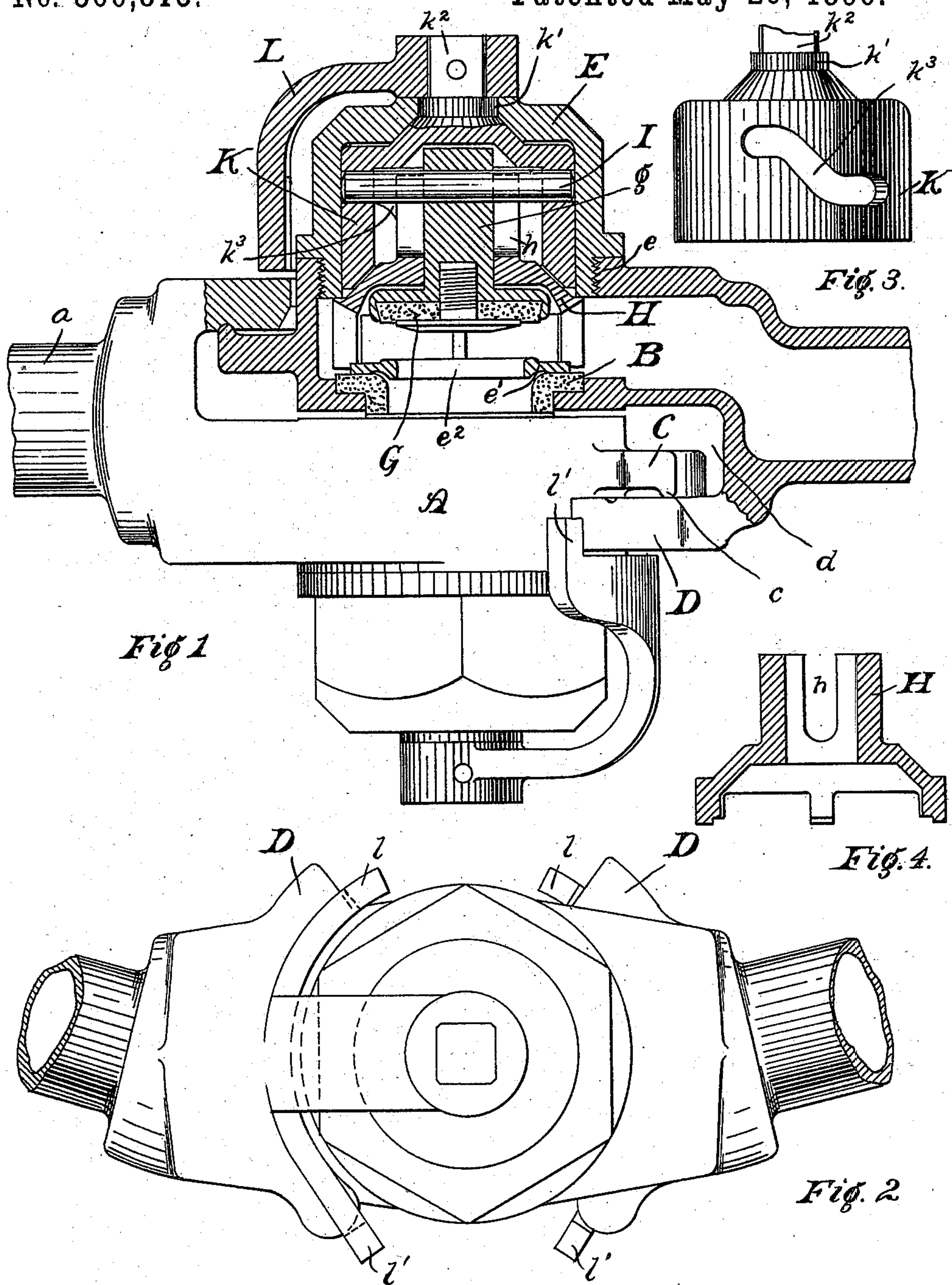


(No Model.)

H. F. NOYES.  
PIPE COUPLING.

No. 560,815.

Patented May 26, 1896.



WITNESSES:

N. B. Newman  
J. W. McMaster.

INVENTOR,  
Henry F. Noyes.



# UNITED STATES PATENT OFFICE.

HENRY F. NOYES, OF ELGIN, ILLINOIS, ASSIGNOR OF ONE-HALF TO JAMES M. BARR, OF SPOKANE, WASHINGTON.

## PIPE-COUPLING.

SPECIFICATION forming part of Letters Patent No. 560,815, dated May 26, 1896.

