J. A. HICKS.

CROSSOVER CONNECTION FOR FLUID PRESSURE BRAKE SYSTEMS.

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973,042. Patented Oct. 18, 1910.

Fig. 1.

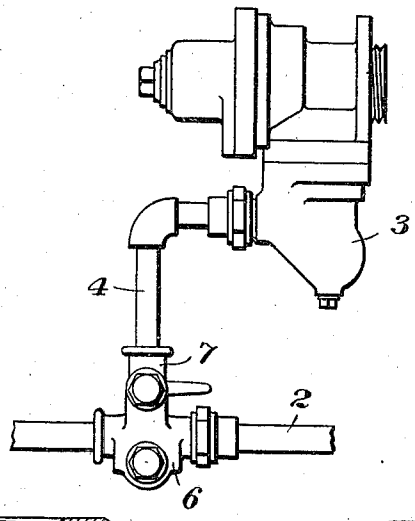


Fig. 2.

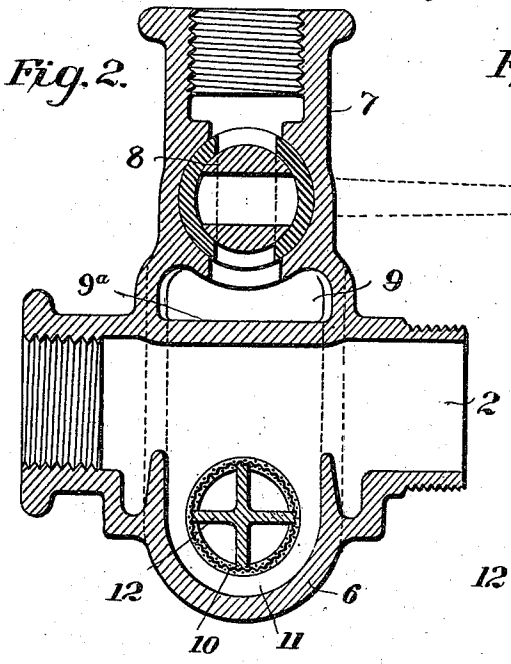
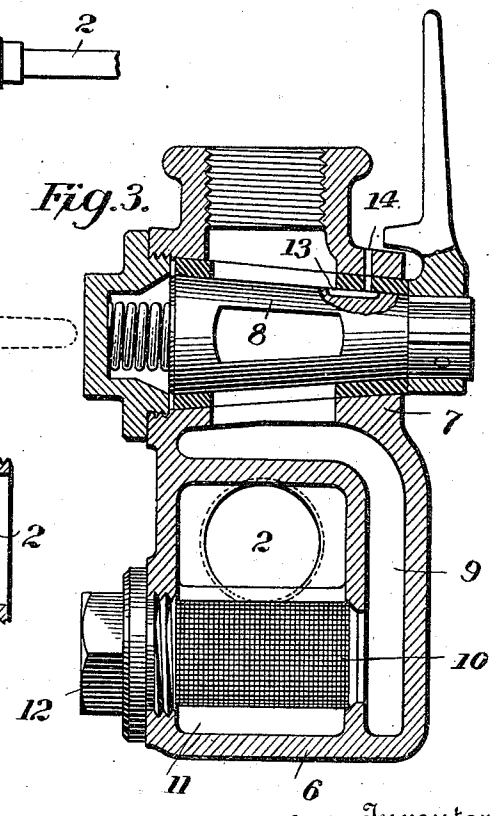


Fig. 3.



Witnesses

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CROSSOVER CONNECTION FOR FLUID-PRESSURE BRAKE SYSTEMS.

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To all whom it may concern:

Be it known that I, JAMES A. HICKS, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Crossover Connections for Fluid-Pressure Brake Systems, of which the following is a specification.

