(No Model.)

W. F. GRASSLER.

AUTOMATIC PIPE COUPLING FOR RAILWAY CARS.

No. 383,288. Patented May 22, 1888.

Fig. 1.

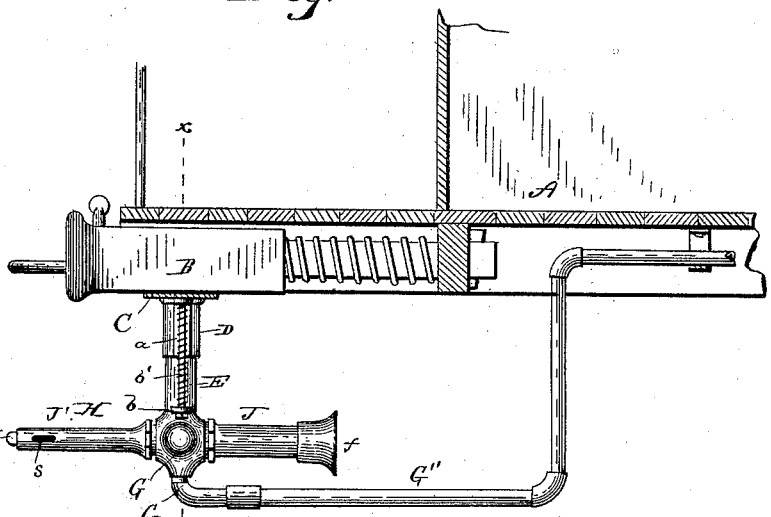


Fig. 2.

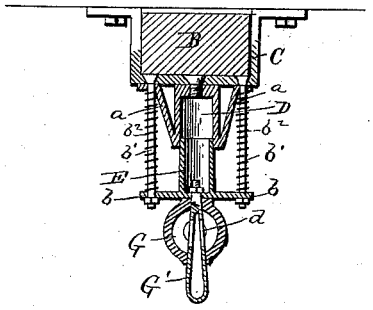


Fig. 3.

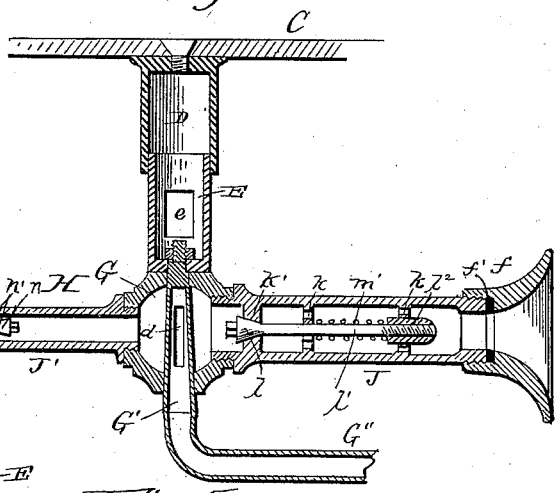
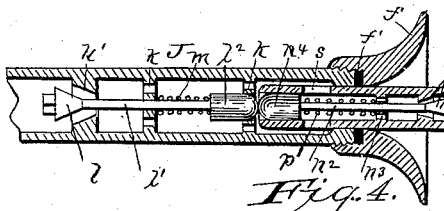


Fig. 4.



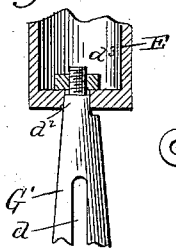
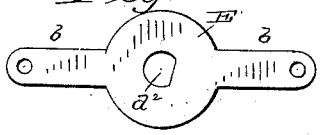


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM F. GRASSLER, OF WILLIAMSPORT, PENNSYLVANIA, ASSIGNOR OF THREE-FOURTHS TO WILLIAM G. ELLIOT, OF SAME PLACE.

AUTOMATIC PIPE-COUPLING FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 383,288, dated May 22, 1888.

