(No Model.)

J. WALKER.

AUTOMATIC COUPLING FOR STEAM PIPES.

No. 416,767. Patented Dec. 10, 1889.

Fig. 2.

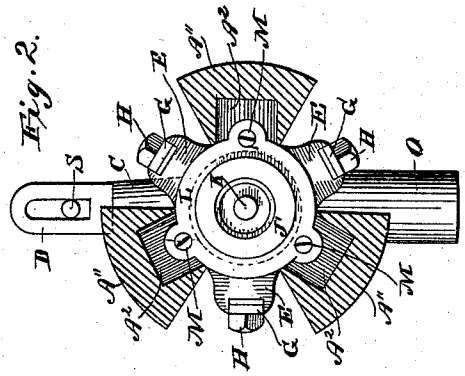


Fig. 4.

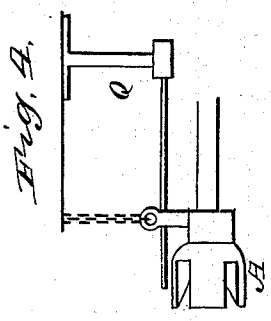


Fig. 1.

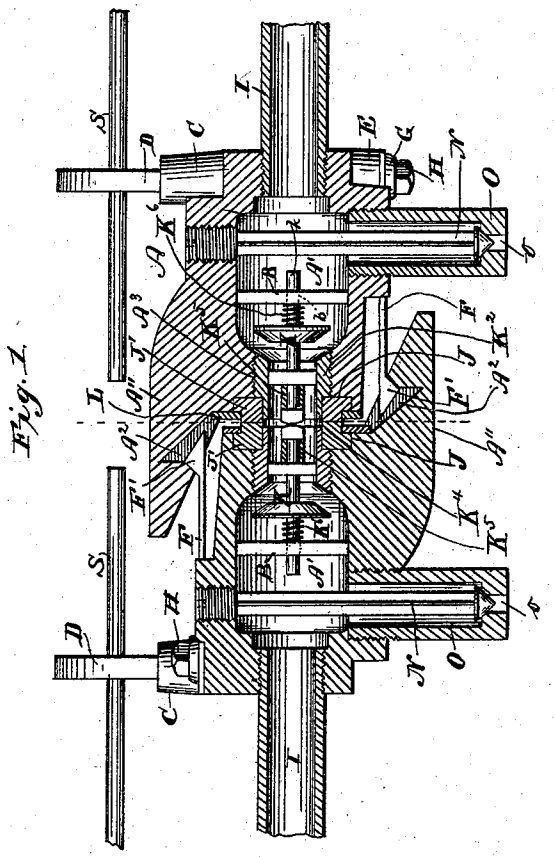


Fig. 3.

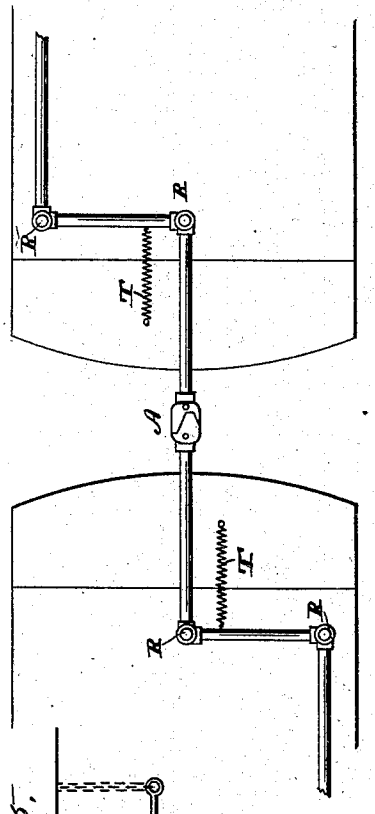
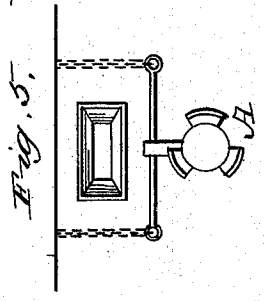


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH WALKER, OF CLARK'S GREEN, PENNSYLVANIA.

AUTOMATIC COUPLING FOR STEAM-PIPE.

SPECIFICATION forming part of Letters Patent No. 416,767, dated December 10, 1889.

Application filed November 20, 1888. Serial No. 291,337. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH WALKER, of Clark's Green, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Couplings for Steam-Pipes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

My invention has for its object to provide an automatic coupling for steam-pipes, adapted more especially for use in connection with those systems of railroad-car heating in which steam from the locomotive-boiler is conveyed by pipes throughout the train for the purpose of heating the said cars; and it consists in a novel construction and combination of parts, such as will be hereinafter particularly described and claimed.

