

(No Model.)

2 Sheets—Sheet 1.

W. BORBRIDGE, T. FRASER & W. PRENTER.
AIR BRAKE COUPLING.

No. 526,178.

Patented Sept. 18, 1894.

Fig. 1.

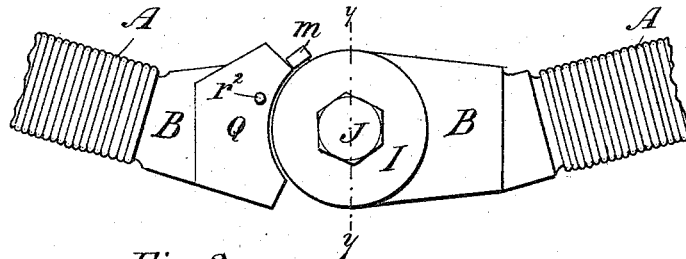


Fig. 2.

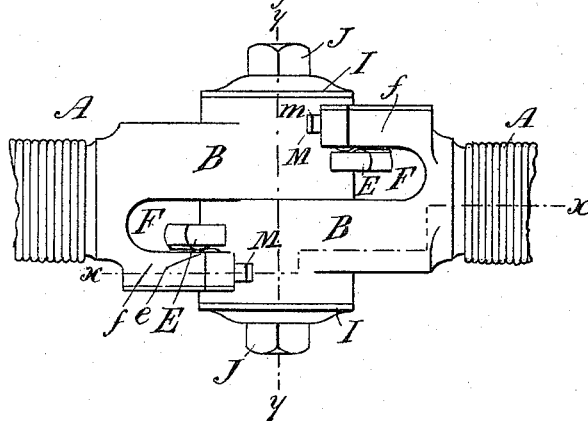


Fig. 4.

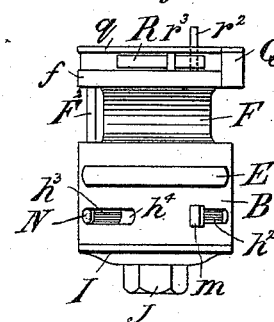
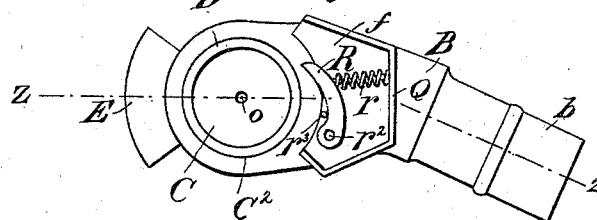


Fig. 3.



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Fig. 5.

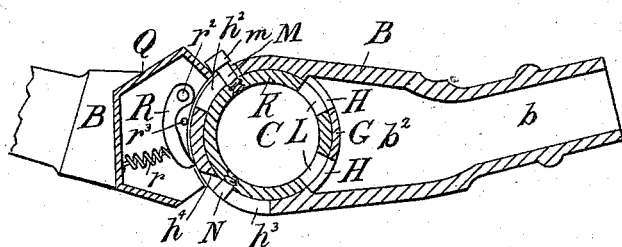


Fig. 6.

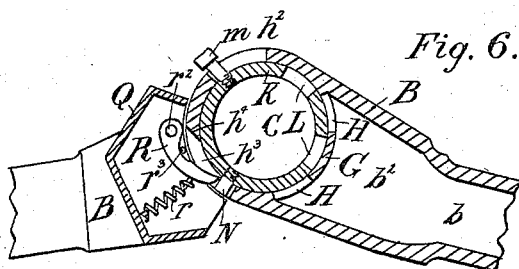


Fig. 7.

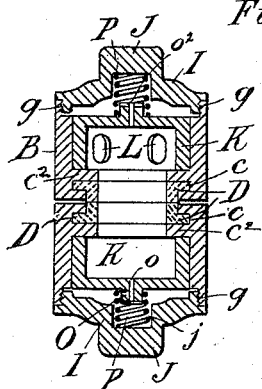


Fig. 8.

