(No Model.)

T. A. TAYLOR & G. W. S. AUSTIN.

AIR BRAKE COUPLING VALVE.

No. 558,235. Patented Apr. 14, 1896.

Fig. 1.

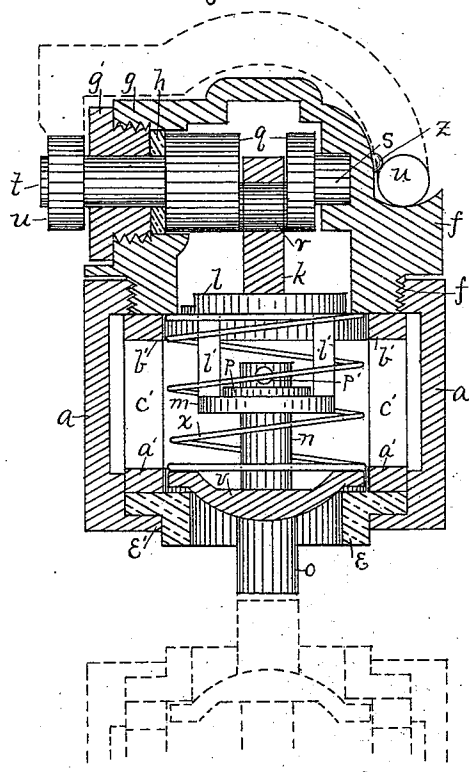
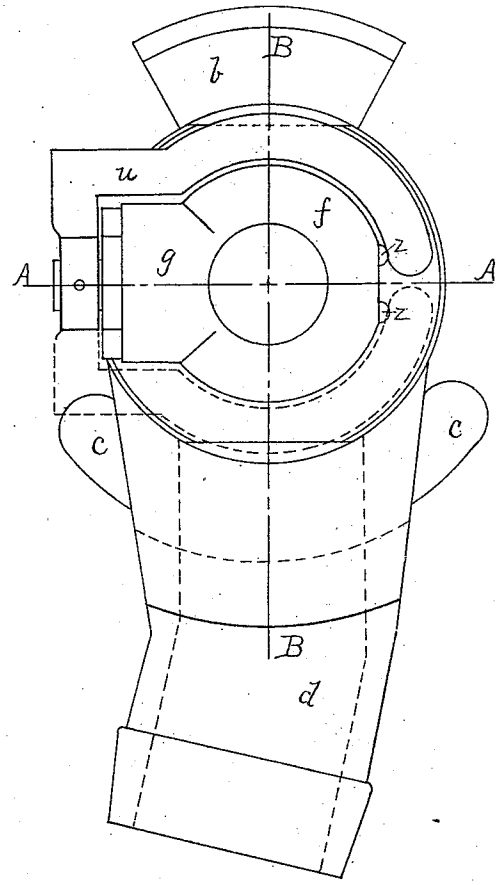


Fig. 2.



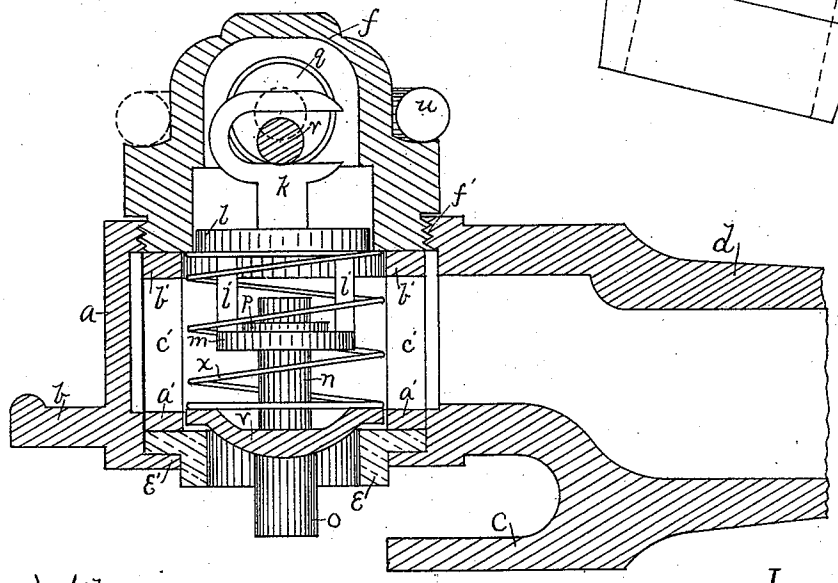


Fig. 3

Witnesses.
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UNITED STATES PATENT OFFICE.

THOMAS A. TAYLOR AND GEORGE W. S. AUSTIN, OF KENTON, OHIO.

AIR-BRAKE COUPLING-VALVE.