The present invention relates to cross over connections between the triple valve and the train line of an air brake system, and while particularly designed and intended for use in such connection, it will be understood that I do not limit myself to that particular adaptation of the invention, but claim the right to its use wherever in a fluid pressure system it may be found desirable.

It has long been common to provide cross overs from the train line to the triple, and to put in such cross-overs a cut-out valve, and I do not claim broadly such an arrangement or combination, but in these cross-overs as now known to me it has been customary to locate the cut-out cock at a point removed from the tee with which the cross-over connection with the train pipe is made, and in service this cross-over connection not infrequently becomes broken between the tee and the cut-out valve, with the result that even though the cut-out valve be closed, the train line on that car will be totally destroyed owing to the fact that the breakage is between the valve and the tee and the car will become "dead," and must then either be cut out or hauled at the end of the train, in order to meet with the requirements governing the handling of trains in interstate traffic.

While my invention will by no means absolutely prevent breakage in the cross-over between the train line and the triple, it is designed so that if breakage does take place; the cut-out valve may be thrown to closed position; the triple valve, auxiliary, and brake cylinder of the car cut out; and yet the train line may be preserved, so that, while the braking instrumentalities of that particular car are ineffective by reason of the breakage, yet the train line is preserved and the necessity of cutting out the dead car or putting it at the rear of the train is done away with.

In order that the invention may be understood by those skilled in the art I have illustrated one embodiment of the same in the drawings which accompany and form a part of this specification, and in said drawings: Figure 1 is a general view to show the relation of my cross-over connection in the system, the train pipe, and the triple being conventionally shown. Fig. 2 is a longitudinal sectional view of the cut-out valve and casing. Fig. 3 is a transverse sectional view of the valve and casing.

Referring to the drawings by numerals, like numbers indicating like parts in the several views, 2 denotes the train line or brake pipe, and 3 the triple of an air brake system. The cross-over from the train pipe to the triple is indicated by the numeral 4, and this general arrangement and combination of parts is old and well known in the art and may be of any of the usual types or arrangements.

As has been stated it has heretofore been customary to locate the cut-out valve for the cross-over 4 at some distance from the tee 6 of the train pipe, and obviously, if the cross-over 4 be broken between this valve and the tee 6, then the train line will be absolutely destroyed.

In the present form of my invention it will be seen that the tee, instead of being of the usual construction with a pipe connection from the tee to a cut-out valve casing, and thence by a second pipe to the triple, is provided with an integral valve seat or casing 7, in which a cut-out valve 8 of suitable design may be mounted, which cut-out valve is, of course, normally in the position shown in dotted lines in Fig. 2, giving a through passage from the train line 2, past valve 8, to the cross-over 4, so as to give a proper feed from train line to triple, and thence to auxiliary in the usual way, a suitable valve spring and valve nut being provided to hold the valve 8 to its seat.

The valve seat or casing 7 connects by means of a passage 9 with the train line part of the tee 6, as best shown in Fig. 3, a gauze strainer 10 being provided between the train line 2 and the passage 9, this strainer being seated in a chamber 11 communicating directly with train line 2 and also connecting directly with the passage 9, said chamber 11 being closed by a strainer cap 12, which cap holds the strainer to its seat and provides ready access to the tee and to the valve passage for repair, replacement, or cleaning.

