

(No Model.)

2 Sheets—Sheet 1.

G. D. PETTINGELL.
AUTOMATIC CAR AND AIR BRAKE COUPLING.

No. 575,167.

Patented Jan. 12, 1897.

Fig. 1.

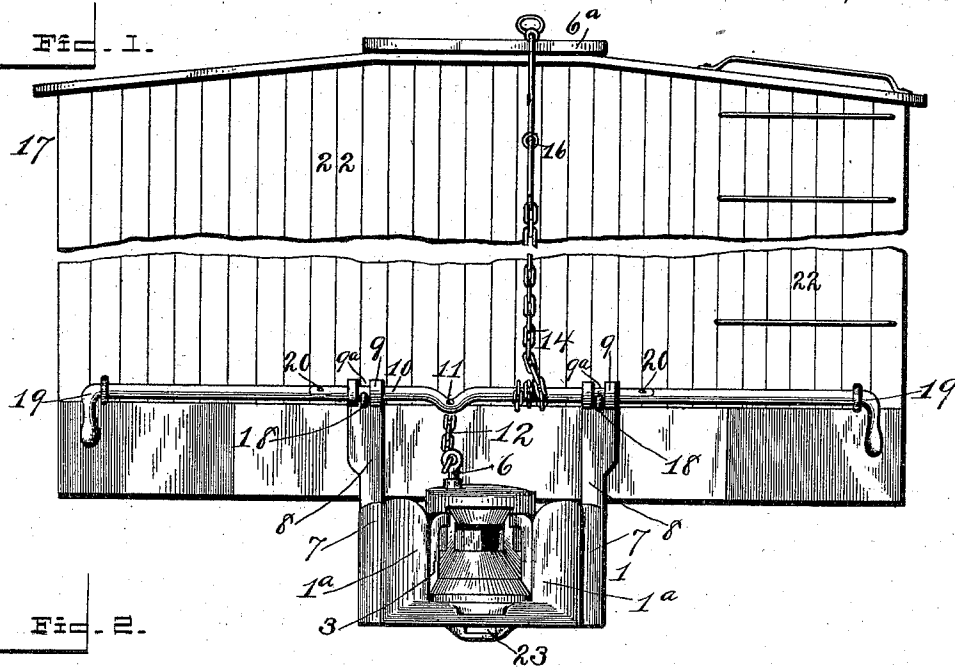
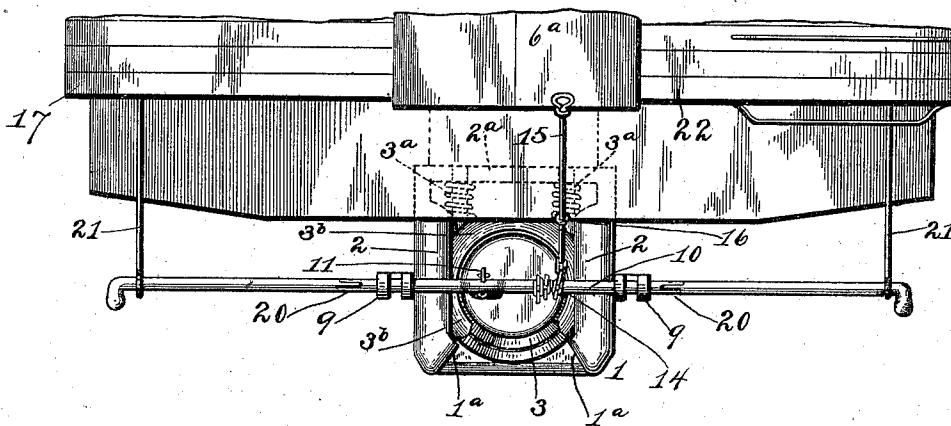


Fig. 2.