SPECIFICATION forming part of Letters Patent No. 558,235, dated April 14, 1896.

Application filed February 13, 1895. Serial No. 538,243. (No model.)

To all whom it may concern:

Be it known that we, THOMAS A. TAYLOR and GEORGE W. S. AUSTIN, citizens of the United States, residing at Kenton, in the county of Hardin and State of Ohio, have invented a new and useful Improvement in Air-Brake Coupling-Valves, of which the following is a specification.

Our invention relates to a form of valve to be used in connection with the ordinary form of couplings used for connecting the air-pipes of air-brakes between cars.

The object we seek to accomplish with our valve is to overcome a defect in the successful operation of brakes now commonly in use, which often proves serious when by accident a moving train breaks its couplings at a point anywhere between the middle and the end at which the engine is attached. When this happens to be the case with air-brakes now in common use, the air-pipe couplings automatically disconnect when the car-couplings break apart and the pressure in the air-pipes is at once released and the brakes are immediately set on all cars of both the severed parts of the train as well as the engine. If the breaking apart of the train should take place very near the front end, the engine and the few cars which were connected to it having less momentum than the greater number and mass of cars in the rear portion would be stopped first and the rear and greater and heavier part of the train would strike it from the rear before it would be possible for the brakes to overcome the greater momentum of the rear section of a broken train.

When the breaking apart of a train occurs while traveling at a high rate of speed, the disastrous results of a rear-end collision may be readily anticipated, especially when the break occurs very close to the engine, leaving almost the whole rear end of the train to strike the front end before being stopped.

The hereinafter more technical portion of the specification will more fully describe the form, construction, and operation of the valve by which we overcome the above objection.

In the accompanying drawings, Figure 1 is a transverse section of the coupling on the line A A, as indicated on Fig. 2, which is a top view of the coupling. Fig. 3 is a longitudinal section, as indicated by the line B B in Fig. 2.

In Fig. 1 the parts *l*, *m*, *n*, *o*, *p*, *q*, *r*, *s*, *t*, and *u*, which are intersected by the section plane A A, are shown solid instead of section-lined, as the remainder of the view is indicated. The same is true in Fig. 3 of the parts *k l m n o p*, which are intersected by the plane B B.

Similar letters refer to similar parts throughout the several views.

The only part of this device which is now in use is the main external shell forming the head *a*, and being attached and forming a part thereof are the cam-plates *b* and *c* and the neck *d*, around which the rubber hose is connected. The rubber packing-ring *e* is also a part of the old device.

Into the head *a* the cap *f* is screwed at *f'*, said cap being cored out, as shown, for the reception of an eccentric having the bearings *s* and *t*, the crank-head *q*, and the crank pin or shaft *r*. On the side of the cap *f*, which will be uppermost when two couplings are connected, is the stuffing-box *g*, having the head *g'*, which screws into the end of the box *g* and bears snugly against the rubber packing-ring *h*, which sets against the crank-head *q* for the purpose of making an air-tight fitting around the shaft *t*, the outer end of which is square and fitted with the operating-handle *u*.

Within the head *a* is a cage formed of the two rings *a'* and *b'*, connected by four straight bars *c'*. When the cap *f* is screwed down into the head *a*, it presses the cage down upon the packing-ring *e*, holding it firmly in air-tight contact with the bottom flange *e'* of the head *a*. Within this cage is the valve *v*, having the stem *o* on the convex side and the stem *n* on the concave side. The end of the stem *n* passes through a loose-fitting hole in the circular disk *m*, and is provided with the washer *p* and the key *p'*.

The disk *m* is connected to another circular disk *l* by means of the two bars *l'*, and the disk *l* is connected at the center of its upper surface to the connecting-bar *k*, which is in turn hooked over the eccentric-pin *r*. The spiral spring *x* bears with one end against the under surface of the cap *f*, and with the other

end against the top of the flange of the circular valve *v*, for the purpose of keeping said valve seated against the packing-ring *e*.

When two heads *a* are to be coupled together in the usual manner, the stem *o* of each coupling is set face to face, as in Fig. 1, and each forced back until the end of the stem *n* strikes the lower side of the plate *l*, and the faces of the packing-rings *e* brought in contact and the cam-plates *b* turned in between the cam *c* and the main body of the head *a*, thus binding the two heads together. When the stem *o* is thus pressed back, the valve *v* is pressed back with it, thus opening the passage in the ring *e* and making a continuous air-passage in through the neck *d*. While in this position it is serving the functions of any commonly-used coupling; but it will be observed that as soon as the two heads are uncoupled the valve *v* is at once forced down upon its seat by the spiral spring *x*, thus cutting off the escape of air from the air or train pipe and maintaining the pressure which keeps the brakes released.

