G. WESTINGHOUSE, Jr.

Pipe-Couplings.

No. 157,951. Patented Dec. 22, 1874.

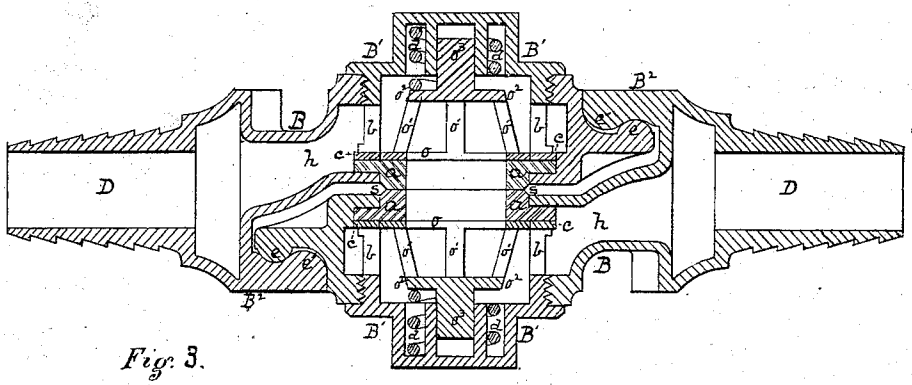

Fig. 3.

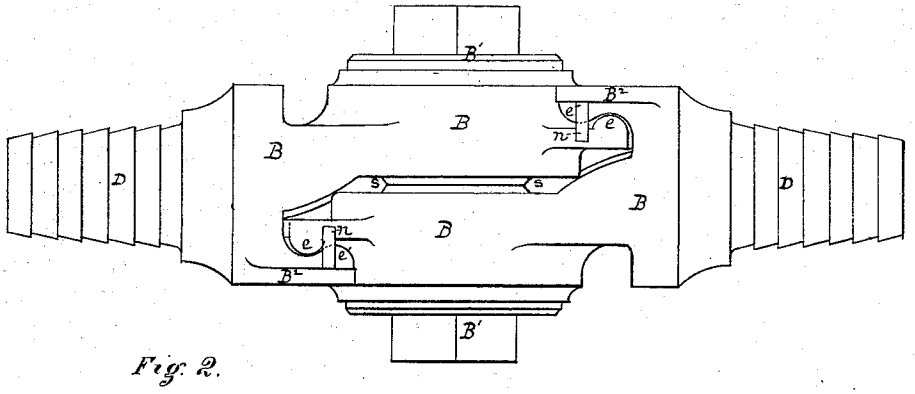

Fig. 2.

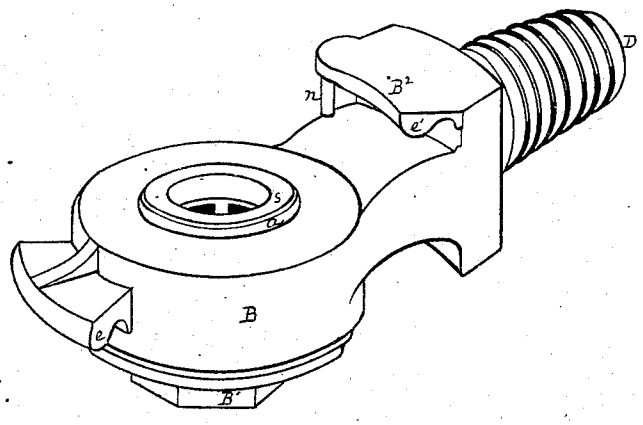

Fig. 1.

Witnesses { S. Howard Sprague, Saml M Blain

Inventor: George Westinghouse Jr. by George H. Christy, his atty.

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UNITED STATES PATENT OFFICE.

GEORGE WESTINGHOUSE, JR., OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN PIPE-COUPLINGS.

Specification forming part of Letters Patent No. **157,951**, dated December 22, 1874; application filed June 27, 1874.

To all whom it may concern:

Be it known that I, GEORGE WESTINGHOUSE, Jr., of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Pipe-Couplings; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an outline perspective view of of one part or half of my improved coupling. Fig. 2 is a side elevation or edge view of the two parts of the coupling when united; and Fig 3 is a longitudinal sectional elevation as formed by a plane passing vertically through the axial line of Fig. 2.

Like letters of reference indicate like parts in each.

This improvement, while applicable in some or all of its novel features to pipe-coupling purposes generally, is particularly designed for use in connection with the flexible hose of air-brake pipes, where, in order that the cars may be turned end for end, it is important that in either position the couplings may be counterparts of each other, or otherwise be capable of being united. In this improvement the couplings are counterparts of each other, or, in other words, each half-coupling is exactly like each other, so that on a train of cars fitted up with the same, the coupling together of the brake-pipes will not be affected by the reversal of any of the cars.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and mode of operation.

