F. KING.

Pipe-Coupling for Cars.

No. 210,459. Patented Dec. 3, 1878.

Fig. 1.

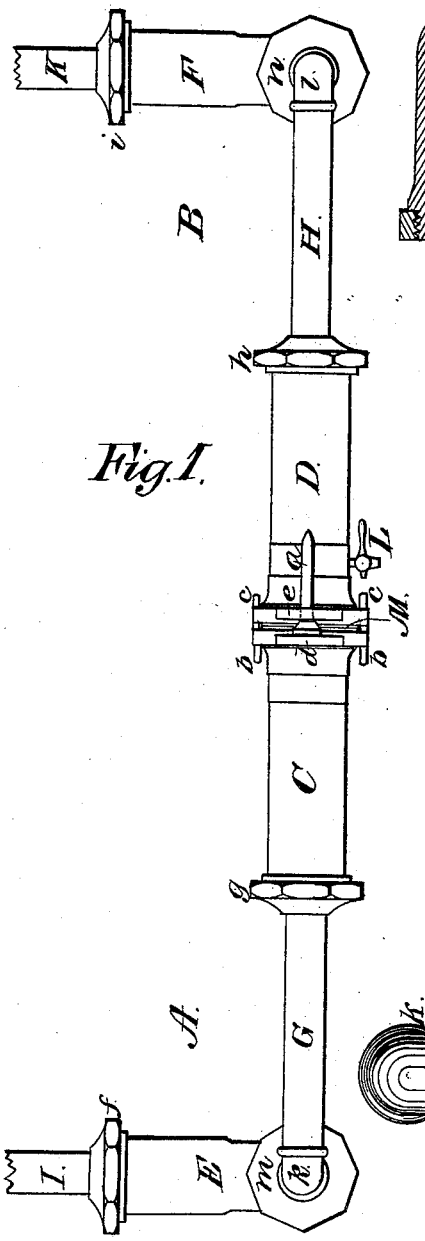


Fig. 2.

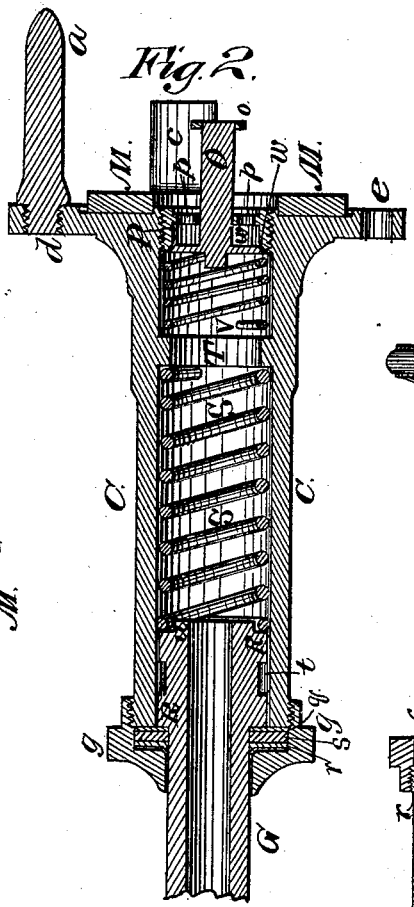


Fig. 3.

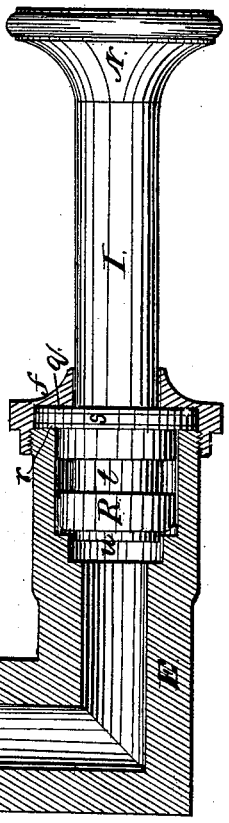
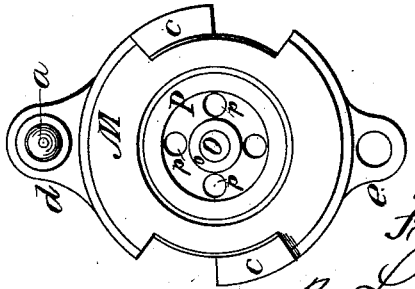


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANCIS KING, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN L. SINN, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN PIPE-COUPLINGS FOR CARS.

Specification forming part of Letters Patent No. **210,459**, dated December 3, 1878; application filed April 25, 1878.

To all whom it may concern:

Be it known that I, FRANCIS KING, of Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Pipe-Couplings for Railroad-Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Similar letters indicate similar parts.