It will be observed that if the valve *v* of each head *a* would thus automatically close as the heads *a* were uncoupled the pressure in the two severed parts of the train would be maintained, and the brakes on both parts of the train would remain released, whereas the object is to allow the air to escape from the air-pipe and set the brakes on the rear portion of the train and to prevent the escape of air from the front end, thus keeping the brakes released and allowing the front end of the train to continue on out of the way of the rear portion until it has stopped.

To accomplish the above-stated object, the head *a*, which is attached to the rear end of each car, will have the parts operating the valve *v* set in the position shown in Figs. 1 and 2, which will permit said valve to automatically close as soon as it is uncoupled from the head *a* on the front end of any car coupled to it. This keeps the brakes released on any one car and all cars between it and the engine. The coupling on the front end of all cars will be set so the valve *v* cannot close when the air-pipes are uncoupled, thus allowing the air to escape from the air-pipe on the rear part of the train, which is broken away, thus setting the brakes. To accomplish this, the valve *v* is kept from closing by throwing the handle *u* over into the position shown by dotted lines in Fig. 2. By thus turning this handle through an arc of one hundred and eighty degrees the eccentric is given one-half of a revolution and the pin *r* thrown to the highest point, raising the disks *l* and *m*, and with them the valve *v*. When the eccentric is in this position, the washer *p* rests on the disk *m*, and the valve *v* cannot seat itself, thus leaving the air-passage open when uncoupled. By this device it may now be seen that by having the valve *v* which is in the coupler at the rear end of all cars set in a released position by means of the handle *u*, as shown in Figs. 1 and 2, and by having valve *v* in the coupling on the front end of all cars set by the handle *u* so it cannot seat itself it will then make no difference where a train of cars breaks apart. The brakes of the front section will stay released and on the rear section will be at once set. The small projections *z* shown on the drawings are designed, simply, to keep the handle *u* in one position or the other, and when throwing it over will have spring enough in itself to be pushed past the projections *z* with little force.

In our device as thus described we claim and pray to secure by Letters Patent—

1. In an air-brake-hose coupling-head, the combination of a valve-seat in its outer end, a packing-ring fitted therein, a valve seated thereon having outward and inward projecting stems, a cage surrounding said valve, a spiral spring therein for normally seating said valve, a movable yoke loosely connected to said inward-projecting valve-stem, the eccentric connected to said movable yoke, means for operating said eccentric so as to prevent or permit the seating of said valve, at will, substantially as set forth.

2. In an air-brake-hose coupling-head, the combination of a valve-seat in its outer end, a valve seating thereon and having outward and inward projecting stems, the movable yoke loosely connected to said inward-projecting stem, the eccentric connected to said movable yoke, means for operating said eccentric so as to prevent or permit the seating of said valve, at will, substantially as described.

3. In an air-brake-hose coupling-head, the combination of a valve-seat in its outer end, a valve seating thereon and having outward and inward projecting stems, a cage surrounding said valve, a spiral spring interposed therein for normally seating said valve, a movable yoke loosely connected to said inward-projecting stem of the valve, the eccentric connected to said movable yoke, the cap incasing and carrying said eccentric, external threads on the annular flange of said cap to engage with internal threads in the opening in the back of coupling-head, means for operating said incased eccentric so as to prevent or permit the seating of said valve, at will, substantially as set forth.

4. In an air-brake-hose coupling-head, the combination of a valve-seat in its outer end, a valve seated thereon and having outward and inward projecting stems, a movable yoke loosely connected to said inward-projecting stem, the eccentric connected to said movable yoke, the cap carrying and incasing said eccentric, means for operating said eccentric so as to prevent or permit the seating of said valve, at will, substantially as shown.

5. In an air-brake-hose coupling-head, the combination of an air-opening in its outer end, a valve located therein and having outward and inward projecting stems, a movable yoke loosely connected to said inward-pro-

jecting stem, means for operating said movable yoke so as to prevent or permit the seating of said valve, at will, a cap closing the opening in the back of said valve coupling-head, substantially as set forth.

6. In an air-brake-hose coupling-head, the combination of an air-opening in its outer end, a valve located therein having outward and inward projecting stems, a cage surrounding said valve, a spiral spring located therein for normally seating said valve, a movable yoke connected to said inward-projecting stem, the eccentric connected to said movable yoke, the cap incasing and carrying said eccentric, external threads on the annular flange of said cap to engage with internal threads in the opening in the back of coupling-head, an air-tight box and packing-ring in said cap, an extended end to said eccentric-shaft projecting through said box, a bent lever attached to said eccentric-shaft for operating said eccentric so as to prevent or permit the seating of said valve, at will, substantially as shown and set forth.

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