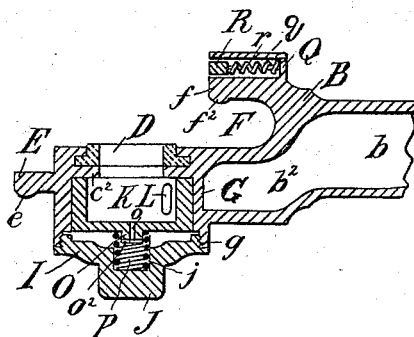
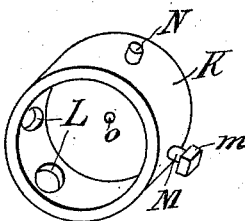


Fig. 9.



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UNITED STATES PATENT OFFICE.

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AIR-BRAKE COUPLING.

SPECIFICATION forming part of Letters Patent No. 526,178, dated September 18, 1894.

Application filed February 10, 1894. Serial No. 499,698. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM BORBRIDGE, THOMAS FRASER, and WILLIAM PRENTER, subjects of the Queen of Great Britain, residing at Ottawa, in the county of Carleton, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Air-Brake Couplings; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to the couplings used on railroad cars to connect the air pipes used either for signaling or for operating the air brake.

The object of our invention is to provide a coupling that will dispense entirely with the gallery cocks, and so prevent a number of accidents. The coupling hereinafter described forms an automatic plug valve connected with the hose bag couplings, and is so constructed that when coupled the passage from one car to the other is open. The air has free access from the engine to all cars coupled. When uncoupled the valve automatically closes, so that the train may be broken at any point, and without the use of any extra cock or dummy coupling and still leave a full pressure of air in the pipes; and also in case of a train breaking loose while in motion, they may be uncoupled and still leave the valve open sufficiently to apply the brake, and thus prevent accident from the rear end of the train colliding with the front portion.

In the drawings: Figure 1 is a side view of our device coupled. Fig. 2 is a top view of the same. Fig. 3 is a view of the coupling face of one jaw of the coupling, the cover plate being removed from the spring dog. Fig. 4 is an end view of the same. Fig. 5 is a section on line x x , Fig. 2. Fig. 6 is a similar section showing the coupling in the act of being uncoupled. Fig. 7 is a transverse section through the coupling on line y y Figs. 1 and 2. Fig. 8 is a section on line z z Fig. 3. Fig. 9 is a perspective view of the interior cylinder forming the hollow plug of the valve.

We will first enumerate those parts of the coupling that are now in common use.

A A are the flexible hose terminations of the air pipes in the cars.

B is a casting forming one jaw of the coupling. Both jaws being the same, only one will be described. b is the hollow shank by which the casting is secured to the flexible hose A. The hollow shank b communicates with a passage b^2 communicating with the chamber C, in the main body of the jaw. This chamber is provided with a circular opening C^2 on its meeting face, and has an annular groove c , formed round the inner edge of the chamber C, by means of the band c^2 formed integrally with the casting B. This annular groove c is adapted to receive the rubber ring D, which being L-shaped in cross section, one limb of the "L" is forced into the groove while the other projects a little beyond the meeting face of the jaw, so as to make an air tight joint when the jaws come together. On the outer edge of the jaw B, that is the edge opposite the shank b , is formed a projection E, its outer edge being concentric with the circular opening C^2 in the face of the jaw. A shallow groove e is formed on the back or outer face of this projection. On the face of the jaw nearest the shank b , a groove F is formed by the overhanging lip f , having its edge concentric to the opening C^2 and having a ridge f^2 formed on the inner side of the lip f . A stop F^2 , by the projection E striking against it, holds the jaws in the proper position. The weight of the jaws will hold them in the locked position. The projection E, on the lip f , of the groove F, being out of the plane of the face of jaw forms a wedge joint holding the faces close together, forming with the rubber rings an air tight joint.

The device as far as described is simply the coupling now in common use, the air coming through the tubes A, through the shank b and passage b^2 into the chamber C and through the opening C^2 into the other jaw. The chamber C is divided from the passage b^2 by means of the wall G which is provided with two openings H. These openings are together equal to the opening C^2 . Slots h^2 , and h^3 are formed passing through the casting one of them h^3 being beveled at h^4 for a purpose to be hereinafter explained. The interior of

the chamber C is cylindrical and smooth to receive a valve plug and is provided with thread at *g* to receive the cap I which has a hexagonal projection J.

