(No Model.)

J. KREHBIEL.

EQUIPMENT OF RAILWAY TRAINS.

No. 455,021. Patented June 30, 1891.

Fig. 1

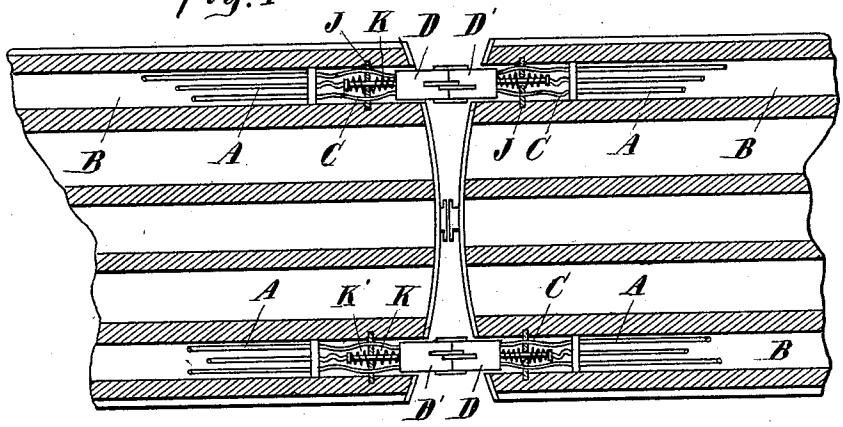


Fig. 2

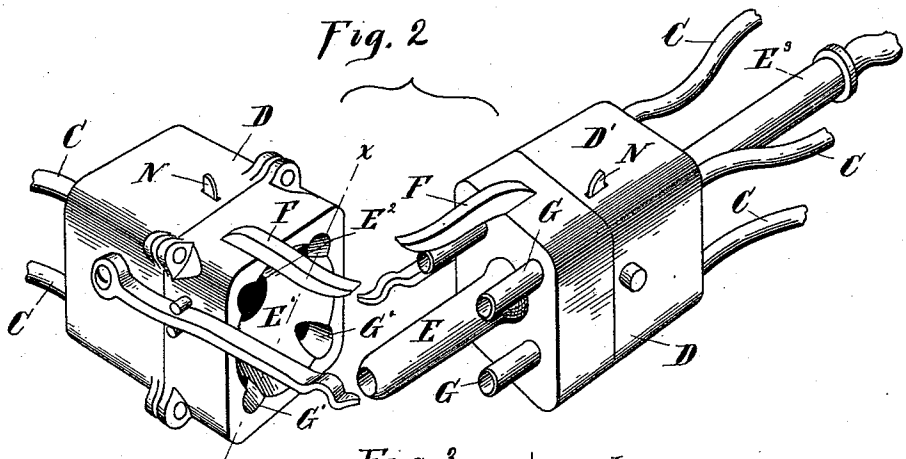


Fig. 3

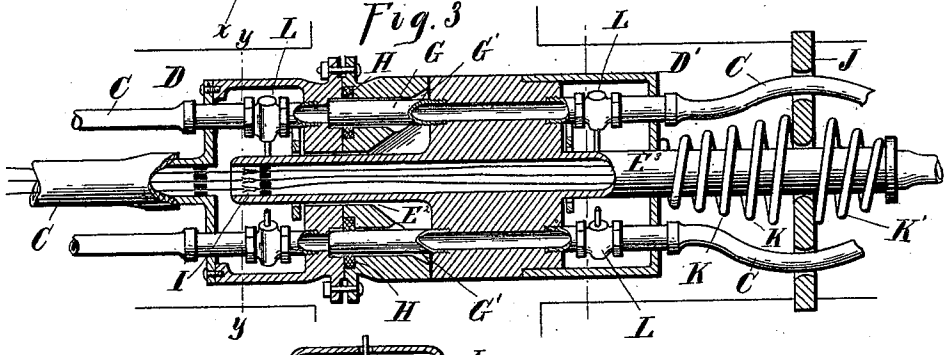
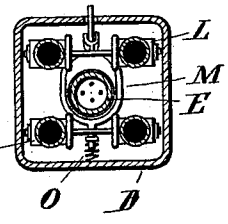


Fig. 4



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UNITED STATES PATENT OFFICE.

JOHN KREHBIEL, OF KALAMAZOO, MICHIGAN.

EQUIPMENT OF RAILWAY-TRAINS.

SPECIFICATION forming part of Letters Patent No. 455,021, dated June 30, 1891.

Application filed August 29, 1890. Serial No. 363,453. (No model.)

To all whom it may concern:

Be it known that I, JOHN KREHBIEL, a citizen of the United States, residing at Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in the Equipment of Railway-Trains, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in the equipment of railway-trains with service-pipes and conductors for the conveyance of steam, water, air, and electricity to the different cars; and the invention consists in the peculiar construction and arrangement of such conductors and their connections between the cars, whereby they may be automatically coupled and uncoupled, all as more fully hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a diagram bottom plan view of adjoining ends of two cars provided with my improved equipment. Fig. 2 is a detached and enlarged perspective view of the two parts of the coupler. Fig. 3 is a longitudinal section thereof on line *x x*, and Fig. 4 is a cross-section on line *y y*.

