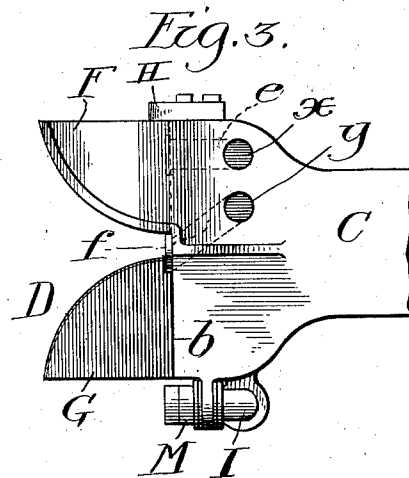
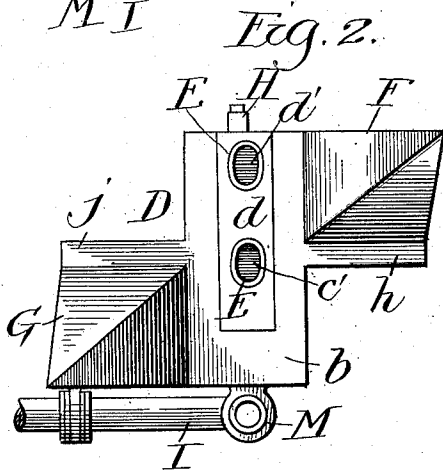
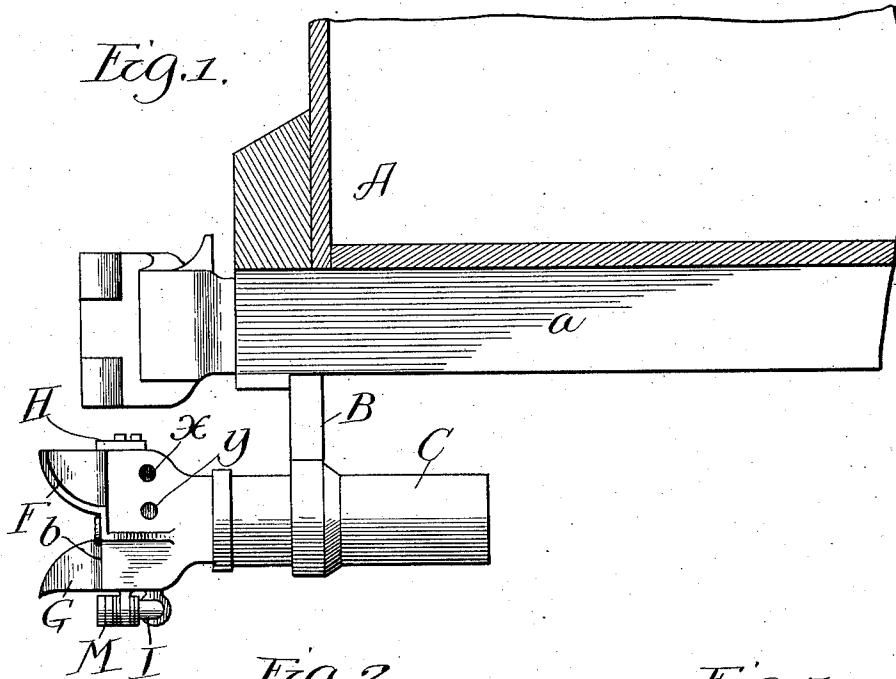


F. H. RUTHERFORD.
AUTOMATIC TRAIN PIPE COUPLING.
APPLICATION FILED FEB. 25, 1907.

1,025,540.

Patented May 7, 1912.

2 SHEETS—SHEET 1.



Witnesses
Wm. Merrill
E. Lundy.

Inventor
Frank H. Rutherford.
by *Frank H. Thomson*
Att'y

F. H. RUTHERFORD.
 AUTOMATIC TRAIN PIPE COUPLING.
 APPLICATION FILED FEB. 25, 1907.

1,025,540.

Patented May 7, 1912.
 2 SHEETS—SHEET 2.

Fig. 4.