Application filed December 15, 1887. Serial No. 258,010. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. GRASSLER, a citizen of the United States, residing at Williamsport, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Pipe-Couplings for Railway-Cars, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain novel improvements in automatic steam-couplers for use in heating railroad-cars, which improvements will be fully understood from the following description and claims, taken in connection with the annexed drawings, in which—

Figure 1 is a vertical longitudinal section in detail of part of one end of a railroad-car, showing in a side elevation one of my improved automatic steam-couplers arranged below a draw-bar and depending from the stirrup through which this bar plays. Fig. 2 is a vertical cross-section through Fig. 1, taken in the plane indicated by dotted line *x x* thereon. Fig. 3 is a vertical longitudinal section taken centrally through my improved device, illustrating the steam-couplers opened, as they appear when cars are coupled. Fig. 4 is a sectional detail showing the connection of the vertically-movable cylinder with the tapered upturned end of the steam-pipe, by which communication is established with a steam-generator and a series of heaters. Fig. 5 is a bottom view of the said vertically-movable cylinder, showing its radial arms and the aperture which receives the flattened upper end of the conical portion of the steam-pipe.

Referring to the annexed drawings by letters, A designates the bed of a railroad-carriage, which may be the tender, the coach, or other car of a train.

B designates a coupling for connecting cars, which coupling may be of any of the well-known varieties.

C designates the hanger or stirrup, which is rigidly secured to the car bed sills and adapted to support the front end of the coupling B and to allow the usual lateral play. Centrally secured to the said stirrup C is a vertical cylindrical guide, D, which is firmly held by lateral braces *a a*, and in this guide C is allowed to play vertically a cylinder, E, laterally, from the lower end of which extend rigid arms *b b*. (Shown clearly in Figs. 2 and 5.) Through the ends of these arms *b b* pass freely vertical rods *b' b'*, the beveled headed ends of which are countersunk into the stirrup C, and on their lower ends below the arms *b b* nuts are applied. On these rods *b' b'* are coiled springs b^2 b^2, which are compressed between the laterally-projecting ends of the braces *a a* of the stationary guide D and the arms *b b* of the vertically-movable cylinder E.

G designates the enlarged body or hollow globe of a reversible steam coupler, H, the upper flat face of which impinges against the bottom of the cylinder E. This globe receives vertically through it the tapered nozzle end G' of a steam-pipe, G'', which nozzle is closely fitted in said globe and is formed with apertures *d* for admitting steam into the globe. The upper end, *d'*, of the tapered nozzle G' is partly round and partly flat, thus adapting it to enter a hole, d^2, of a corresponding shape, made through the lower end of the vertically-movable cylinder E, as shown in Fig. 5, and on the screw-threaded end d^3 of said nozzle a nut is applied. By these means the nozzle G' is rigidly secured to the vertically-movable cylinder, and the globe G is allowed to oscillate freely, but is steam-tight about the nozzle, and by introducing a suitable wrench through an aperture, *e*, in cylinder E the nut therein can be conveniently turned and the nozzle drawn up to its seat in the walls of the globe, thus compensating for wear and allowing the joints to be kept steam-tight.

The steam-pipe G'' extends from the globe G at one end of a car to a similar globe at the opposite end of the car and should communicate at suitable points with radiators located in proper positions inside of the car.

If desired, the pipe G'' may be formed into coils or bends located beneath the car-seats, or other suitable system of warming may be adopted which forms no part of my present invention.

J J' designate two cylindrical branches, the horizontal axes of which coincide and are at right angles to the vertical axis of oscillation of the globe G, as clearly shown in Figs. 1 and 3 of the annexed drawings. The branch or female portion, J, is screwed steam-tight into the globe G, and provided on its outer end with a flaring or bell mouth, *f*, in the throat

of which is a suitable annular packing, f', for a purpose hereinafter explained.