A A, &c., represent the stationary portions of the different conductors for conveying steam, air, gas, water, electricity, &c., to the different cars of a railway-train. These I preferably inclose and support in longitudinal conduits B, extending from end to end of the car and formed between the longitudinal supports of the car-floor, suitable racks or intermediate supports being provided for keeping these conductors in their relative position to each other.

The tubular conductors for conveying fluids are provided at their ends with sections of flexible hose C, which connect such conductors with coupling-heads D D′, supported in the ends of two conduits in a manner similar to the ordinary car-couplings and in such relation to each other as to bring the coupling-heads adapted to unite opposite each other in the adjacent car ends.

To make the two coupling-heads D D′ unite automatically and form a tight connection from each conductor of one car to the corresponding conductors of the other car, I construct the coupling-heads in the following manner: One of the coupling-heads D′ is provided with a central pin or guide-tube E, projecting some distance beyond the coupler-head, and the other head D is provided with a funnel-shaped mouth E′, leading into a central aperture E″, to receive the pin and guide the two coupler-heads in juxtaposition when the ends of the cars are approaching for coupling. Exterior guiding-arms F are provided to engage the two heads in proper relation to each other, and these guiding-arms are utilized for the further purpose of operating the valves in the different conductors, as hereinafter more fully described. Around the central guide-pin are grouped similar guide-pins G, and in the opposite head are provided corresponding apertures G′, which are conically enlarged at the mouth and into which said guide-pins engage. These guide-pins form the terminals of the different conductors joined to the coupling-head, and the apparatus in the opposite head communicates with the corresponding conductors in the opposite coupling-head, the guide-pins thus forming the intermediate conductors to convey the fluid or liquids contained in the conductors from one car to the other.

To provide for a tight joint in the individual conductors, I provide in each of the apertures in which the guide-pins engage suitable gaskets H, which form a tight fit around the different guide-pins when two parts of the coupler are joined, and to provide easy means for securing the gaskets and renew them from time to time as they may become worn out I form the coupling-head, which has these apertures of two parts secured together with the gaskets inclosed between in suitable recesses.

The central guide-pin, which projects beyond the other guide-pins, I preferably utilize for conveying the electrical conductors from car to car, suitable coupling-jacks I being provided at the opposing terminals to automatically unite the terminals and form a continuous metallic connection, each with its own conductor on the other car.

To provide for a free play in every direction necessary, the coupling-heads are made of smaller cross-section than the cross-section of the conduits, and the flexible hose-connection C may be either relied on to support the

coupling-head within the conduit in a fixed normal position, as shown on the left of Fig. 3, or the construction shown on the right of Fig. 3 may be used, in which the coupling-head is supported and guided by means of a rigid shank E^3, which passes through a fixed apertured diaphragm J, and has buffer and draft springs K K′ in the manner of securing car-couplings. Either manner of securing will allow the coupling-heads the necessary play when coupled and keep the two parts in coupled condition when forcibly drawn apart by the separation of the cars in uncoupling.

Each of the conductors is provided with a suitable shut-off valve L close to each coupling-head, and the valves controlling such conductors are all connected for joint operation by the sliding yoke M, which connects the valve-plugs and has an arm N projecting outside into the path of the arm F of the opposite coupling-head, so that the valves are automatically opened in coupling and again closed in uncoupling by a reaction-spring O on the yoke.

What I claim as my invention is—

1. In a coupler, two heads, one head formed with a central hollow guide-pin and a series of reduced guide-pins near its outer edges and the opposite head having apertures with conical mouths registering with the pins, packing in the outer series of apertures, guide-arms on the upper faces of the respective heads and overlapping the adjacent heads, pipes leading into the heads, and valves in the pipes actuated by the arms, substantially as described.

2. In a coupler, the combination, with two heads, of a large central guide-pin on one head, a series of short hollow pins surrounding the central pin, apertures in the opposite head having conical mouths, arms extending from the upper faces of the respective heads over the opposite head, pipes leading into the heads, valves in the pipes, and trips actuated by the arms to open the valves, substantially as described.

3. In a coupling device for the purpose described, two coupling-heads supported at the ends of the adjacent cars in corresponding relation to each other, one being provided with a central guide-pin carrying the electrical conductors and a series of hollow guide-pins communicating with the hollow conductors for conveying fluids, and the other coupling-head having corresponding apertures communicating with similar conductors on the adjacent car and adapted to receive such guide-pins on the opposite coupler, the exterior guide-arms on each coupling-head, and a system of connecting-valves on each coupler-head operated by these guide-arms in the act of coupling or uncoupling, substantially as described.

4. The herein-described improvement in the equipment of railway-trains, consisting in securing the stationary portions of the conductors in longitudinal conduits formed in the body of the car and extending from end to end, coupling-heads supported in yielding bearing in the adjacent ends of said conduits, flexible hose connections between such coupling-heads and the terminals of the stationary portions of the conductors, a series of guide-pins on one of the coupling-heads communicating with the terminals of the conductors, a corresponding series of apertures in the other coupling-head corresponding to the terminals of its respective conductors, a central guiding-pin on one of the coupling-heads, and a corresponding aperture in the other coupling-head and provided with a conical mouth, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN KREHBIEL.

Witnesses:
M. B. O'DOGHERTY,
P. M. HULBERT.