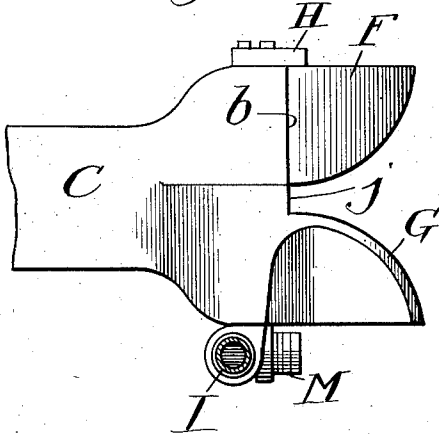


Fig. 5.

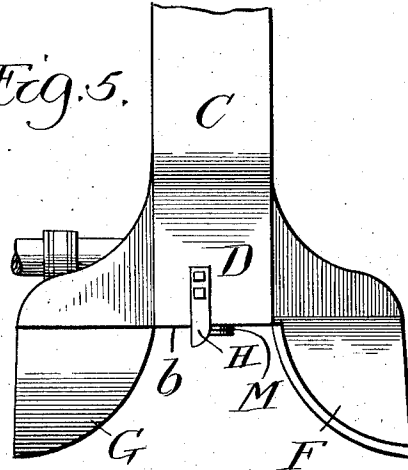


Fig. 6.

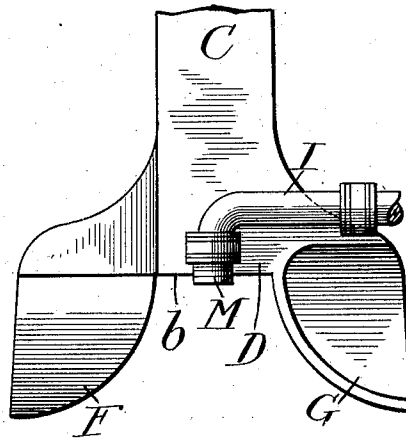


Fig. 7.

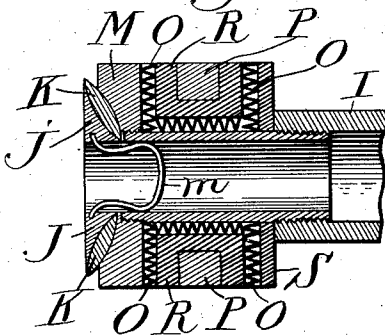
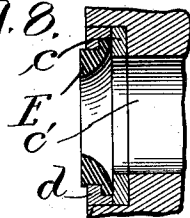


Fig. 8.



Witnesses:
 Chas. Merrill
 E. Lundy.

Inventor
 Frank H. Rutherford
 by Frank D. Thompson
 Atty

UNITED STATES PATENT OFFICE.

FRANK H. RUTHERFORD, OF CHICAGO, ILLINOIS.

AUTOMATIC TRAIN-PIPE COUPLING.

1,025,540.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed February 25, 1907. Serial No. 359,178.

To all whom it may concern:

Be it known that I, FRANK H. RUTHERFORD, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatic Train-Pipe Couplers, of which the following is a clear, full, and exact description.

My invention relates to automatic couplers for the train pipe systems of railway trains, and its principal object is to insure the proper engagement of the flat abutting engaging faces of the coupler-head; to keep said engaging parts free from ice and snow, and to prevent the packing surrounding the orifices or mouths of the air-passages and steam-pipe or conduit from melting. This I accomplish by a comparatively simple construction of the head of the coupler, substantially as hereinafter fully described, and as particularly pointed out in the claims.

In the drawings:—Figure 1 is a side view of an automatic coupler applied to the end of a car, and having my improvements applied thereto. Fig. 2 is a front end view of my improved coupler drawn to a larger scale. Fig. 3 is a side view of the head of the same with the body portion broken away. Fig. 4 is a view of the side thereof opposite that shown in Fig. 3. Fig. 5 is a top plan view of the head portion of the coupler. Fig. 6 is a plan view of the underside thereof. Fig. 7 is a detail view showing a horizontal longitudinal section of the engaging end of the steam-pipe, drawn to a much larger scale. Fig. 8 is a similar view through the mouth of one of the air-passage orifices.