Referring to the accompanying drawings, Figure 1 represents a longitudinal vertical section of a coupling constructed in accordance with my invention. Fig. 2 is a sectional view taken on the line *x x*, Fig. 1; Fig. 3, a plan view illustrating the manner in which the two valves of the coupling are kept together by spring-pressure. Fig. 4 is a side elevation showing the manner of supporting the head. Fig. 5 is a front elevation of same.

Similar letters of reference in the several figures indicate the same parts.

Since each half of my coupling is an exact counterpart of every other half-coupling with which it is designed to co-operate, a detailed description of one half only will be necessary.

The letter A represents a coupling-head constructed of metal, preferably of malleable iron, having a chamber A′ within it, across which extends a bar B, provided with a hole *b*, that serves as a guide for the inner end of the stem *k* of a valve K.

On the upper portion of each head A a boss C is formed, and into this boss is secured a slotted guide or eye D, which is adapted to receive the chain that supports the head under the cars. Into this guide or eye also extends a guide-bar S, consisting of a steel bar, made, in practice, about two feet long and having its rear end fixed in a bracket Q, bolted or otherwise secured to the under side of the car on a central line. By this provision the head is at all times guided to the true center by the action of the bar, and yet said bar will bend or yield to accommodate itself to any strain that it may be subjected to in the vicissitudes of service.

On the head A are formed three bearings E, to each of which is secured the shank of a clutch-spring F by a clamp G and a bolt H, as seen in Fig 2. Each head is also provided with three projections A″, between which open spaces are left for the accommodation of the three corresponding projections on a co-operating head. These projections are preferably tapered from base to point, and in each a recess or socket A^2 is formed, with which the locking end F′ of one of the clutch-springs F is adapted to engage when the two parts of the coupling are brought together. The forward face of each of the sockets A^2 and the corresponding face of each of the locking ends of the clutch-spring are beveled, so that the parts of the coupling may automatically uncouple without breakage when unusual longitudinal strain is brought to bear upon them, as in the uncoupling and separation of cars to which they are respectively attached. The rear end of the head A is tapped to receive the steam-pipe I, while at its front or outer end it is recessed, as at J, and tapped, as at A^3, to receive a valve-seat K^2 of the valve K. The forward extension K^4 of the valve-seat constitutes a guard for the packing that is put in the recess J. Said packing is formed in rings J′, and a recess or shoulder is formed on the outermost ring for the accommodation of an annular thin brass plate or ring L, which is held in place by three screws M, passed through it and into the body, as shown in Fig. 2. The packing projects about an eighth of an inch beyond the face of the plate L, so that when the parts of the coupling are clutched together both halves of the packing are compressed and make a steam-tight joint, while at the same time the outer ends of both valve-stems K, striking together, cause their respective valves to be unseated, thus allowing a free flow of steam to pass through. Small collars K^5 are placed behind

the heads of the valve-stems, so that the valves can only open a determinate distance and equally, and a spiral spring K^6 is interposed between each valve and the bar B to assist in closing the valve when the parts of the coupling are separated and when the pressure of steam is insufficient.

O is a fitting or trap screwed into the lower part of each head and having an aperture *o* in its bottom, as shown.

N is a metal bar, preferably triangular in cross-section, so as to be more susceptible to changes in temperature, and having its lower end beveled and adapted to fit and close the opening *o* of the fitting O, and having its upper end or head made solid and cylindrical and screw-threaded, so as to be screwed onto the upper part of the head, as shown in Fig. 1. When steam is turned on, the bar N, under the influence of the heat, expands and lengthens and closes tightly the aperture *o*, thus preventing any escape of steam; but when there is no steam in the pipes the contraction of said bar causes said aperture to be opened and any water of condensation that may have accumulated in the fitting O to be discharged. The fitting thus operates as a trap, which is automatically discharged when the steam is turned off. By screwing the bar N up or down its action can be regulated with nicety.

In practice I prefer to connect each part of my coupling to piping having flexible joints, as at R R, Fig. 3, and to apply strong spiral springs—such as shown at T T—to keep the parts firmly pressed together when once coupled.

It is obvious that couplings constructed in accordance with my invention may be employed on systems of pipes for conveying hot air, gas, or other gaseous or fluid bodies.

Having thus described my invention, what I claim as new is—

1. In a pipe-coupling, the combination, with the head and the guide-eye, of the flexible bar passing through the eye and mounted on a rigid base, substantially as described.

2. In a pipe-coupling, the combination, with the head connected to the main pipe with the passage through the same and the spring-pressed valve in said passage for automatically cutting off the supply from the main pipe, of the downwardly-extending trap on the head with the discharge-opening in the lower end, and the screw-opening in the wall opposite said trap, and the expansion-bar passing through the screw-opening across the passage through the head and fitting within the trap for closing the discharge-opening therein, substantially as and for the purpose set forth.

3. In a pipe-coupling, the combination, with the head and the valve and valve-seat having the extension K^4 thereon, of the elastic packing surrounding the said extension and the removable plate or ring L overlying the outer edge of said packing and secured to the head, substantially as described.

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