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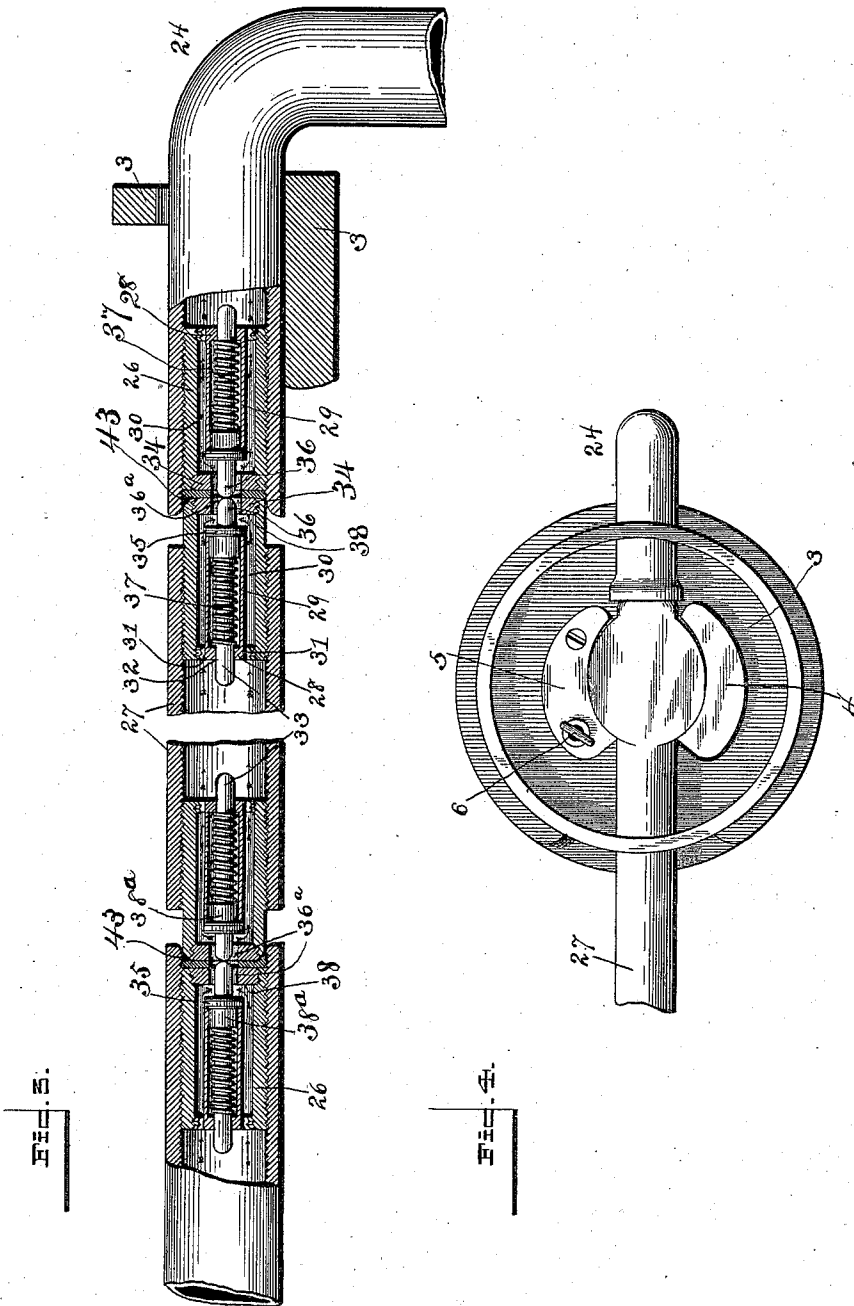
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UNITED STATES PATENT OFFICE.

GEORGE D. PETTINGELL, OF JEFFERSON, IOWA.

AUTOMATIC CAR AND AIR-BRAKE COUPLING.

SPECIFICATION forming part of Letters Patent No. 575,167, dated January 12, 1897.

Application filed September 14, 1896. Serial No. 605,840. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. PETTINGELL, a citizen of the United States, residing at Jefferson, in the county of Greene and State of Iowa, have invented certain new and useful Improvements in an Automatic Car and Air-Brake Coupling, of which the following is a specification.

My present invention relates to an automatic car and air-brake coupling; and the prime object of the invention is to provide a hollow coupling-bar to couple cars and a valve in each end of said bar adapted to engage a like valve in the draw-bars connected with the air-brake pipes to simultaneously open and close communication between the air-cylinders of a train of cars through the hollow bar with the coupling of the cars.

A further object of the invention is to provide a valve of new and novel construction adjustably secured in the ends of the hollow connecting or coupling bar to be operated by and operate like valves in the draw-bars to couple the air-brake pipes and open communication between the several air-cylinders simultaneously with the coupling of the cars by said hollow bar.

A still further object of the invention is to provide a valve mechanism constructed and arranged to obviate the necessity of having to overcome the air-pressure from the air-brake cylinders to open such valve.

Other peculiar and novel improvements, giving advantageous results, will be seen from the following description and claims when taken in connection with the annexed drawings.

The invention consists in the novel construction and arrangement of parts and resides, essentially, in forming in or attaching to a hollow car-coupling bar an air-valve and have the same open itself and a like valve in the draw-bar simultaneously with the coupling of the cars.