Referring to the drawings A represents the end of a car; B the hanger secured to and depending down from the draw-bar *a* of the car; C the body of the automatic train pipe coupler pivotally and yieldingly supported by said hanger, and D the head thereof which is shown to be suitably secured to the forward end of said body. The head D increases in its transverse proportions as it extends forward, and its forward end terminates in a comparatively narrow engaging face *b*, which extends from the top to the underside of the head. This engaging face is, preferably, rectangular, and it is provided with a depressed area between its side edges which extends from its top edge down about two-thirds its height, and is of

sufficient depth to permit a layer of insulating material *c*, and the gasket retaining-plate *d* to be seated and secured therein. Plate *d* and the insulating material *c* are provided with openings *d'* and *c'* which are, preferably, elongated vertically into an elliptical form, and constitute the orifices or mouths of the air-signal passage *e* and the air-brake passage *f*, which latter extend horizontally and longitudinally from the face of the head to a suitable point to the rear thereof and have their exits, *x* and *y*, respectively in the side of the head, as shown. The opening *d'* in plate *d* is provided with undercut rabbets in which the marginal flanges of gasket, E, made of rubber or other suitable material are seated and clamped. This gasket is so shaped that it extends out through said opening to a plane slightly in advance of the engaging face *b*, and when two of the couplers are brought into operative engagement the projecting edges are compressed sufficiently to make a thoroughly air-tight joint.

Placed alongside of the upper portion of the engaging face *b* and projecting forward from the head is a horn F, which has its side surface adjacent to the face *b* curved outward, and its lower surface correspondingly curved upward, so that its advanced end terminates in a point. Placed alongside of the lower portion of the engaging-face *b*, on the opposite side of the head is another horn G, which corresponds with horn F except that its upper surface is curved downward to produce a pointed extremity. The dimensions of said horns are such that the base of the upper one extends from the upper side of the head to a point slightly above the horizontal plane of the center of height of the head, and the base of the lower horn extends from the lower side of said head to a point slightly below said center of height. The base of the lower side of the upper horn is flanged downward, or, in other words, is provided with a downwardly extending vertical surface which constitutes a transverse abutting wing *h* which is in the same vertical plane as the engaging-face *b*, and diametrically opposite is an alining transverse abutting wing *j*, which is made by providing a vertical surface extending up from the upper basal edge of the lower horn. The great advantage obtained by providing these oppositely ex-

tending abutting wings is that the base of the horns F and G do not extend beyond the ends of the engaging-face and said wings, and a great economy of engaging area is thereby effected while at the same time greatly reducing the area occupied by the orifices of the air-brake, air-signal, and steam-pipe passages, which the horns are designed to keep in operative engagement.

In order to assist in bringing the engaging-face of the couplers into proper operative relation, I secure to the upper edge of the coupler-head a supplemental horn H in such position that its point-end will project a comparatively slight distance beyond the plane of the engaging face, and so that it will not interfere with the action of the supplemental horn of the colliding coupler. While it is desirable to employ said supplemental horns, they can be dispensed with if desired.

The steam-pipe coupling used in connection with my invention consists of an angle-shaped pipe-connection I, which is secured to the underside of the head in such manner that one end projects slightly in advance of the engaging-face of the coupler, and its opposite rear end extends sufficiently beyond the side of the coupler-head to permit of a connection being established between the steam-pipe system of the car by a flexible hose connection (not shown) the same or substantially the same as that now in extensive use.

The mouth of the bore of the advanced engaging end of connection I is countersunk, and an annular lining or outer gasket J, preferably made of zinc is placed therein, and inside of and concentric with said outer gasket is an inner gasket K which is preferably made of copper. The opening in these gaskets, J and K, preferably corresponds to the outer reduced portion of the bore of the connection I, and are retained therein by a V-shaped wire spring *m*, the ends of which are turned outwardly and enter holes made for their reception in the inner circumference of gasket J, and the branches of which between said ends and the return bend thereof curve outward and bind in the bore of the connection. If desired the advanced end of the connection I may have a head M screwed thereon in which the gaskets J and K are seated, substantially as shown in the drawings. This connection, I, gets very hot when in use and it is therefore necessary to insulate it from the coupler-head as much as possible to prevent the gaskets of the orifices of the air-passages from melting. The means employed to secure the said connection, I, to the head consists of eyes P and *p*, which may be made in one piece with the head or consist of separate parts and be screwed thereto. The connection passes through said eyes

but are insulated therefrom by a woven wire packing O, which is preferably placed in contact with the connection, and a ring R of wood or other insulating material interposed between the wire packing and the inner circumference of the eye P, substantially as shown. This packing and insulation are retained between the head M and a washer or collar S on the pipe connection and prevent the heat from being transmitted to the coupler-head to a detrimental extent.

