

UNITED STATES PATENT OFFICE.

FRANK HUNTER, OF TRINIDAD, COLORADO.

AUTOMATIC AIR-PIPE COUPLING.

No. 896,546.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK HUNTER, a citizen of the United States, residing at Trinidad, in the county of Las Animas and State of Colorado, have invented new and useful Improvements in Automatic Air-Pipe Couplings, of which the following is a specification:

This invention relates to couplings of air pipes used in connection with air brake systems and with pneumatic systems generally upon railroad cars; and it has for its object to provide a simple and efficient automatic coupling whereby, when the cars come together, the train pipes shall be united to form a continuous conduit.

Further objects of the invention are to simplify and improve the construction and operation of this class of devices.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention; it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the invention may be resorted to when desired.

In the drawing, Figure 1 is a side elevation of the improved pipe coupling showing the same applied to railroad cars which latter are shown partly in section. Fig. 2 is a longitudinal sectional view through one member of the coupling. Fig. 3 is a horizontal sectional view taken on the plane indicated by the line 3—3 in Fig. 2.

Corresponding parts in the several figures are denoted by like characters of reference.

The improved air pipe coupling, as is usually the case in devices of this class, is composed of two mating units or members A—A which are applied to the meeting ends of railroad cars, and which are throughout of identical construction, so that the description of one applies to both.

Each member or unit of the improved coupling comprises a shank 1 and a head 2, said shank being supported for longitudinal movement in suitable supporting means such as a bracket 3 which may be connected in any suitable manner with the car or with the draw-head which constitutes a part of the car coupling proper; it being distinctly understood that no limitation is made with regard to the manner of arranging or supporting the improved air pipe coupling, although it is preferred that the said air pipe coupling be arranged, and supported in such a manner that its units or members will come into engagement with each other previous to the engagement of the co-acting parts of the device which constitutes the car coupling proper in order that it may be assured that the air pipe coupling shall be in operation at all times when the meeting ends of two cars are connected with each other by the car coupling proper.

The shank 1 is formed with a longitudinal passage 3 having a constricted neck 4 in advance of which there is formed a chamber 5 for the accommodation of a ball 6 which latter is formed upon the coupling head 2, which latter is thereby connected with a shank in such a manner as to be capable of universal movement to a sufficient extent to insure successful operation of the device under all circumstances that are liable to arise. The head 2, which may be of any desired shape, but which is preferably of the somewhat flattened semi-oval or semi-elliptical shape indicated in the drawings, is provided with a longitudinal aperture or air passage 7, bifurcated at its front end to form a U-shaped passage 8, the limbs of which terminate respectively in a nipple 9 that projects outwardly from the head proper and in a recess or cavity 10 which is formed in the head and which is provided with a lining 11 of rubber or other suitable flexible material, said lining being retained by means of a washer 12; it being readily understood that when two railroad cars equipped with the improved air pipe coupling come together, the nipple 9 of each coupling unit will enter into engagement with the lined recess 10 of the mating unit, thus establishing a

communication between the air passages 7. Each coupling unit is provided with a shield or guide member 13 at one side thereof, adapted to guide it into engagement with the mating unit, as will be readily understood.

The chamber or cavity 5 which constitutes the socket for the ball 6 communicates with another recess or cavity 14 which is formed intermediate the said socket and the constricted portion 4 of the shank for the purpose of affording free play to the terminal flange 15 which is formed upon the rear or inner end of the ball, and to a flexible pipe section 16 which connects said flange with a tube or pipe 17 that extends longitudinally through the shank 1, and upon which is coiled a spring 18, the ends of which abut respectively upon the constricted portion or neck 4 and upon the supporting bracket 3 in which the shank is slidably supported, thus forcing said shank and its related parts automatically in a forward or outward direction.

Suitably constructed springs 19 are used to connect the shank 1 with the head 2, and to support the latter in proper position with relation to the shank for engagement with the head of a mating coupling unit.

The train pipe 20 is provided with a valve, which may consist of an ordinary angle cock 21, the stem of which is provided with a crank or lever 22 which latter is connected with the coupling shank 1 by means of a link 23; the arrangement being such that when the pipe coupling is not in operation, and the shank 4 is pushed in a forward direction under the tension of the spring 18, the cock or valve will be closed, and the flow of air through the train pipe obstructed thereby. When the parts come together, and the units or members of the pipe coupling are in engagement with each other, said units will be pushed rearwardly against the tension of the springs 18, the cock or valve is moved to the position indicated in dotted lines in Fig. 3, which, it will be understood, is the open position.

It will be understood that no limitation is made with regard to the construction of the valve and that, if desired, a slide valve, or a cut-off valve of any desired construction may be substituted for the angle cock.

From the foregoing description taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood. When two cars equipped with the improved air pipe coupling come together, the units or members of said pipe coupling are maintained in operative relation by the coupling means used for connecting the cars, and the train pipes will be automatically opened to the passage of air therethrough; and this is effected auto-

matically, and without necessity of going between the cars; the device therefore is not only time saving, but it constitutes an effective safety device whereby the necessary coupling is effected without danger to the members of the train crew.

Having thus fully described the invention, what is claimed as new is:—

1. In an air pipe coupling for railroad cars, a coupling unit comprising a shank supported for longitudinally sliding movement, a pipe extending longitudinally through the shank, a head having ball and socket connection with the shank and provided with a longitudinal passage having a U-shaped portion, the limbs of which terminate respectively in a projecting nipple and in a recess or socket, a flexible pipe connecting the coupling head with the longitudinal pipe, a spring coiled upon the latter and forcing the shank and its related parts in a forward direction, a train pipe having a cut-off provided with an actuating lever, and a link connecting said lever with the shank.

2. In an air pipe coupling for railroad cars, a shank having a longitudinal passage provided with a constricted portion and provided adjacent to its front end with a ball socket and with a recess or cavity intermediate the constricted portion and the ball socket and communicating with the latter, a coupling head having a ball engaging the socket, a longitudinal air passage and a flange formed upon the ball and extending into the cavity adjacent to the ball socket, an air pipe extending through the longitudinal passage of the shank, and a flexible pipe section connecting said air pipe with a flange upon the ball of the coupling head.

3. In an air pipe coupling for railroad cars, a coupling unit including a shank having an air pipe extending longitudinally therethrough and provided with a constricted portion supporting said air pipe, with a ball socket adjacent to its front end and with a recess or cavity intermediate the ball socket and the constricted portion, means for supporting the shank for sliding movement, a spring coiled upon the air pipe and abutting upon the supporting means and upon the constricted portion of the shank, a coupling head having a ball engaging the socket and provided with a flange extending into the recess or cavity adjacent to the socket, and a flexible pipe section connecting the flange with the air pipe.

4. In an air pipe coupling for railroad cars, a coupling unit including a longitudinally movable spring actuated shank, an air pipe extending longitudinally therethrough, a head having ball and socket connection with the shank, a flexible pipe connecting the head with the air pipe, and springs connecting the

head with the shank to support the head in
engaging position; said head being provided
with a longitudinal air passage having a U-
shaped passage, the limbs of which terminate
5 respectively in a projecting nipple and in a
mating recess or cavity, an elastic lining for
said cavity, a washer to secure the lining in
position, and a shield or guide member con-

nected with and projecting from one side of
the head.

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

FRANK HUNTER.

Witnesses:

GEORGE ESTEP,

DAVID M. RALSTON.