(No Model.) 2 Sheets—Sheet 1.

J. F. McELROY.

AUTOMATIC PIPE COUPLING.

No. 384,991. Patented June 26, 1888.

Fig. 1

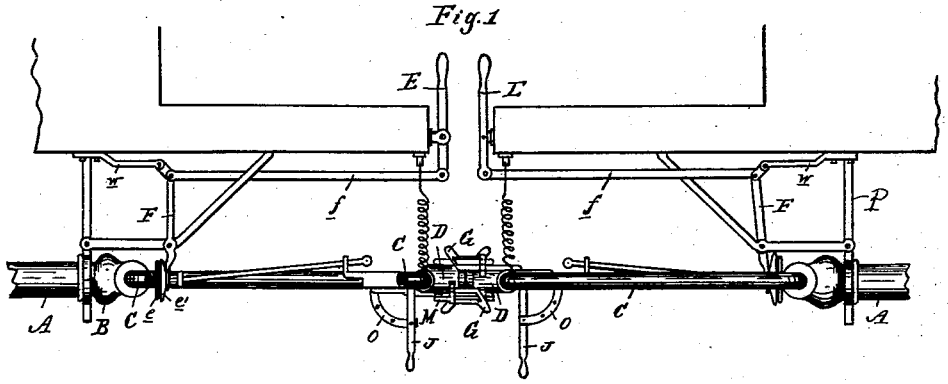


Fig. 2

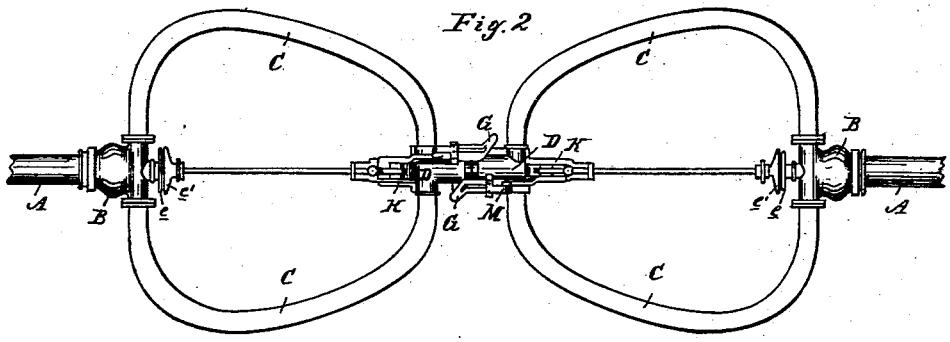
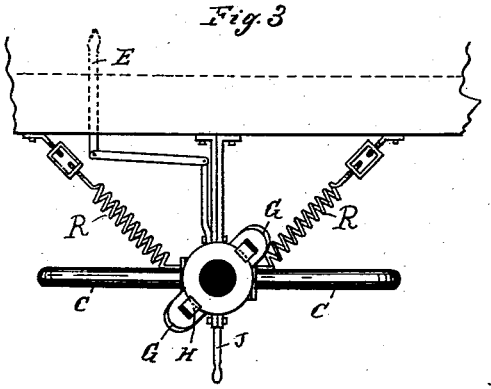


Fig. 3



Attest:
John Schuman.
E. J. Scully.

Inventor:
James F. McElroy.
by his Atty.
Phil. S. Sprague.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 4

