D. W. MAGEE.

VALVE-COUPLINGS FOR VACUUM-PIPES.

No. 182,376. Patented Sept. 19, 1876.

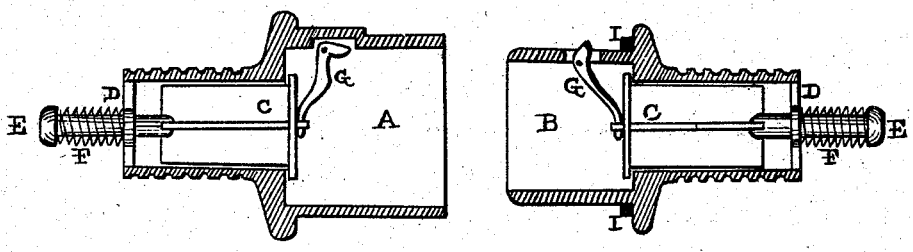


FIG. 1

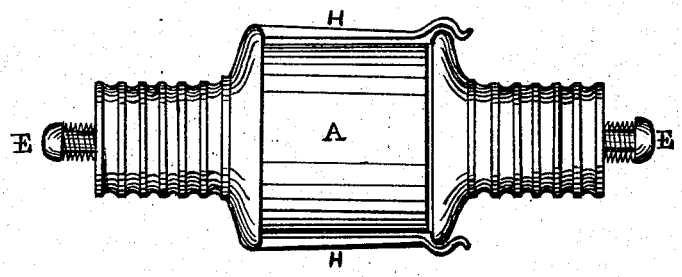


FIG. 2

WITNESSES:

David T. Blount

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# UNITED STATES PATENT OFFICE.

DANIEL W. MAGEE, OF NEW YORK, N. Y.

## IMPROVEMENT IN VALVE-COUPLINGS FOR VACUUM-PIPES.

Specification forming part of Letters Patent No. **182,376**, dated September 19, 1876; application filed March 23, 1876.

*To all whom it may concern:*

Be it known that I, DANIEL W. MAGEE, engineer, of the city of New York, in the county and State of New York, have invented a new and useful Improvement in Valve-Couplings for Vacuum-Pipes; which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a transverse sectional view of the male and female pipe-coupling, and showing the arrangement of valves in each. Fig. 2 is an outside view of the pipes coupled together in place.

A is the female pipe. B is the male pipe. C C are three wing-valves. D is a cross-head in the pipe. E is a spindle, at the back of the valves, having a spring, F. G G are levers, pivoted so that pressure will raise the valves outwardly from their seats. H H are outside springs to hold the couplings together. I is a rubber ring.

Similar letters of reference indicate similar parts.

The object of my invention is to arrange a coupling with valves in the same, especially applicable to the pipes connected with what is known as a "vacuum-brake" for steam railway-cars.

The common objection to a vacuum-brake has been that if one or more of the cars became detached from the rest of the train, the control over the train was utterly lost the moment a separation took place, because the efficacy of the brake depends on the vacuum in the pipes. If a single end be open the air cannot be sucked out. I therefore so arrange valves in the couplings that when the connection between the cars is made the valves will be held away from their seats, thus leaving a clear passage for sucking out the air; and in case of the breaking apart of the cars, as would ordinarily happen in case of an accident, the valve in the coupling so separated will close, and thus the engineer retains full control over all the cars remaining in the train attached to the locomotive, by the action of the pump on the engine in applying the vacuum pressure principle on the brakes.

When the couplings are connected together the pivoted lever G in the male pipe B is necessarily pressed down at its short point, and, consequent on this movement, the long arm of the lever working through an eye on the valve, the valve C is raised from off its seat. In the female pipe A, when the connection is being made, the pivoted lever G is necessarily pressed upward at its short point, and consequent on this movement the valve C is raised from off its seat. When the couplings are connected the valves are held away from their seats, thus leaving a clear air-passage.

When the couplings are disconnected, the valves go back to their seats. To aid this backward movement, I arrange a cross-head, D, in the pipe through which the back spindle E passes. Around the back spindle is a spiral spring, F. The proper working of the valves, however, in no way depends on the springs F, because when the engineer works the pump and sucks the air from the pipes to apply the brakes, the creation of a vacuum in the pipes brings into play the atmospheric pressure of, say, fifteen pounds to the square inch on the face of the valves, and so forces the valves backward to their seats and holds them there. But the arrangement of cross-head, spring, &c., is desirable in contributing to the neat working of the parts, as at the end of the train of cars, or when an accidental separation of cars takes place.

When the cross-head and spindle are not used, a simple device, such as a slot and pin, will prevent the valve from dropping out.

Rubber or other elastic packing may be used on the seats or other parts. A rubber ring, I, may be used outside to make the coupling joint absolutely air-tight.

When the male and female pipes are coupled, outside springs H H hold them together. When the couplings are pulled asunder, the springs allow a separation without doing damage to any of the working parts. Each end of a car may be provided with a double set of connecting pipes and couplings.

My device makes an arrangement simple and efficient, not liable to get out of order, not expensive, and insures the proper working of a vacuum-brake under any and all circumstances.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A coupling for the pipes of vacuum-brakes consisting of male and female pipes A B, having valves C C in the same, the said valves being forced away from their seats by pivoted levers G G, all arranged substantially in the manner and for the purpose herein described and set forth.

DANIEL W. MAGEE.

Witnesses:

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