Application filed January 7, 1895. Serial No. 534,155. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY F. NOYES, of Elgin, Illinois, have invented certain new and useful Improvements in Pipe-Couplings, of which the following is a specification.

My invention relates particularly to pipe-couplings that are attached to the air-brake system of railroad-trains, and has for its object the providing of a simple, economical, and efficient pipe-coupling adapted for such uses; and it consists in providing two engaging interlocking coupling-shells with independent longitudinally-movable valve mechanism so arranged that the act of coupling or uncoupling the hose ends acts to open or close the valves.

In the drawings, Figure 1 is a side elevation showing two couplings in their locked position, one of such couplings being shown in section. Fig. 2 is a plan view of the two couplings shown in their locked position. Fig. 3 is a detail view of the cam-slot, and Fig. 4 a view of the chair with its vertical slot.

In constructing my improved coupling I use a shell A of the type in general use, provided with the end *a*, to which the flexible hose ends may be secured in any convenient way. I provide the coupler-shells with the usual abutting face B, formed, preferably, of rubber, and which forms the contacting surfaces of both coupling-shells, through the aperture of which the compressed air passes. The coupler-shell is also provided with the usual cam-shaped interlocking arm-lugs C, adapted to fit within and become locked with a projecting arm D, which extends outward from the body of the engaging shell, leaving a space *d* between it and the valve-seat portion. This is the ordinary and usual construction, and is so arranged that two coupler-shells can be interlocked with each other, one portion being provided with an inclined cam surface and groove into which a rib *c* on the arm-lug of the engaging shell fits for the purpose of securely and firmly holding the parts in their engaged positions.

To provide each coupler-shell with a valve for the purpose of confining the air-pressure in the air-brake mechanism and prevent its escape therefrom when the cars are uncoupled, I provide a nut E, which has a

threaded portion *e*, entering a threaded opening in each coupler-shell, which contacts and holds in place a chair H, the latter contacting and holding in place a valve-seat *e'*. To close the opening *e*<sup>2</sup> in this valve-seat, I provide a valve G, which has a longitudinal motion directly away from and toward the valve-seat for the purpose of opening or closing the aperture. To raise and lower this valve, I prefer to provide it with a cylindrical valve-stem *g*, having a bearing in the chair H, such chair being provided with a slot *h*, in which a cross-pin I rides, carrying with it the valve G. To actuate the valve, I provide the nut with a cylindrical opening in which fits snugly the neck *k'* of the cup-shaped cam K. This cam has a slot *k*<sup>3</sup>, in which the pin I rides as the cup is rotated. Its neck *k'* has a square portion *k*<sup>2</sup>, projecting outside the nut, and to which is pinned the actuating lever or arm L. The free end of this lever or arm has two lugs *l* and *l'*, which straddle the flange D of the other coupling. As the couplings are engaged or disengaged the lever L is turned, and with it the cam, causing the pin to ride up and down in the cam-slot and to raise the valve from its seat and return it to its seat. When the shells are in their coupled or engaged position, the valves are intended to be in their open position, so that air may freely pass through from one car to another. When it is desired to disconnect the couplings, the act of turning them moves the lever around so that the cam-slot forces the pin and valve until the latter reaches its seat, thereby closing the opening and preventing the escape of air and entrance of dust. When the couplings are pulled apart without rotating, the cross-pin I being in the top of the slot *k*<sup>3</sup> holds the valve away from its seat, thus allowing the escape of air through the opening *e*<sup>2</sup> and applying the brakes.

As the valve is held to its seat by the pressure of the confined air, which is about seventy pounds per square inch, it requires the application of considerable force to lift it. Therefore the slot *k*<sup>3</sup> of the cam is constructed so that the couplings may be rotated toward their engaged position far enough for the bead *c* to have entered the groove in the lip D, in order to give the coupling-shells a hold on



each other before the rise in the cam-slot begins to lift the valve.

The cam *k* has a seat in the nut *E* and is ground in, so as to make an air-tight joint when it is held to its seat by the pressure of the confined air.

It will be evident that the valve has no motion except a reciprocating motion to and from its seat. The advantages of this construction over all previous constructions in which the valve has a rotary motion on its seat are very evident. The wear on the valve is very much less and its life longer. The operations of coupling and uncoupling when the pipes are full of air are made much easier, as the friction caused by air-pressure is greatly reduced and the operator has a chance to get the couplings partially connected before work of lifting the valves commences.

