

(No Model.)

2 Sheets—Sheet 1.

C. E. MARK.

BRAKE VALVE FOR AIR BRAKES.

No. 307,561.

Patented Nov. 4, 1884.

Fig 1

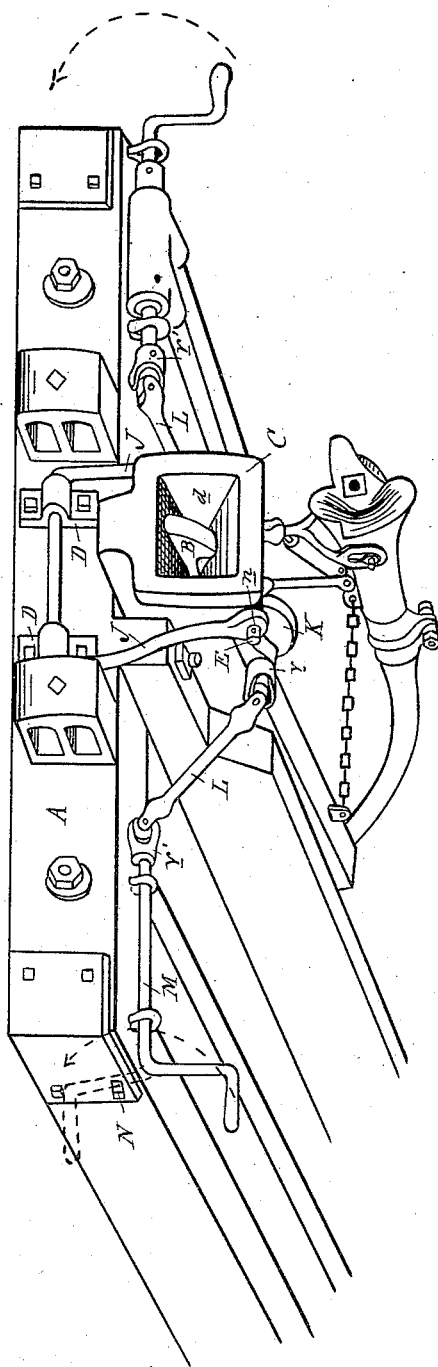
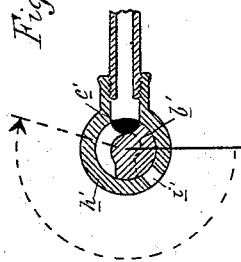


Fig. 5



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CHARLIE E. MARK, OF FLINT, MICHIGAN.

BRAKE-VALVE FOR AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 307,561, dated November 4, 1884.

Application filed July 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLIE E. MARK, of Flint, in the county of Genesee and State of Michigan, have invented new and useful Improvements in Brake-Valves for Air-Brakes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and useful improvements in devices for the more effectual operation of any of the known air or steam brake systems employed upon railroad-trains for arresting the travel of the cars, by means of which the act of coupling or uncoupling the cars controls the air-passages of the hose-connections.

The invention consists in providing a stop-cock or plug-valve in said hose-connections, and so connecting such valve with the lever or levers that are employed to actuate the car-coupling that the same levers will simultaneously actuate the valve, as more fully herein-after described and explained.

While I describe my improvement in connection with a car-coupling such as is described in Letters Patent issued to me on the 15th day of April, 1884, and numbered 296,859, I do not desire to be understood as confining myself to the use of my improvement as connected with that patented device, as the same may be employed with any self or automatic or other car-coupler that is actuated in uncoupling by any system of levers or their equivalents.

My improvement is designed to render the employment of air or steam brakes upon freight-trains available—a much desired desideratum not easily attained by the brake systems now in common use upon passenger-trains, for reasons well known to railroad-engineers and master mechanics.

Figure 1 is a perspective view of one end of a car bed or platform with my improvement thereto attached. Fig. 2 is a bottom plan of the adjacent ends of two cars, showing the arrangement of brake-pipes and stop-cock. Fig. 3 is a vertical longitudinal section of one of the cars through the center of the self-acting coupler shown in the beforementioned Letters

Patent. Fig. 4 is a horizontal section through the stop-valve and inlet and outlet pipes. Fig. 5 is a vertical cross-section of the same on the line X X in Fig. 4.

In the accompanying drawings, which form a part of this specification, A represents the front end of a car. To this front are suitably secured the boxes D, in which the bale or gate J swings. This gate is in the form of a parallelogram, preferably, as shown, three of the sides thereof being formed of one piece of iron, leaving two free ends, in which eyes *n* are formed to receive a bolt or bar E. This bar forms the fourth side of the gate, and supports, as in a swinging stirrup, the front end of the buffer, as shown.