The car-coupling device proper, and particularly the means for locking the coupling-bar in the draw-bars, is covered by a former application, Serial No. 594,296, and the same will not be herein claimed nor described except so far as it may be found essential in the disclosure of the connections and relative operation thereto of my present invention.

In the accompanying drawings, forming part of this application, only one draw-bar and a coupling-bar are shown, the other draw-bar being a duplicate.

Figure 1 is a front view. Fig. 2 is a top view. Fig. 3 is an enlarged longitudinal section of the coupling-rod and draw-bar valves, the latter and the rod-valves being open. Fig. 4 is a plan view of the cup with its top removed, showing the elbow air-valve engaging the air-valve of the coupling-bar and the latter locked in the cup.

The draw-bar 1 has an open top with flanges 2, vertical flanges 1^a at the front, and open back provided with a removable back-stop 2^a, against which springs 3^a bear. This construction confines a ring 3^b upon the bottom of the draw-bar, said ring having a cup 3 confined therein and adapted to oscillate transversely and vibrate vertically in accordance with the motion of the cars. The cup has an integral lug 4 upon its inner bottom, and a dog 5, pivoted in said bottom and carrying a bolt 6, adapted to engage an aperture in the bottom of the cup to fix the dog around the end of a coupling-bar in the cup against the lug 4, whereby the cars are coupled. The dog and the bolt operate automatically together and constitute the automatic means, hereinafter to be referred to, for connecting the coupling-bar in the draw-bars.

Upon each side of the draw-bar is formed a projection 7, to which are secured standards 8, having a journaled bearing end 9 for a bolt-lifting hand-shaft 10. In the center of this shaft 10 is formed a crank having an eye 11, to which is attached a chain 12, connected to the bolt 6, and a similar eye to which a chain 14 is secured and connected to a hand-rod 15, working through a bracket 16 and reaching to the top 6^a of the car 17 for raising the bolt to uncouple the cars from the top of the latter. At right angles to the eye 11, upon the shaft 10, are formed stops 18, which are operated in a slot 9^a, in the said journal-bearing 9, in turning the shaft 10 and limits the revolatory movement of the shaft. At a point outside of the said bearing 9 the shaft 10 has a hand-lever 19 joined to it by a tongue-and-groove pivot-joint 20. These hand-levers, for there is one at each side of the car to operate the said shaft from the car sides,

are supported in arms 21, secured to the car-front 22, and when the cars are coupled the joints allow backward movement of the draw-bars by concussion without bending the shaft 10 or retarding the free action of the draw-bars.

A slot 23 is made in the lower front of the draw-bars for an ordinary link-coupling should my draw-bar have to be used in connection with the ordinary pin-and-link coupling. Secured to the cup 3 in the rear of the dog 5 and lug 4 is an elbow-pipe 24, one end of which is adapted to receive an air-brake pipe, and the other end contains a valve-casing 26. The latter is screw-threaded upon its outer face to engage a like screw-thread in the elbow-pipe or in the ends of the hollow coupling bar or rod 27, and by such screw attachment is capable of longitudinal adjustment.

The air-valve consists of the casing 26, hereinbefore referred to, having an inner and outer screw-thread. This inner screw-thread is engaged by an enlarged screw end 28 of a barrel 29 to leave a space or chamber 30 between the said casing and the barrel, with air ducts or channels 31 from said chamber through the enlarged end 28 and a central aperture 32 for the valve-stem 33. The inner end of the barrel terminates short of the end 34 of the casing 26 to leave a space between the end of the barrel and the end of the casing, in which the valve proper, 35, is operated, and the said valve has a projection 36, extending through an aperture 36^a in the said end 34, or such projection may be a part of the valve-stem. Surrounding the valve-stem and bearing, one end against the barrel and the other end against the valve 35, is a spring 37, which holds the valve against its seat 38^a, and this closes the valve and shuts off communication between the air-brake pipes. The valve proper has a projection 38 to close the open end of the barrel and prevent the air from the chamber 30 entering the barrel and making pressure against the valve 35, so that when the projection 36 of the coupling-bar strikes a like projection of the draw-bar valve the valves 35 proper are pushed inward simultaneously to the end of the barrels, and open communication between all of the air-brake pipes and cylinders through the said chamber 30, apertures 36^a, and the coupling-bar; and in thus opening communication no air-brake pressure has to be overcome, but only the pressure of the springs, because the barrel and the projection 38 closes off air from the valves proper at all times, and confines it in the chamber 30, and as said valves do not project into said chamber there is no air-pressure upon the valves.

