

993,182.

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Witnesses
Geo. L. Thom
J. V. Sherwood

By Franklin N. Hoyt
Attorney

UNITED STATES PATENT OFFICE.

JOEL McDONNELL, OF POTTSVILLE, PENNSYLVANIA.

AUTOMATIC AIR-BRAKE COUPLING.

993,182.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOEL McDONNELL, a citizen of the United States, residing at Pottsville, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Air-Brake Couplers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in automatic couplings for air brakes upon railway trains and comprises means whereby the coupling heads may be held together by air pressure and also in the provision of means whereby the heads may be guided together in the event of the coupling being effected either upon curves or when the cars are in alinement with each other.

The invention consists further in the provision of an automatic coupling device for air brake systems having oscillating cylinders centered by means of springs and containing each a piston formed upon the stem of the coupling head.

Another feature of the invention resides in the provision of auxiliary passageways communicating through openings in the head for the purpose of forming conduits for steam for operating whistles, heating, etc.

The invention comprises various other details of construction and combinations and arrangements of parts which will be hereinafter fully described and then specifically defined in the appended claims.

I illustrate my invention in the accompanying drawings, in which:—

Figure 1 is a bottom plan view of one coupler head and an adjacent one in section. Fig. 2 is a side elevation of one coupler head and showing an adjacent one connected thereto in longitudinal section. Fig. 3 is a detail perspective view of the coupling head, and Fig. 4 is a perspective view of the under side of one of the oscillating cylinders.

Reference now being had to the details of the drawings by letter, A designates a base plate which is adapted to be held by bolts B or other suitable means to the bottom of the crate. Said plate is provided with an inte-

gral semicylindrically formed rib D to the ends of which is fastened a cross plate E which is apertured at E' for the reception of the trunnions F which project in opposite directions from the oscillating cylinder F', an enlarged detail view of one of which is shown in Fig. 4 of the drawings. Said cylinder is provided with a central passageway G and a piston H suitably packed is mounted to reciprocate therein. A spring H' bears between the inner end of the cylinder and one end of the piston and a second spring I is interposed between the opposite ends of the piston and the threaded cap J which fits within the end of the cylinder. A pipe O has a swiveled connection O' with the interior of the cylinder, as shown clearly in Fig. 2 of the drawings, and forms a part of the main pipe line, adapted to extend the length of the train and to the locomotive, not shown. Said piston has a stem H² which is made preferably square in cross section in order to prevent the same from rotating and moves through a similar shaped opening in the cap J. Each piston stem has a head K with a lateral projection K' upon one side and a guiding lug K² upon its opposite side, said lug K' having an inclined recessed portion K³, shown clearly in Fig. 3 of the drawings, adapted to receive a lug K² upon an adjacent coupler head and which lug preferably has an inclined edge K⁴ which is rounded in order to conform to the concaved and inclined recessed portion formed in the lug K'. Each head is provided with a plurality of ducts, designated respectively by letters L, M and N, as shown clearly in Fig. 3 of the drawings, the central duct M communicating through the stem and piston with the interior of the cylinder, while the passageway N has an opening laterally through the head and communicates with the pipe P which telescopes within a passageway P' formed in the casting shown in Fig. 4 of the drawings and is adapted to communicate with a separate passageway not shown whereby steam or any other fluid may be conducted through the separate passageway thus formed for heating cars or for operating whistles. A second pipe, designated by letter Q, communicates with a laterally extending portion of the passageway L and telescopes within a passageway Q' which may also connect with a passageway for any purpose, such as for telephones, wires, etc.

In order to return the cylinder to its normal central position, springs S are afforded, each of which is fastened opposite the other and adjacent to the pivotal end of the cylinder and each spring bearing against a pin T. Projecting from the plate A are the arms T' and a cross-piece T² is bolted or otherwise fastened to said arms and adapted for the purpose of supporting and guiding the cylinder as it swings laterally.

The operation of my invention will be readily understood and is as follows:— When two cars, each equipped with a coupling made in accordance with my invention, come together upon a curve or in alinement upon a straight stretch, the tapering lugs coming in contact with the inclined and concaved surface upon the coupler head will cause the heads to come into operative connection so that the ducts leading through the ends of the heads will come into registration with one another, suitable gaskets being provided to effect air tight connections. When the connections are made and the pressure of air is turned on the train pipe with my improved coupling attached thereto, the pressure of air will have a tendency to hold the heads in contact with each other to establish operative connection between all the pipes of the train.

By the provision of the oscillating cylinders, the heads are allowed lateral swinging movements incident to cars coming about curves, the springs connected to the cylinders serving to normally center the same. By the telescoping pipe connections, provision is also made for allowing the connections to be maintained while the cars are going about curves and, owing to the reinforcing ribs projecting from the base plates, any operative pressure coming upon the pivotal ends of the cylinders will be relieved by said projections serving as abutments to receive the impact of the pressure upon the cylinders, it being noted upon reference to Fig. 1 of the drawings that a slight play is allowed intermediate the trunnions upon the cylin-

ders and the bearing apertures in which the same are mounted.

What I claim to be new is:—

1. An automatic coupler for air brake pipes comprising oscillating cylinders having train pipe connections, springs adapted to center said cylinders, a piston movable within said cylinder, a stem connected to each piston, a coupler head fixed to each stem and provided with a duct leading there-through and through the stem and piston and communicating with the cylinder, means for throwing the coupler heads into operative connection as they come in contact with each other, and abutment means against which the pivotal end of the cylinder is adapted to bear.

2. An automatic coupler for air brake pipes comprising a base plate having an abutment projection thereon, a cylinder with trunnions projecting therefrom and journaled upon the base plate, means for centering the cylinder, a coupler head, a stem therefor, a piston upon said stem movable within the cylinder, said stem and piston having a duct leading therethrough and communicating with the cylinder, a lateral projection upon each head provided with a concaved recess having a tapering wall adapted to receive a guide projection upon a coupler head.

3. An automatic coupler for air brake pipes comprising an oscillating cylinder, a coupler head with a stem and a piston thereon movable within the cylinder, a passageway leading through the head, stem and piston and communicating with the cylinder, pipes communicating with passageways leading through the head and adapted to telescope within passageways within the cylinder.

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

JOEL McDONNELL.

Witnesses:

A. L. HOUGH,
FRANKLIN H. HOUGH.