

(No Model.)

J. EMERSON.
STEAM HEATING PIPE CONNECTION.

No. 534,430.

Patented Feb. 19, 1895.

Fig. 1.

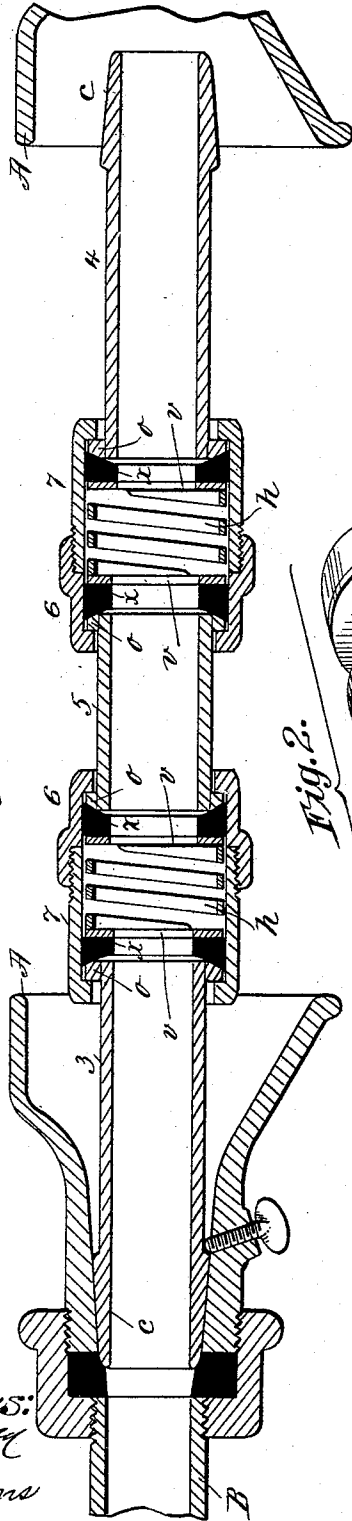


Fig. 2.

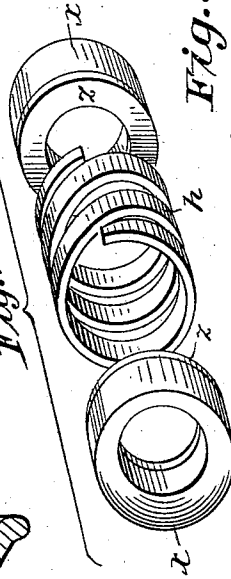
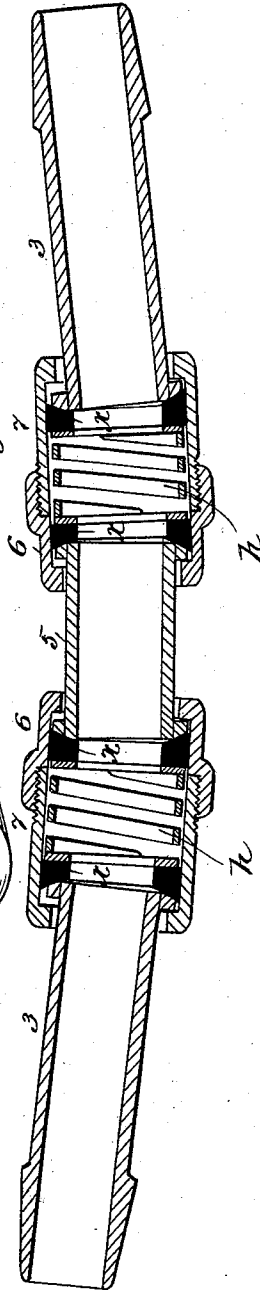


Fig. 3.



Witnesses:
J. D. Garfield
H. A. Clemons

Inventor:
James Emerson,
per *Chapman & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

JAMES EMERSON, OF WILLIMANSETT, MASSACHUSETTS.

STEAM-HEATING-PIPE CONNECTION.