5 K is the hollow cylindrical plug having its outer edge fitting the chamber C. This plug has one end closed and the other open, the edges *k* of the open end resting on the flange *c*² which forms a seat. Openings L are provided adapted to register with the openings H in the wall G, the distance between the two openings is a little more than the diameter of one of the openings. Pins are screwed into the cylindrical plug K from the outside, and pin M passing through the slot *h*² and having a square head *m*, the other N, being shorter passing into the slot *h*³. Its head is finished off square, and is flush with the surface of the casing. It will be seen that by means of these pins the plug K may be moved so that it either registers with, or closes the openings in the wall G. The closed end of the plug K is pierced by a small aperture *o* and a hub O is formed on the back as a seat for the spring P, the other end of which rests inside a chamber *j*, formed in the cap I. A groove *o*² is cut across the hub O, so that the plug may be set in its right position.

On the overhanging lip *f* of the groove F is pivoted a spring dog R, having spring *r*, pin *r*² and stop *r*³. This dog is inclosed in a box Q secured on the said lip and covered by a plate *g*, or can be cast with core box to receive the spring dog R. The point of the dog projects in front of the boxing which loosely fits the outer projecting edge of the valve box on the other coupling.

The manner of operating the device is as follows: Suppose the jaws to be in the position shown in Fig. 6, *i. e.*, as they are being either coupled or uncoupled, the communication between the passage and the chamber is closed. The shanks of the jaws are then turned up or the central part of the coupling depressed. The edge of the boxing Q catches the square headed pin M and pushes it round until the coupling assumes the position shown in Fig. 5, the openings in the wall G, and valve plug registering. In uncoupling the central portion of the jaws is raised until the point of the dog descends the beveled edge *h*⁴ into the slot *h*³ and engages and pushes around the pin N, thus closing the valve. The aperture *o* in the back of the plug is to admit air to the back of the valve and prevent floating, the spring P being thus enabled to keep the valve on its seat.

It will be seen from the above description, that whenever the coupling is coupled the

valves must be open, and whenever it is uncoupled they must be closed. The operation of coupling being precisely the same as that now in use, opening and closing of the valves is automatically performed while the coupling is being accomplished.

Having now fully described our invention, what we claim is—

1. In a coupling for air pipes in an air brake or air signaling system, the combination with the flexible hose A, jaws B, having passages *b*², chamber C, and annular rubber cushion D, of the wall G having openings H, communicating with the said passage *b*², slots *h*² and *h*³, the said slot *h*³ being beveled at *h*⁴, the hollow plug K having one end closed, openings L, adapted to register with the said openings H, pins M and N, passing through and into the said slot *h*², and *h*³, respectively, the cap I, spring P, the aperture *o* in the closed end of the said plug K, the spring dog R in the box Q, and the box Q substantially as set forth.

2. In a coupling for air pipes in an air brake or air signaling system, the combination with the jaws B, having chambers C and slots *h*² and *h*³ formed therein, the walls G having apertures H therein, the valve plugs K having apertures L therein, the said valve plugs being adapted to be partially rotated in the said chamber, so as to close, or have the aperture L register with the said apertures H, pins *m* secured in the said valve plugs projecting through the said slots *h*², and pins N secured to said plug and projecting into said slots *h*³, of the spring dogs R, adapted to engage said pins N in each jaw when uncoupling, the boxes Q covering the said spring dogs, the edges of the said boxes being adapted to engage the pins *m* projecting through the said slots *h*² when coupling, thus partially rotating the said valve plug, substantially as set forth.

3. In a coupling for air pipes in an air brake or air signaling system, the combination with the jaws B having chambers C and slots *h*² and *h*³ formed therein of the cylindrical hollow valve plug K, the pins M secured in the said valve plug projecting through the slots *h*², and pins N, secured in the said valve plugs and projecting into the said slots *h*³ and means for engaging the said pins to partially rotate the said valve plug, substantially as set forth.

Signed at Ottawa, this 13th day of January, 1894.

WILLIAM BORBRIDGE.
THOMAS FRASER.
WILLIAM PRENTER.

In presence of—
E. H. MONTY,
K. A. FOLEY.