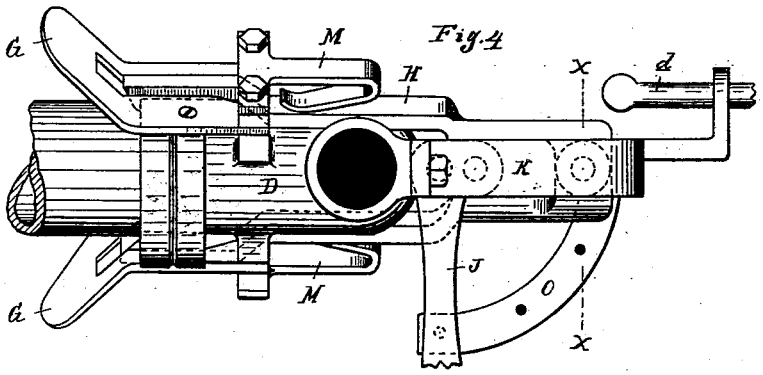


Fig. 5

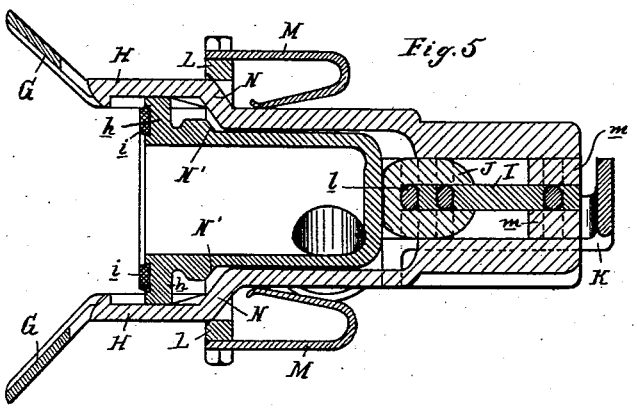


Fig. 6

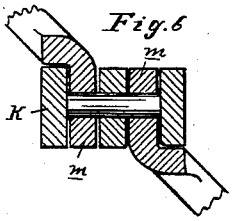
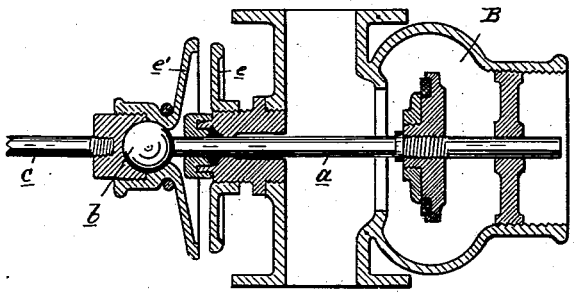


Fig. 7



Attest:
John Schuman.
E. F. Scully.

Inventor:
James F. McElroy.
by his Atty.
Robt. S. Spragus.

UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF LANSING, MICHIGAN.

AUTOMATIC PIPE-COUPLING.

SPECIFICATION forming part of Letters Patent No. 384,991, dated June 26, 1888.

Application filed May 12, 1887. Serial No. 237,967. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McELROY, of Lansing, in the county of Ingham and State of Michigan, have invented new and useful Improvements in Automatic Pipe-Couplings; 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 automatic pipe-couplings; and the invention is principally designed for coupling the steam-heating pipes arranged to carry steam from car to car in a railway-train, all as hereinafter described.

In the drawings which accompany this specification, Figure 1 is a side elevation of a pipe-coupling of my improved construction applied between the adjoining ends of the cars. Fig. 2 is a plan thereof. Fig. 3 is an end view of the coupling. Fig. 4 is an enlarged side elevation of one of the couplings. Fig. 5 is a diagram plan of the same. Fig. 6 is a cross-section on line *x x* in Fig. 4. Fig. 7 is a detached plan of the coupling-valve.

A represents the pipe to be connected by my coupling.

B is a valve secured to the end of the pipe.

C C are two branch pipes of copper or other flexible metallic material, and D is one of the two like members of the coupling-head.

The valve B is operated by a sliding valve-stem, *a*, which carries a valve-disk and projects through a suitable stuffing-box in the valve-case. A ball-and-socket joint, *b*, connects the end of the valve-stem with a pull-rod, *c*, the opposite end of which engages with the coupling-head by means of a sliding connection, *d*, which is designed in case of accidental breaking of the draft-connection between the the cars to automatically close the valve to prevent the exit of the steam or other fluid carried through the pipe A. Two disks, *e e'*, are secured in juxtaposition to each other—one to the valve-case and the other to the pull-rod *c*—for the purpose of automatically closing the valve by the force of leverage of the disk *e'* against the disk *e* in case of an abnormal direction imparted to the pull-rod *c* in case of a derailment or other like accident, which should leave the cars connected together.

The normal operation of the valve B is effected by means of a hand-lever, E, preferably placed for convenient operation at or near the platform of the car. This lever has a connecting-rod, *f*, which pivotally connects the same with the knuckle of a toggle lever, F, one member of which engages with the valve-stem *a* and the other with a spring, *w*, all so arranged that by throwing the lever E one way or the other the valve B is opened or closed, while the toggle-lever at the same time in either one of its positions forms an angular joint which prevents accidental displacement.

The coupling-head D has the general form of a T-coupling. Its central opening is provided with the coupling-flange *h*, which is designed to connect with the coupling-flange of the corresponding number of the coupling on the opposite car. A suitable packing, *i*, is placed into the face of the coupling-flange. The lateral openings in the coupling-head connect with the branch pipes C, which latter are of flexible metal—such as copper—and are suitably arched, curved, or otherwise bent to enable them to compensate any normal variation in the relative position of the two cars.

G are two flaring guides secured to the coupling-head opposite each other at points about forty-five degrees to one side of the top and bottom, respectively, so that if the two like members of a coupling meet the guides will not interfere with each other. Each guide is provided with a slot, within which a coupling-hook, H, is adjusted to hook over the coupling-flange of the opposite member of the coupling. Each of these hooks slides on the coupling-head. Their rear ends are provided with ears *m*, which enter between the legs of the bracket K, and are pivotally connected to one end of the link I, the opposite end of which is pivotally connected to the short arm of the hand-lever J, which is fulcrumed at *l* between the legs of the bracket K. By the actuation of the lever J the coupling-hooks are projected or withdrawn, and it will be seen that the bracket K supports and guides the rear ends of said coupling-hooks, while their forward ends pass through guide-bearings L, to which a spring, M, is secured, bearing upon the coupling-hook.

Near their forward ends the guide-hooks are provided with inclines N, which act, in con-

nection with suitable stationary inclines, N', to throw the hooks outwardly when projected forward. When the hooks are, however, withdrawn, they are positively locked against outward displacement by the guide-bearings L, as shown.