By reference to the drawings it will be observed that the strainer chamber, to which the train line 2 delivers and through which the air currents pass during the manipulation of train line air, is separated from the cut-out valve chamber in the upstanding cross over limb 7 of the connection, by the partition wall 9ª, so that the connection between the strainer chamber 11 and the cut out valve chamber or limb 7 is an indirect one, that is, by way of the gauze strainer 10 and the passage 9. By this construction the valve 8, which is seated in the vertical limb of the connection, is not subjected to the direct action of the through currents of air which surge through the horizontal limb of the connection and the strainer chamber. This feature of construction is of considerable value and importance, in that the cut-out valve 8 is not subjected to the abrasive or wearing action of cinder or dust laden currents every time an application or release of brakes is made, because the connection between the strainer chamber and the cut-out valve chamber being indirect, the cutting flow of currents past the valve is avoided, and such air as passes through the cross-over limb 7 and valve 8 is led by the indirect passage 9 to the cut-out valve chamber. With this arrangement it will be seen that danger of breakage at a point between the cut-out valve 8 and the train line is practically eliminated, for the valve casing and train pipe connections are all cast integral so that said tee 6 and the valve casing 7 are one and the same element, and danger of breakage and interruption of the cross-over passage at a point between the train pipe tee and the cut-out valve is practically eliminated. Should the cross-over pipe 4 become broken the cut-out valve 8 may be thrown to closed position, preserving the train line, and cutting out the leakage through the broken cross-over so that the train line may be preserved intact the entire length of the train, and the train handled as readily as before, even though the braking instrumentalities of a particular car, or a number of cars, may for the time being be ineffective, and the necessity heretofore present of cutting out the dead cars or placing them at the rear of the train is entirely done away with. Furthermore, by this integral one piece tee and cut-out valve casing, I am enabled to reduce the number of couplings necessary in the old structure between the brake pipe 2 and the triple 3, reducing, therefore, the danger of leakage by reason of imperfect joints, it being highly desirable in air brake systems to eliminate so far as possible couplings, and thereby reduce the chances for leakage.

In order that there may be no danger of building up pressure on the triple side of the cut-out valve 8, if, for any reason, such as a defective triple, or a deranged brake rigging, it should be desirable to cut-out a particular car, I provide the said cut out valve 8 with an atmospheric connection in closed position on the triple side of the valve, this atmospheric port or connection comprising in the present illustrative embodiment, the groove 13 in the valve 8, which, when the valve is thrown to the closed position shown in Fig. 3, brings the atmospheric port 14 in the valve casing and the cross-over outlet on the triple side of the valve, so that any leakage past the valve 8 will be taken care of and pressure cannot accumulate on the triple side of the cut-out when this cut-out is in the closed position shown.

It will be understood that variations in structure and mechanical details may be made without departing from my invention, for this disclosure is merely illustrative of one embodiment of my invention, and not restrictive thereof.

I claim:

1. A cross-over connection for air brake systems having a train line and cross-over tee provided with a valve seat in the cross-over limb of the said tee, a cut-out valve mounted in said seat, and a wall to separate the cut-out valve chamber from the horizontal limb of the tee.

2. A cross-over connection for air brake systems having a train line and cross-over tee formed in a single piece, and provided at either end of its horizontal limb with a train line connection; a valve seat in the vertical limb of said tee; a cut-out valve mounted in said seat and controlling said cross-over passage, and a partition wall separating said tee into two chambers so as to protect said cut-out valve from the direct action of the through air currents in the horizontal limb of the tee.

3. A cross-over connection for air-brake systems having a strainer chamber through which train line air passes, a cross-over chamber having a cut-out valve mounted therein, and a wall separating said chambers and protecting the cut-out valve from the direct action of the through currents in the strainer chamber.

4. A cross-over connection for air brake systems comprising a tee joint having provision at either end for train line connection, a chamber communicating with said connection, a strainer in said chamber, a nut closing said chamber, an offset passage leading from said chamber to the cross-over limb of the tee, and a cut-out valve in said cross-over limb controlling said cross-over passage.

5. A cross-over connection for air brake systems having a cut-out valve, and means for bleeding the triple side of said cross-over when the cut-out is closed.

6. A cross-over connection for air brake systems having a cut-out valve and means operated by said cut-out valve for bleeding the triple side of the cross-over on closing of said cut-out valve.

7. A cross-over connection for air brake systems having a cut-out valve, an atmospheric port in the valve casing, and a passage in said cut-out valve bridging said port and the triple side of said cross-over when the cutout valve is in closed position.

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

JAMES A. HICKS.

Witnesses:
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