effect connection through the train and to the engine, as follows: Each end of each shaft is provided with a square or other suitably-shaped socket, q^2. Into each socket a connecter-bar, r^2, extends, this bar being shaped to fit into the socket, and so that, in turning it, the shaft is turned with and by it. For each two adjacent cars two bars, r^2, are connected by a universal joint, as seen at s^2, so that the cars can move around curves and over switch-rails, and endure lateral strains without disturbing the shafts by reason of their connections.

The connection extending to the engine, it will be obvious that the engineer, by turning the first shaft, will turn all the others, and can thus apply all the brakes of the train.

To prevent entrance of gravel or other foreign matters into the air-cylinders each may be provided with a suitable screen, t^2.

The arrangement or system of brake-levers may, of course, differ from that shown, my invention relating only to the means of operating the brake-levers.

I claim—

1. In combination with the air-cylinder chambers and their brake-operating pistons, the air-outlet h^2 and flap-valve i^2, operated by an arm on the rock-shaft, substantially as shown and described.

2. In combination with the brake-actuating mechanism, the valve-operating shaft m^2 for controlling the position of the air-valve i^2, substantially as shown and described.

3. A series of valve-operating shafts, (one for each car,) connected by the link-bars sliding into sockets q^2, each pair of bars being joined by the universal-joint s^2, substantially as shown and described.

4. In combination with each air-cylinder, the screen t^2, substantially as shown and described.

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Witnesses:

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