The elbows 24 have a bell-shaped cushion 43 to insure the alinement of the projections 36 and form an elastic or cushion seat for the ends of the casing carried by the coupling-bars when the cars are coupled.

I do not wish to be understood as limiting

myself to a coupling-bar provided only with the valve herein described, as other forms of valves may be found applicable. Neither do I desire to confine myself to the exact construction and arrangement of parts, as the same may be varied in practice to effect the same or better results.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an air-brake coupling the combination with a draw-bar having a valve, of a hollow coupling-bar having valves adapted to engage the draw-bar valves to open all of said valves simultaneously with the coupling of the cars by said hollow bar, substantially as set forth.

2. In an air-brake coupling, the combination with a draw-bar having a valve connected to an air-brake cylinder, of a hollow coupling-bar, and a valve contained in and closing each end of the coupling-bar, as set forth.

3. In an air-brake coupling, draw-bars having valves provided with a projection, combined with a hollow coupling-rod having an air-passage, like valves in each end of the coupling-rod, and having a projection to engage the said projection of the draw-bar valves, as set forth.

4. In an automatic car and air-brake coupling, the combination of the cup secured in a draw-bar to oscillate laterally and vibrate vertically, and a valve secured in the cup and connected to the air-brake pipe, with a hollow coupling-bar, a valve in each end of the coupling-bar, and means in the cup for locking the coupling-bar to the cup, as set forth.

5. A combined car and air-brake coupler, comprising a hollow rod having a valve in each end, a valve in the draw-bar, and means for automatically connecting the rod to the draw-bars to couple the cars, the said rod-valves adapted to engage the draw-bar valves to couple the latter and open communication between them through the hollow rod, as set forth.

6. In an automatic car and air-brake coupler, the hollow rod having end valves, like valves in the draw-bars connected to the air-brake pipes, and means located in the draw-bars to lock the rod ends in the same to couple the cars, all of said valves adapted to be operated by the said rod to couple the air-brakes simultaneously with the coupling of the cars, as set forth.

7. The combination with the draw-bars having valves connected to the air-brake cylinders, and a hollow coupling-rod having screw-threaded ends, valves adjustably contained in said ends to make contact with the valves in the draw-bars, as set forth.

8. The combination of the casing, and the barrel having both ends permanently closed and contained in the casing to form an air-chamber between the latter and the barrel, ducts leading into the said chamber only at one end, with a valve having a stem extending through both ends of the barrel and cas-

ing, and a spring surrounding said stem and engaging the valve and barrel end, as set forth.

9. The combination with the inner and outer screw-threaded valve-casing, and a cushion-head secured to the casing, of a barrel having a screw-threaded end provided with air-ducts leading into a chamber between the casing and barrel, a spring-controlled valve having a projection beyond the casing and a projection into and closing the barrel, substantially as set forth.

10. The combination with a draw-bar, a suitable means for coupling cars, of the standards secured to the draw-bar and having slotted hand-shaft bearings, the said shaft having eyes at right angles to each other, to one of which is connected the said coupling-bolt, and to the other of which is connected a lever from the car-top, and stops upon the said shaft operated in the said slots to control the vibratory movement of the shaft, as set forth.

11. The combination with a draw-bar, a suitable means for coupling cars, of a crank hand-shaft having eyes, and projections at right angles to the eyes, standards secured to the draw-bar and having slotted bearings for the shaft, and hand-levers supported from the car-front and joined to the shaft to permit backward movement of the draw-bars, substantially as set forth.

12. The combination with the cup, and ring of an open-top draw-bar having flanges, the

removable back-stop, and the springs engaging the ring and the said back-stop, substantially as and for the purpose set forth.

13. The combination with the cup having an integral lug, a dog pivoted therein, a coupling-bolt carried by the dog and a valve secured to the cup in the rear of the lug and dog, of a hollow coupling-bar, and a valve in the end of the bar having a portion projecting and extending through and between the lug and dog to engage a like projection of the said cup-valve, substantially as and for the purpose set forth.

14. In a combined automatic car and air-brake coupling, the combination with draw-bars having valves, of a hollow coupling-rod having valves to engage the draw-bar valves and open communication between the air-brake cylinders of a train through said hollow rod simultaneously with the coupling of the cars by said rod, as set forth.

15. A hollow car-coupling rod having valves adapted to be opened simultaneously with the coupling of the cars by said rod, and means contained in the rod for closing the valves simultaneously with the uncoupling of the cars, as set forth.

In witness whereof I hereunto set my hand in the presence of two witnesses.

GEORGE D. PETTINGELL.

Witnesses:

B. S. McCULLY,
J. A. HENDERSON.