SPECIFICATION forming part of Letters Patent No. 534,430, dated February 19, 1895.

Application filed December 20, 1893. Serial No. 494,167. (No model.)

To all whom it may concern:

Be it known that I, JAMES EMERSON, a citizen of the United States of America, residing at Willimansett, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Steam-Heating-Pipe Connections for Cars, of which the following is a specification.

This invention relates to steam or air-pipe connections to be used between the cars of railway trains, the object being to provide an improved connection of this class, and the invention consists in the peculiar construction and arrangement of the several parts of the connection, all as hereinafter fully described and more particularly pointed out in the claims.

In the drawings forming part of the specification, Figure 1 is a longitudinal section of a steam or air pipe connection constructed according to my invention, this figure showing a portion, in section, of the devices commonly used on the opposite extremities of the steam conducting pipes of the adjoining ends of two cars, and a short piece of a steam pipe connected with one thereof. Fig. 2 is a perspective view of the packing rings and springs which occupy a position between the adjoining ends of the sections. Fig. 3 is a similar view to Fig. 1 showing the pipe connection in a curved position.

A, A, indicate funnel shaped receivers, one being fixed on each end, in practice, of the main steam conducting pipe, B, under a car, said receivers serving to guide the tapered extremities of the connections to a seat at, or near, the end of the said conducting pipe, B, when two cars approach each other. The said pipe connection, D, consists, preferably, of three main, metallic, tubular sections, and two couplings for uniting said main sections, and it has fitted therein two pairs of packing rings, and a spiral spring arranged between each of said pairs of rings.

The before mentioned elements constitute all the parts of the coupling connection, and the object of the assemblage of said structural elements thereof is, to produce substantially a purely metallic, flexible pipe connection of the class named, which is capable of assuming the requisite curved positions in a horizontal plane when connected between

cars, caused by the passage of said cars around short, or other curves. Said connection, owing to its structural peculiarities is also maintained, normally, in a straight or horizontal position between said cars, as shown in Fig. 1, or, in other words, it is not centrally deflected between its extremities by its own weight, or by the weight of any water that may flow through it. These peculiarities of action in said connection tend to guard against the formation therein of a "water-trap" to obstruct the free passage of steam from the main pipe of one car to that of another, under either low or high pressure. Furthermore, said connection is compressible in the direction of its length, and it becomes again elongated, automatically, so that it accommodates itself to the movement of the cars toward and from each other.

The details of the connection construction above referred to, whereby said advantages are attained, are as follows: The said three, main, tubular sections are indicated by 3, 4, and 5; 3 and 4, being the end sections, and 5, the central one. The said end sections have their extremities, *c, c*, tapered to enter a seat suitably formed at the inner end of each of said receivers, A, A. On the opposite end of each of said sections, 3 and 4, is fixed a metallic collar, *o, o*, the outer face of each of said collars being beveled, or rounded, outwardly from the axial line of said sections to adapt them to fit one side of packing rings, herein after described. The said central section, 5, of the connection, has also similar collars, *o, o*, on each end thereof and having also the same face contour to fit other packing rings against which they are made to bear, as below set forth. The said couplings for uniting said main sections, 3, 4, and 5, consist each of two short tubular parts, 6 and 7, the parts, 7, having a loose engagement with the main sections, 3 and 4, by means of the collars, *o*, thereon, and the parts, 6, having a loose engagement with the central section, 5, by means of the collars, *o*, on that part, and said sections, 6 and 7, of each coupling, having a screw engagement with each other, as shown.

It will be observed that the collars *o, o*, on the pipe sections are pressed by the springs *h* against the inturned flanges of the coupling elements or sleeves 6 and 7. These flanges

and collars are illustrated as having bearing faces at right angles to the bore of the tubes. The pressure of the springs always brings the parts into a straight line, except when a side pressure overcomes the tension of a spring or springs, when the coupling may yield, but the tendency of the springs is to hold all the joints in the coupling in a straight line.