Inside of the female branch, J, are three diaphragms, k k k', and a conical valve, l, which latter is seated in diaphragm k' and opens toward the globe G. The stem l' of the valve l is guided in apertures through the diaphragms kk, which latter are perforated for the free passage of steam through them, as shown clearly in Fig. 3. On the outer end of the valve-stem l' is an enlargement or buffer-head, l^2, between which and the inner perforated diaphragm, k, a spring, m, is coiled around the valve-stem. The object of this spring is to forcibly hold the valve l to its seat when cars are uncoupled. The tubular male branch, J', which is also screwed steam-tight into the globe G diametrically opposite the female branch, J, is constructed with a slightly beveled or tapered end and is provided internally with a cone-valve, n, adapted to open toward the globe G and to close against a seat, n'. The stem n^2 of valve n passes through and is guided by a diaphragm, n^3, which is perforated like diaphragms k k in the female branch, J, to allow steam to pass freely through it. On the outer end of the valve stem n^2 is an enlargement or buffer, n^4, which when unresisted will be caused to protrude more or less beyond the male branch, J', by means of a spring, p, coiled about the valve-stem n^2.

Just in rear of the enlargement or buffer n^4 on valve-stem n^2 apertures s s are made laterally through the male branch, J', as shown in Figs. 1 and 3, for allowing a free escape of steam from this branch when the valve n is open, as shown in Fig. 3.

All of the automatic steam-couplers H are constructed alike and connected by a steam-pipe, G'', as above described. On the bed of a locomotive-tender will be applied a similar steam-coupler connected by a steam-pipe with a suitable steam-generator conveniently located.

It will be observed from the foregoing description that my improved automatic steam-pipe coupler is reversible—that is to say, it is so applied beneath a car-bed that either the male branch, J', or the female branch, J, can be readily directed outward. Hence, a male branch on one car and a female branch on another car can be adjusted in a moment, so that a steam tight coupling of the pipes on the cars can be automatically effected when the cars are brought together. It will also be observed that when one car is uncoupled from another that the valves in the male and female branches J J' will be closed steam-tight. Also, that when cars are coupled the valves in the branches which are coupled will be opened and the valves in the branches which are uncoupled will be closed, as shown in Fig. 3.

It will furthermore be observed that the couplers H are free to oscillate about the perforated upturned ends of the steam-pipes G', and also to receive free vertical motion, thereby freely accommodating their movements to the movements of cars while in motion and in turning curves. Finally, it will be observed that the joints between the globes of the couplers and the steam-pipes can always be maintained steam-tight by adjusting the nuts which secure the upturned ends of the steam-pipes to the spring-actuated cylinders E, which are vertically movable in the fixed guides D, as described.

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

1. In a pipe-coupling for railway-cars, the combination of the main conducting-pipe terminating in an upwardly-directed tapering extension, G', provided with openings in its opposite sides, means for supporting the main pipe, the globe G, fitted closely upon the extension G' and inclosing its recessed portion, the globe being adapted to rotate freely upon the vertical extension and provided with screw-threaded openings in its opposite sides, and the oppositely-projecting valved male and female branches screwed into the openings in the opposite side of the globe, whereby either the male or female branch may be directed toward the adjacent car, substantially as herein set forth.

2. In a pipe-coupling for steam pipes, the combination of the main steam-pipe provided with a perforated tapering vertical portion, G', a vertical yielding suspension device to which the upper end of the portion G' is adjustably secured, a globe, G, vertically perforated for the passage of the vertical portion G', this portion G' forming a vertical pivot for the globe to turn upon, and the male and female branches attached to opposite sides of the globe G and communicating with the interior thereof.

3. In a coupling device for steam-pipes, the combination of the main steam-conducting pipe provided with a vertical perforated extension, as at G', a vertically-yielding suspension device for suspending the main pipe to the car, and the reversible horizontally-arranged coupling H, comprising, essentially, the valved male and female branches, the said reversible coupling H being pivotally supported upon the extension G' of the main pipe and communicating therewith, substantially as described.

4. The combination, with a rigid tubular guide depending from the stirrup of a car-coupling, a cylinder working vertically in said guide and suspended by springs, a male and female reversible steam-pipe coupling having valves in its branches, and a conical perforated steam-pipe nozzle rigidly but adjustably secured to said vertically-movable cylinder, substantially as described.

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

WILLIAM F. GRASSLER.

Witnesses:

H. H. BLAIR,

R. C. CAMPBELL.