B is a hook coupling-bar, the hook end whereof is adapted to engage with the coupling-link of the adjoining car, by means of the hook *a* on the bar, after the link has entered the flaring mouth *d* of the metallic box or buffer C that incloses the hook end of the draw-bar, and guides the entering-link into the chamber *c* through the mouth *d* leading thereto. The draw-bar and its inclosing-box are pivotally connected together by means of the bolt *l*. A cam, K, is eccentrically secured upon the shaft *t*, which is suitably journaled below the bottom of the coupler and buffer-box, so as to operate against the under face of the draw-bar B through the slot *u*, cut or formed in the bottom of the box or buffer C. The cam-shaft is connected at each end by means of the universal-joint connections *v* with the connecting-rods L, which are located diagonally to the plane of the cam-shaft, and upward where they connect by means of similar joints, *v'*, with the inner ends of the crank-shafts M, which are suitably secured to the bottom of the car, and project beyond its sides to allow said cam to be operated outside the track, instead of requiring the operator to enter between the adjacent cars to guide the link or uncouple the same from its adjoining support. Upon each side of the car there projects a stop, N, which stop may be an elongated head of one of the bolts which secure the corner-iron to the car, if desired. In practice, when the hook *a* of the draw-bar B is engaged with the link, the peculiar form of the hook par-

tially turning back upon itself at the point, and the peculiar form of the chamber *c* and contracted throat leading from the flaring mouth of the box *C* to said chamber, have a
5 tendency to keep the projecting end of the link on a level plane. At this time the cam is turned out of contact with the draw-bar. Now, if it is desired to release the hook from its engagement with the link, it is necessary to turn
10 said cam into contact with the draw-bar, thereby lifting the same until the hook *a* is withdrawn from its engagement with the link, thereby uncoupling the two adjoining cars.

Upon one of the crank-shafts *M*, or forming an integral part of the same, if preferred,
15 there is secured the plug *b'*, so arranged as to revolve with the rotation or partial rotation of the shaft to which it is attached. Parallel with the axis of this plug, but not extending
20 its whole length, as is shown in Fig. 4, there is formed a recess, *c'*, of sufficient length to communicate with the ports *d'* and *e'*, and at one end with the annular recess *f'*, formed around said plug near one of its ends. This
25 plug is surrounded by the shell *h'*, which has the two ports above named, and an exhaust-port, *i'*, to the atmosphere, the whole being so constructed as to form a cock with the three
30 ports named, the plug forming the valve, which, in the position shown in Fig. 5, allows the air or steam from the connecting air or steam pipe which leads from the locomotive to enter the port *e'*, pass through the channel
35 or recess *c'* in the plug, and thence through the port *d'* to the brake-pipe of the system and brake-cylinder, as shown in Fig. 2. When the plug is turned so that it closes the port *d'*, the air entering the port *e'* will escape through
40 the port *i'*. These parts are so arranged with relation to the car-coupling that when the lever *M* is turned in either direction to disengage the car-coupling, or, in other words, to couple or uncouple the cars, the passage of the
45 air may be controlled by the same movement as desired. Thus it will be seen that whenever the cars are coupled the air-passages are all connected and the air-brake system is ready for use, the parts being arranged as described to enable this to be done.

As the automatic or self-acting hose-coupling is fully described in another and simultaneous application for a patent, it is not necessary to describe the same here, as it forms no part of the present invention, although shown
50 in the drawings.

What I claim as my invention is—

1. In combination with the operating-lever of a car-coupling, a stop cock or valve in an air-brake system whereby the actuation of the lever for coupling the cars will at the same
60 time open the valve for the passage of the air, substantially as described.

2. In combination with the operating-lever of a car-coupling, a stop cock or valve whereby the actuation of the lever for uncoupling
65 the cars will simultaneously therewith close said valve, thereby preventing the escape of air from the system of air-brakes employed on the disconnected car, substantially as specified.

3. In combination with each car-section of brake-pipe of an air-brake system, a two-way
70 cock placed at either end of a car, one way of said cock establishing an air-connection through the brake-pipes, and the other way forming an exhaust-port for the brake-pipe, substantially as set forth.

4. In combination with a rock-shaft which forms the actuating-lever of a car-coupling, a valve having its actuating-plug secured upon
80 said rock-shaft, substantially as described.

5. In combination with a rock-shaft which forms the actuating-lever of a car-coupling, and with the brake-pipe of an air-brake, a two-way stop-valve in the end of a car-section
85 of said pipe having its operating-plug secured upon said rock-shaft, whereby by the actuation of said rock-shaft for the purpose of coupling and uncoupling the valve is simultaneously operated in the desired manner, substantially as specified.

CHARLIE E. MARK.

Witnesses:

H. S. SPRAGUE,
CHARLES J. HUNT.