

No. 701,833.

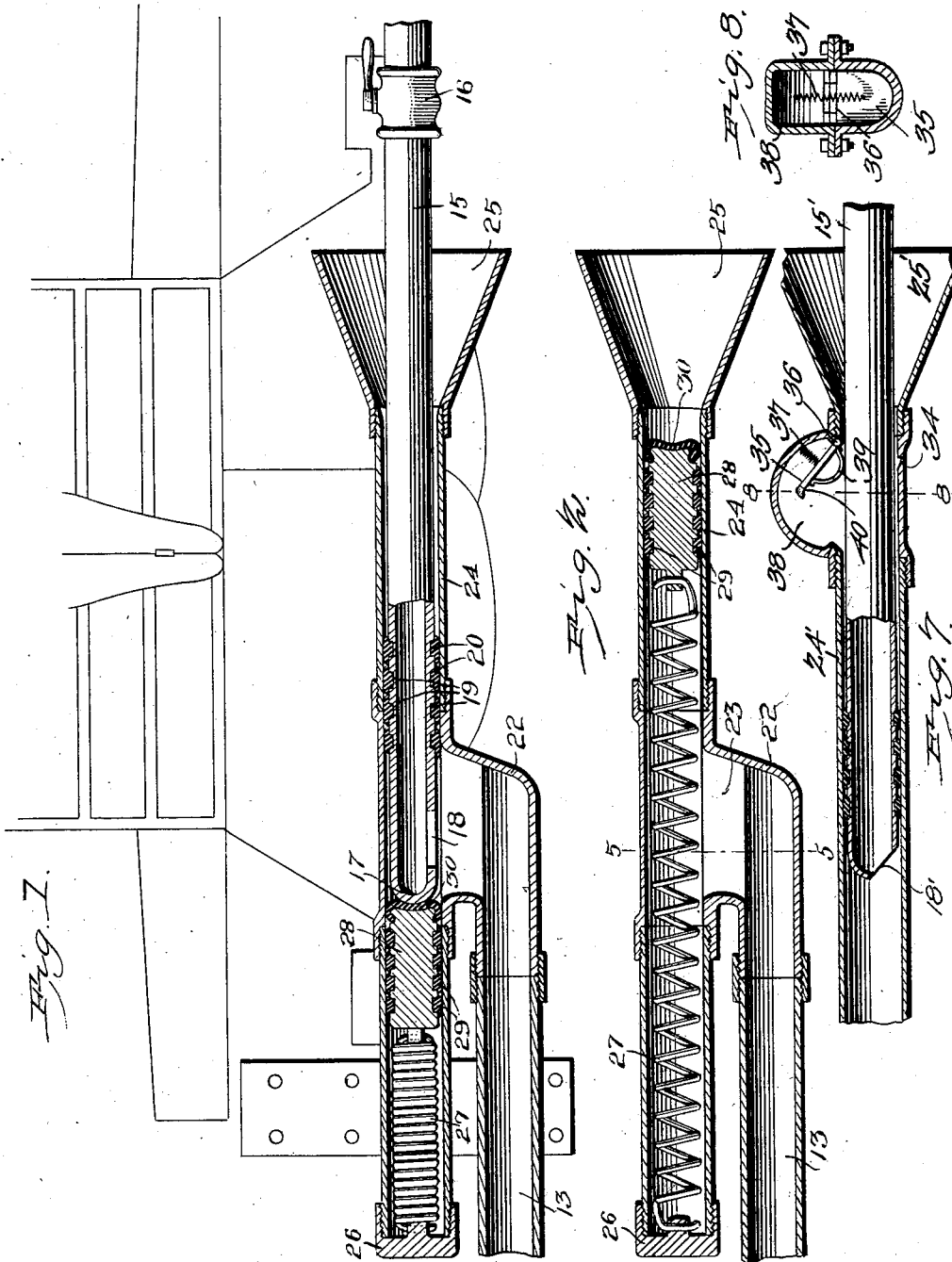
Patented June 10, 1902.

G. L. BONHAM.  
TRAIN PIPE COUPLING.

(Application filed Jan. 15, 1902.)

(No Model.)