I claim—

1. In a pipe-coupling, the combination of a shell, a longitudinally-movable valve within such shell, a valve-seat and a chair adapted to hold such seat in place and to directly prevent the rotation of such valve upon its seat, and a lever-operated cam adapted to control such valve substantially as described.

2. In a pipe-coupling for air-brake hose, the combination of a reciprocating valve controlling an opening in such coupling, a lever-operated cam controlling such valve, and provided with a flat portion on the operating-surface of such cam whereby it may be partially rotated in its opening movement without operating such valve, substantially as described.

3. In a pipe-coupling for air-brake hose, the combination of a reciprocating valve controlling an opening in such coupling, a lever-operated cam controlling such valve and provided with flat places on its operating-surfaces whereby said cam may be partially rotated in the first part of its opening movement without operating such valve, substantially as described.

4. In a pipe-coupling for an air-brake hose, the combination of a reciprocating valve adapted to control an opening or port in such coupling, a lever-operated cam adapted to control such valve, and adapted to be partially rotated in its opening movement without operating such valve, a gasket, a chair adapted to guide such valve and prevent it from rotating during the operation of such cam, and to hold said gasket in place, substantially as described.

5. In a pipe-coupling, the combination of a shell, a valve adapted to control an opening in such shell, and a pin directly connected with such valve and adapted to give such valve a reciprocating motion to and from such seat and to prevent any rotation of such valve upon its seat, a cam connected with said pin and a lever adapted to operate said cam substantially as described.

6. In pipe-couplings, the combination of two engaging interlocking coupling-shells, a longitudinally-movable valve within such shell,

a valve-seat within each shell and a chair adapted to hold such seat in place and to guide said valve to and from its seat and to directly prevent its rotation during such operation, a cam adapted to operate such valve and a lever adapted to operate such cam and to be operated by the opposite coupling-shell, substantially as described.

7. In pipe-couplings, the combination of a single coupler-shell, a rotary cam arranged within such shell, a longitudinally-movable valve provided with a stem portion, a chair adapted to guide such valve-stem in its longitudinal motion and to prevent any rotary motion of said valve-stem, a nut adapted to hold such chair in place and to form a bearing for said cam, means of connecting said cam to said valve-stem whereby said valve is opened as said cam is rotated in one direction and closed as said cam is rotated in the opposite direction, and a lever adapted to operate such cam, substantially as described.

8. In pipe-couplings, the combination of two engaging interlocking coupling-shells, a rotary cam within each shell, a longitudinally-movable valve provided with a stem portion within each shell, a cross-piece on such stem engaging with such cam to raise such valve as such cam is rotated in one direction and to return it to a seat as such cam is rotated in the opposite direction, a valve-seat within each shell, a chair for holding such seat in place, a slotted neck to such chair to guide such cross-piece and valve-stem and to prevent their rotating as such cam is rotated, a lever attached to such cam and adapted to straddle projecting flanges of the opposite coupler-shell, and to be actuated by them to rotate such cam in the direction necessary to open its valve as the couplers are rotated to an engaged position, to remain inoperative where the couplers are pulled apart without rotating, and to rotate such cam in the direction necessary to close its valve as the couplers are rotated to their disengaged positions, substantially as described.

9. In pipe-couplings, the combination of a single coupler-shell, a rotary cam arranged within such shell, a longitudinally-movable valve provided with a valve-stem, a cross-piece on such stem adapted to engage said cam to open said valve as said cam is rotated in one direction and to close said valve as said cam is rotated in the opposite direction, a valve-seat, a chair provided with a slotted neck adapted to form a guide for said valve-stem and cross-piece and to prevent their rotating as said cam is rotated, a neck for said cam having a bearing in a suitable nut, such nut adapted to hold said chair and valve-seat in place, and a lever attached to said neck of said cam and recessed to receive projecting flanges of a second coupler-shell and adapted to be operated by such shell, substantially as described.

10. In pipe-couplings, the combination of two engaging interlocking coupler-shells, a



rotary cam within each shell, a longitudinally-movable valve provided with a stem portion within each shell, a cross-piece on such stem engaging with such cam to raise such valve  
5 as such cam is rotated in one direction and to return it to a seat as such cam is rotated in the opposite direction, a valve-seat within each shell, a chair for holding such seat in place, a slotted neck to such chair for guiding  
10 such cross-piece and valve-stem and prevent-

ing their rotating as such cam is rotated, and a lever attached to such neck and engaging the opposite coupler-shell for actuating such cam to raise and lower such valve as the couplings are engaged or disengaged, substantially as described. 15

HENRY F. NOYES.

Witnesses:

F. W. JOSLYN,

F. P. JOY.