What I claim as new is:—

1. An automatic train-pipe coupler comprising a head the outlines of the engaging face of which substantially describes a Greek cross the upper portion of the vertical member of which is depressed and has orifices therein for longitudinal passages extending to the rear therefrom, packing applied to the marginal edges of said orifices, and a plate having openings therein registering with said orifices, which is seated in said depression and retains said packing in place.

2. An automatic train pipe coupler comprising a pivoted body, a head having an elongated engaging face consisting of a vertically disposed portion having a suitable orifice for a passage therethrough, wings extending horizontally from each side edge of said face, and a steam coupling consisting of a pipe secured to but insulated from the exterior of said head.

3. An automatic train-pipe coupler comprising a pivoted body, a head having an elongated engaging face consisting of a vertically disposed portion having a suitable orifice for a passage therethrough, wings extending horizontally from each side edge of said face, and a steam coupling consisting of a pipe secured to but insulated from the underside of said head below the vertical portion of said engaging face.

4. An automatic train-pipe coupler comprising a head the outlines of the engaging face of which substantially describes a Greek cross having a suitable orifice for a passage therethrough and a steam coupling consisting of a pipe secured to but insulated from the underside of said head having a suitably packed end projecting slightly in front of said engaging face.

5. An automatic train-pipe coupler comprising a head the outlines of the engaging face of which substantially describes a Greek cross having a suitable orifice for a passage therethrough and a steam-coupling consisting of an angle shaped pipe secured to but insulated from the exterior of said head.

6. An automatic train-pipe coupler comprising a head the outlines of the engaging face of which substantially describes a Greek cross having a suitable orifice for a passage therethrough and a steam coupling consisting of an angle shaped pipe the ends of which are packed, which is secured to but

insulated from the underside of said head, and has one end projecting slightly in front of said engaging face.

7. An automatic train-pipe coupler comprising a pivoted body, a head having an engaging face consisting of a vertically disposed portion having a plurality of orifices in the plane of the axis thereof from each of which a longitudinal passage extends, wings extending horizontally from each side edge of said face, and a steam coupling consisting of a pipe secured to but insulated from the exterior of said head.

8. An automatic train-pipe coupler comprising a head having a narrow vertically elongated transverse engaging surface, a horn projecting forward therefrom on one side of the upper portion thereof, and a horn projecting forward therefrom on the opposite side of the lower portion of said engaging surface, said horns and engaging surface being included within an area not exceeding a square the sides of which substantially correspond to the length of said engaging surface and a steam coupling consisting of a pipe secured to but insulated from the exterior of said head.

9. An automatic train-pipe coupler comprising a head having a narrow vertically elongated transverse engaging surface, a horn projecting forward therefrom on one side of the upper portion thereof, and a horn projecting forward therefrom on the opposite side of the lower portion of said engaging surface, said horns and engaging surface being included within an area not

exceeding a square the sides of which substantially correspond to the length of said engaging surface and a steam coupling consisting of a pipe secured to but insulated from the exterior of said head.

10. An automatic train-pipe coupler comprising a head having a narrow vertically elongated transverse engaging surface, a horn projecting forward therefrom on one side of the upper portion thereof, and a horn projecting forward therefrom on the opposite side of the lower portion of said engaging surface and a steam coupling consisting of a pipe secured to but insulated from the exterior of said head.

11. An automatic train-pipe coupler comprising a head the outlines of the engaging face of which substantially describes a Greek cross, and which has a horn projecting on one side of the upper portion of the vertical part of said engaging face from the reentrant angle between the arms of said cross, and also a horn projecting from the reentrant angle on the opposite side of the lower portion of the vertical part of said engaging face between the arms of said cross and a steam coupling consisting of a pipe secured to but insulated from the exterior of said head.

In testimony whereof I have hereunto set my hand and seal this 19th day of February, A. D., 1907.

FRANK H. RUTHERFORD. [L. S.]

Witnesses:

FRANK D. THOMASON,
E. K. LUNDY.