2 Sheets—Sheet 1.



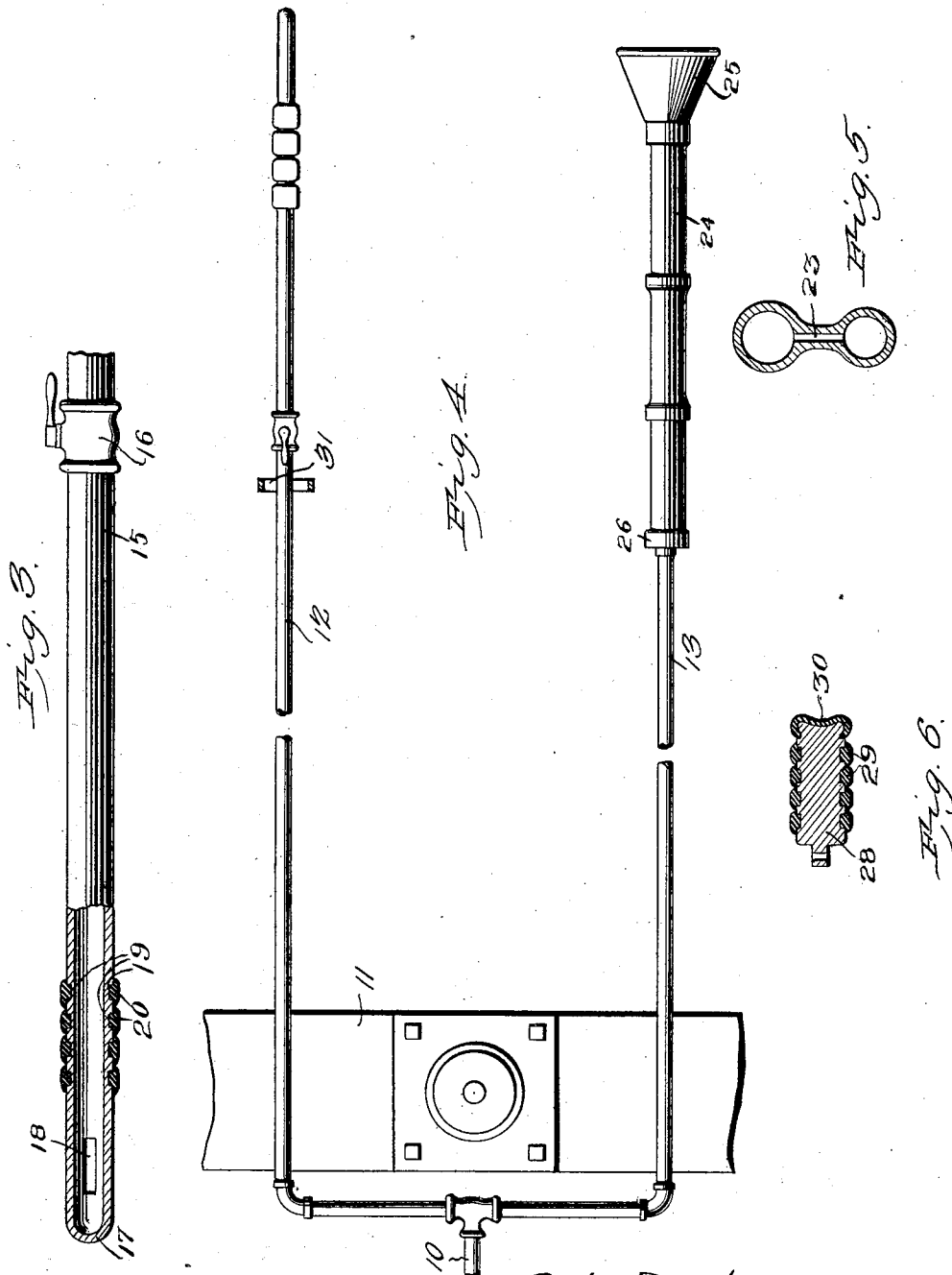
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 (Application filed Jan. 15, 1902.)

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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

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## TRAIN-PIPE COUPLING.

SPECIFICATION forming part of Letters Patent No. 701,833, dated June 10, 1902.

Application filed January 15, 1902. Serial No. 89,885. (No model.)

*To all whom it may concern:*

Be it known that I, GUY L. BONHAM, a citizen of the United States, residing at Dorranceton, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Train-Pipe Coupling, of which the following is a specification.