A segment, O, is secured alongside the lever J, which permits of holding the lever J in three different positions. In the lowest position the coupling-hooks are withdrawn into the position in which the coupling of two members is perfected The next higher position unlocks the hooks sufficiently to permit self-coupling, and the highest position permits the uncoupling of two members.

It will be noticed that if the coupling is perfected the coupling-hooks are perfectly locked by the relative position of the actuating parts, as shown in Fig. 4.

The train-pipe is supported underneath the car in any suitable way, preferably by means of hangers P, which fasten around the neck of the valve B. The coupling-head I preferably support by means of two elastic hangers, R, obliquely connected to the under side of the platform and provided with turn-buckles or equivalent devices for lengthening or shortening them.

One of the two metallic branches C between the coupling-head and the end of the train-pipe may dispensed with, if desired, without departing from my invention.

What I claim as my invention is—

1. In a pipe-coupling for railway-trains, the combination, with a train-pipe, of a coupling-head suspended by an elastic hanger or hangers and connected with the end of the train-pipe by one or more lateral curved expansible branch pipes, substantially as described.

2. In a pipe-coupling for railway-trains, the combination, with the train-pipe, of a coupling-head suspended by two oblique flexible hangers and connected with the end of the train-pipe by two curved lateral branch pipes of flexible metal, substantially as described.

3. In a pipe-coupling for railway-trains, the combination, with the coupling-head, of a valve secured to the head of the train-pipe, one or more laterally curved or arched branch connections between the coupling-head and valve, and a pull-rod connected with said valve and coupling-head, substantially as and for the purpose specified.

4. In a pipe-coupling for railway-trains, the combination, with the coupling-head, of a valve secured to the head of the train-pipe, one or more laterally curved or arched branch connections between the coupling-head and said valve, a sliding valve-stem in said valve, and a pull-rod connecting said valve-stem with the coupling-head and having a limited sliding play therewith, substantially as described.

5. In a pipe-coupling for railway-trains, the combination, with the coupling-head, of a valve secured to the head of the train-pipe, one or more laterally-arched pipe connections between said valve and the coupling-head, a sliding valve-stem in said valve, a pull-rod secured to said valve-stem by a universal joint and connecting it by a limited sliding joint with the coupling-head, a disk-fulcrum secured to the valve, and a disk-fulcrum secured to the pull-rod, all arranged to operate substantially as described.

6. In a pipe-coupling for railway-trains, the combination, with a valve located between the coupling-head and the train-pipe, of a hand-lever pivoted to the car for operating the valve, and operating connection comprising a spring connected with the car, and a toggle-lever, one end engaging with the valve-stem and the other with said spring, whereby the angular position of the toggle-lever locks the valve in its open and closed position, substantially as described.

7. In a pipe-coupling for railway-trains, the combination, with a valve located between the coupling-head and the train-pipe, of a hand-lever and connection for operating said valve at will of the operator, and an automatically-operating connection between said valve and the coupling-head, substantially as described.

8. In a pipe-coupling for railway-trains, the combination, with a coupling-head provided with a coupling-flange, of two coupling-hooks hinged together and slidingly secured to said coupling-head, a lever for projecting and retracting said coupling-hooks, and suitable guides for imparting to said coupling-hooks an opening movement when projected and a closing movement when retracted, substantially as described.

9. In a pipe-coupling for railway-trains, the combination of a coupling-head provided with a coupling-flange, of two flaring guides secured to said coupling-head at points at an angle to the top and bottom side of said coupling-head, and of coupling-hooks working in slots in said guides, and means for moving said hooks, all substantially as described.

10. In a pipe-coupling for railway-trains, the combination, with a coupling-head provided with a coupling-flange, of two coupling-hooks hinged together at their rear ends and slidingly secured to said coupling-head upon opposite sides thereof, an operating-lever for said hooks, an incline formed on each coupling-hook and corresponding inclines formed on the coupling-head, a spring pressing against the back of each coupling-hook, a locking-guide near the forward end of each coupling-hook, and a guide at the hinged rear end of said coupling-hooks, substantially as described.

11. In a pipe-coupling for railway-trains, the combination of the flanged coupling-head C, the sliding coupling-hooks H, hinged together at their rear ends, the guide-bracket K, the link I, and the lever J, all arranged to operate substantially as described.

12. In a pipe-coupling for railway-trains,

the combination, with the train-pipe, of a flanged coupling-head, the pull-rod *e*, a sliding connection between the pull-rod and coupling-head, a valve secured to the end of the train-pipe, the disks *e e'*, secured in juxtaposition to each other, one to the valve-case and the other to the pull-rod, a lever and connection for opening and closing said valve by hand, coupling-hooks sliding on and operating in connection with the coupling-head, and a hand-lever and connection for opening and closing said coupling-hooks, all arranged to operate substantially as described.

JAS. F. McELROY.

Witnesses:
M. N. CROSS,
PRESCOTT HULBERT.