Each half-coupling consists of a box, B, closed on one side by a cap, B^1, screwed therein, and on the other open or port side containing an annular india-rubber packing-ring, *a*, through which communication is effected with the opposite half-coupling. The ring *a* is held in place by a washer, *c*, and posts *b*, projecting down from the cap B^1 on one side, and by a shoulder or seat in the box on the other, and at its open outer end it projects a short distance beyond the face of the box, as at *s*, and it is so arranged in each half that when the two half-couplings are brought together these packing-rings will come together face to face or end to end, as shown, and be compressed somewhat by hooks *e* on the extremities of the boxes, each of which hooks will engage a bead or counter-hook, *e'*, on the under side of each flange, B^2, made for that purpose on the box at the side of the port-opening opposite to the hook *e*. But the rings *a* should project far enough to be capable of still farther compression, in case of the forcible separation of the couplings, as hereinafter described. In order to hold these rings more effectually in contact with each other, and thereby prevent the escape of air or other leakage, I bring a pressure to bear on the back or inner face or end of each one, by means of a skeleton pressure-frame, $o\ o^1\ o^2$, such as will not interfere with the flow of air, and a spring, *d*, interposed between it and the cap. This pressure-frame, as shown, consists of an annulus, *o*, which bears against the ring-posts o^1, a pressure-plate, o^2, against which the spring *d* bears, and a stem, o^3, to steady it in place; but the form of this frame may be changed somewhat without seriously, if at all, impairing its function.

The outer end of each box is closed, but at its inner end it opens by a port, *h*, into the thimble D, by which the half-coupling is secured to the flexible hose, and the two boxes being put together, as shown, an uninterrupted passage-way is provided from one hose to the next; and as these couplings are exact counterparts of each other any two may be coupled together at pleasure. The hooks described are preferably made, one or both, with a slight bevel, so that while retaining their hold on each other, under the strain to which they are subjected in ordinary use, they may be pulled apart or become automatically disengaged when exposed to more than the usual strain; and this function is further secured by the fact that the packing-rings *a*, one or both, extend a little beyond the faces of their boxes, as shown at *s*, and under the unusual strain referred to, the rings may then be sufficiently compressed to allow the hooks *e e'* to slip over each other, and thus become disengaged. But the extension of the faces or ends of the rings *a*, each beyond the face of its box, is not, in every use of my improvement, absolutely es-

sential, since the face or end of one ring being flush with or below the face of its box, it can be made subject to the required pressure by a flange or ring, either elastic or otherwise, projecting from the opposite box.

The couplings are united by a rotary motion of each on the axis of its port-opening. The couplings are brought together with their port-openings coinciding, but with the hooks *e e'* projecting past each other, and then each hook being curved in the direction of its length to the proper radius, the couplings are rotated, the hooks engaging each other till each hook *e* comes against a proper stop, *n*, suitably arranged for that purpose. In practical use it will be found that, ordinarily, the couplings when united, will incline edgewise to one side or the other, and to prevent, in such case, their becoming uncoupled by the partial rotation of the two halves under their own weight, I prefer to turn or twist one or the other before coupling, so that when the two are coupled, such twist transmitted back to the flexible hose shall cause them to hang edgewise, and with the stops *n* on the under side. Their weight will then, in connection with the stops *n*, keep them from becoming uncoupled while the train is running, except when forcibly pulled apart, as above referred to. Other known suitable form of stop may be used, and for many purposes a single one may suffice.

Each half of the coupling may, if so desired, be provided with valves having the function described in reissued patent No. 5,504, granted to me July 29, 1873; also, where automatic detachability is not desired, other known fastening devices may be employed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A two-part pipe-coupling, having lateral port-openings by which through communication is effected, when the two halves or parts which constitute the coupling are counterparts of each other, so as to be interchangeable at pleasure, constructed substantially as set forth.

2. In the half-coupling described, the combination of a lateral port-opening, a packing-ring, *a*, arranged therein, and a skeleton pressure-frame, *o* o^1 o^2, with a spring for applying pressure, arranged substantially as set forth.

3. In a pair of couplings having lateral port-openings, the compressible ring or rings *a*, in combination with the hooks and catches *e e'*, by which the couplings are rendered automatically detachable under unusual strain, substantially as set forth.

4. As a device for connecting together the two halves of a coupling of the class described, the hook or hooks *e e'*, curved in the direction of the line of engagement, with the radial line of curvature running in the general direction of the line of strain, substantially as set forth.

5. The hook or hooks *e e'*, curved in the direction of their line of engagement, in combination with a stop or stops, constructed substantially in the manner and for the purposes set forth.

In testimony whereof, I the said GEORGE WESTINGHOUSE, Jr., have hereunto set my hand.

GEO. WESTINGHOUSE, JR.

Witnesses:

JOHN D. MORELAND,
GEORGE H. CHRISTY.