In order to avoid corrosion of parts, the said three main section parts of the connection and the couplings, are made preferably of brass. In constructing and uniting each main section, 3 and 4, with its proper coupling part, 7, the latter is placed on its section, 3 or 4, in such position that the end of the latter, on which the collar, *o*, is fixed, is caused to project beyond the end of the section, 7, and while in this position the ring, *o*, of like metal, is placed on the end of the section, 4 or 3, and there brazed, or otherwise securely fixed.

It will be noted that the aperture through the end of the coupling part, 7, is of larger diameter than that of the main section, 3 or 4, which passes through it. This difference of diameter, in respect to the main sections and the coupling section thereon, permits said main sections to swing freely in either direction so that the coupling may assume more or less the position illustrated in Fig. 3.

The collars, *o*, *o* on the central section, 5, are there secured in the same manner as above described, after putting the coupling section, 6, thereon, and the latter named section is fitted loosely into the coupling sections thereon for the same purpose, as above stated. In each of the said couplings of this connection are placed two packing rings, *x*, of rather hard, vulcanized rubber, or other similar material, one side of each of said rings being suitably concaved to fit against the said collars, *o*, on the ends of the tubular sections, 3, 4, and 5, in the positions shown in Figs. 1 and 3. The opposite side of each of said rings is protected by a metallic washer, *v*, against which a spring, below mentioned, has its abutment. The said vulcanized rings and their washers, having been placed in the coupling part of the connection, a (preferably) flat, metallic spring *h*, is placed in each coupling in the position shown, and in a distended condition, so that in order to unite and screw together the coupling elements, 6 and 7, each of the latter has to be forced one toward the other, in order to screw them together, as shown; and by so doing, the said spring, *h*, is brought under a strong tension, each end bearing with considerable force against the ring and washer at each end of the spring, the result of said spring force being to maintain the herein described pipe connection, normally, in the straight position in which it is shown in Fig. 1; and, consequently, when said connection is attached between two railway cars and

is caused (when said cars pass around a curve) to take the bent position, more or less shown in Fig. 3, it straightens itself out, so to speak, by the action of said springs therein, when the cars shall come into line on a straight track. The same spring force tends to cause the connection to be maintained in a straight position when one end, only, thereof is connected with the steam-pipe of one car, so that its opposite end will be in proper line to enter the receiving part of the steam pipe devices of the opposite car when that shall approach the central connection. The said packing rings, *x*, the washers, *v*, on one end thereof and the intermediate spring, *h*, are all illustrated in perspective view apart from the connection and in their operative relations as to position in Fig. 2.

It is obvious that a pipe connection, similar to that above described but capable of less deflection from a straight line, may be made by uniting the end portions, 3 and 4, by a single intermediate coupling having therein like washers and rings to those described. Each of said packing rings, being of a more or less resilient material is forced so tightly against the face of each of the collars on the main sections of the connection, and more or less expanded against the inner wall of the coupling sections, 6 and 7, by the action of the springs, *h*, that a tight joint is formed preventing the escape either of steam or air under pressure, at the several points of connection between the said main parts, 3, 4, and 5, and said coupling elements.

What I claim as my invention is—

1. A coupling for steam pipes and the like, consisting essentially of a rigid metallic sleeve having inturned flanges at its ends, a tube within said sleeve having an outwardly turned flange and a spring bearing on the tube to press its flange against the flange of the sleeve, the bearing faces of the flanges being practically at right angles to the bore of the tube, whereby the spring holds the parts in straight line, or causes them to assume such position when the spring is in control, substantially as described.

2. In a pipe coupling, the rigid sleeve having inturned flange, the connecting link within said sleeve having out turned flange in register with the flange of the sleeve when the axes of the tube and sleeve are in line, the inner face of said flange having its bearing surface on about straight lines projected in radial direction, and a spring operating against said face to press the flanges in contact, substantially as described.

JAMES EMERSON.

Witnesses:

H. A. CHAPIN,
K. I. CLEMONS.