Figure 1 is a side elevation of my improved pipe-coupling. Fig. 2 is a vertical section of the cylinder or central portion. Fig. 3 is a view in section of the elbow, showing its interior construction with its joint-connections. Fig. 4 is an end view of the central cylinder, showing its point of contact with the corresponding section.

This invention relates to certain improvements in pipe-couplings, and is particularly adapted for use on railroad-cars for conveying hot water, air, or steam from one car to another for heating purposes; or it may be used in connection with the pipes of an air-brake.

It consists of two or more extensible sections of metallic pipe, with loosely-fitting and vibrating joint-connections, so arranged and combined as to form a complete universal joint, which will conform to any position or motion of the cars, as hereinafter more fully described.

In the annexed drawings, A B represent two sections, of similar construction, which unite to form my coupling. I K are the end or upright pipes, intended to pass up through the floors of two opposite cars and connect with heating-pipes in the cars. E F are elbows, which serve to unite the pipes I G and K H, respectively, by flexible joints formed in their ends. C D are cylinders or larger pipes, into which the pipes G H project, the latter being fitted with steam-tight packing, and designed to slide into the former, and thereby shorten the coupling, if necessary, when the cars come together. *a b c* are guides, designed to direct the course and cause the two parts A and B to automatically assume their proper position of contact when brought together. M is a suitable packing interposed at the point of contact, to prevent the escape of steam and render the joint tight. L represents a cock, which may be placed at any convenient point of the coupling, for the purpose of discharging any water that may accumulate by the condensation of steam.

S, Fig. 2, is a spiral spring within the cylinder, designed to press against the end of the pipe G, and thereby cause the coupling to remain extended. T is an annular shoulder or projection, intended to hold the spring in place. P is a check-valve in the end of the cylinder, which is automatically closed when the coupling is detached by means of the spring V, interposed between it and the shoulder T. It is provided with a projecting stem, O, which engages with a corresponding stem of the valve in the opposite cylinder when the cylinders are coupled, and is forced back, thereby opening the passage for the steam through the pipes.

The joints connecting the pipes I K and G H with the elbows E F are all similar in construction, and will be described more in detail.

On the end of the pipe is tightly fitted a ring, R, as shown in Fig. 3, having an annular groove, *t*, designed to be filled with packing. This end is inserted in the opening of the elbow, which is enlarged to form a socket, and confined by a screw-cap, *f m*, surrounding the pipe and fitting over the end of the elbow. Between this screw-cap and the end of the elbow is interposed a washer, *s*, provided with suitable packing *q r*. Packing may also be inserted in the space *u* around the inner end of the pipe, if deemed necessary.

It will thus be seen that by this construction a perfectly steam-tight flexible joint is formed without bearings, the metal ring being kept from contact with the interior by the packing surrounding it, and all wear thus obviated. Slight wear in the packing may be compensated for by tightening the screw-caps *f m* without renewing the packing. The joints connecting pipes G C D H are of similar construction, except that the opening or socket in the cylinder is elongated to admit of the extensible or sliding motion of the pipes.

When it is desired to operate my coupling the respective sections A B are attached to the

steam or heating pipes in separate cars by means of the upright pipes I K. The cars are then brought together, and the coupling automatically adjusts itself by means of the guides *a b c*.

It will be observed that the joints at the bottom of pipes I K admit of a horizontal or lateral motion by the coupling, thereby adapting it to the arc described by the train in rounding a curve.

In order to provide a vertical movement and adapt the coupling to the upward or downward motion of the cars caused by obstructions or inequalities of the track, the pipes G H are bent at right angles horizontally at *l k* with the lower arm of the elbows E F, and the joints connecting pipes G C and D H adapt the coupling to the rolling or rocking motion of the train.

It is advisable to so attach the coupling that when the cars are coupled at their ordinary distance apart the springs S will be always more or less compressed, thereby affording sufficient resistance to maintain a tight joint at the center.

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

1. An automatic metallic pipe-coupling, consisting of the sections A B, composed of the pipes I K, elbows E F, pipes H G, cylinders C D, and guides *b c a*, all connected and combined substantially as described, and for the purpose specified.

2. The anti-friction joint composed of the grooved ring R and washer *s*, both provided with suitable packing, in combination with the socketed pipe E C, having the screw-cap *f m g*, substantially as described, and for the purpose specified.

3. The extensible joint consisting of the pipe G, having the grooved ring R and the washer *s*, in combination with the enlarged pipe C, having the elongated socket, and the interior spiral spring S, substantially as described, and for the purpose specified.

4. The elbows E F, provided with a socket in each end, in combination with the pipes I K and elbowed pipes G H, when the same are provided with a grooved ring, R, and washer *s*, and secured in said sockets by a screw-cap, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

FRANCIS KING.

Witnesses:
UPTON SCOTT,
N. ROBINSON.