The object of my invention is to provide an improved form of coupling for automatically connecting and disconnecting the sections of a train-pipe as the cars are brought together or separated, and while principally intended for coupling the sections of the train-pipe of an air-brake system it may be employed in connection with signaling systems or steam-heating systems employed on railway-cars of various character.

A further object of the invention is to provide one of the coupling members with an automatic valve which will remain closed if situated at the end of a train and will at all times prevent the passage of air or other fluid until it is engaged by the mating member of the coupling; and a still further object is to so construct said valve as to keep the coupling member clean and free from dirt, snow, or ice, said member being thus maintained in perfect condition for the reception of its mating member.

With these and other objects in view the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a longitudinal sectional elevation of a train-pipe coupling constructed in accordance with my invention and illustrating the same in coupled position. Fig. 2 is a similar view of the female member of the coupling, showing the automatic valve moved to closed position. Fig. 3 is a sectional plan view of the male coupling member. Fig. 4 is a detail plan view illustrating the arrangement of a pair of coupling members at one end of a car. Fig. 5 is a transverse sectional elevation of the female member on the line 5 5 of Fig. 2. Fig. 6 is a sectional elevation of the automatic valve detached. Fig. 7 is a longitudinal sectional elevation of a modified construction of coupling.

Fig. 8 is a transverse sectional elevation of the same on the line 8 8 of Fig. 7.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

Referring first to Fig. 4, 10 indicates the train-pipe leading to the auxiliary reservoir, as usual, said pipe being divided at a point to the rear of the truck-bolster 11 into two branches 12 and 13, terminating, respectively, in male and female coupling members, located one on each side of the center line of the car at a point near the draft-timbers and projecting beyond the end sill for a sufficient distance to permit of the automatic coupling with mating members as the cars come together. The male member consists of a single piece of tubing 15, having a suitable valve 16, by which the air may be shut off. The extreme end of the tube is closed and rounded, as illustrated at 17, in order to facilitate its introduction into the mating member. At a short distance from the closed end of the tube is formed a bottom opening 18 of contracted width and elongated to provide an area about equal to the area of the tube in order not to interfere with the free passage of air. At a point to the rear of the opening the tube is provided with a series of annular grooves 19, in which are placed packing-rings 20, of rubber or other suitable elastic or semi-elastic material, these serving as a valve to prevent the escape of air from the female member. The female member comprises an elongated tube, which may be formed of a number of sections coupled to the train-pipe 13 by a coupling member 22, having an elongated and comparatively narrow slot 23, which permits the passage of air through the coupling, the length of said slot being preferably in excess of the length of the opening in the male member in order to permit play between the two without cutting off communication, or the opening in the male member may be elongated for a similar purpose. To the outer end of the coupling-section 22 is secured the tube-section 24, terminating at its outer end in a conical or funnel shape mouth 25, which may be formed of a separate piece, if necessary, the mouth being sufficiently large to guide the end of the male member into the

tube-section in case the two sections are not in perfect alinement when the cars are being coupled. The rear end of the female member is closed by a suitable plug or cap-piece 26, to which is connected one end of a compression-spring 27, the opposite end of said spring being connected to a cylindrical valve 28, adapted to fit snugly within the female member and provided with suitable annular grooves for the reception of packing-rings 29. At the outer end of the valve is a buffer-plate 30, formed of rubber or other yielding material, the edge of which extends out beyond the line of the valve, said buffer receiving the impact of the rounded end of the male member as the latter is forced into coupling position.

When the cars are separated, the plug 24 is disposed at a point near the entrance-mouth 25, being projected by the spring to the position illustrated in Fig. 2, in order to prevent the passage of air from the train-pipe 13 and at the same time serving as a closure for the end of the female member and preventing the entrance and accumulation of dirt, snow, or other foreign matter.

As the cars are forced together and coupled the male member will be guided by the enlarged mouth 25 into the tube 24 and will force the valve 28 back to the position shown in Fig. 1, the valve being moved to a point beyond the passage 23 and permitting communication between the train-pipe 13 and the opening 18 of the male member.

The coupling members are supported in any suitable manner, the male member being preferably mounted in a guard-loop, as indicated at 31 of Fig. 4, in order to permit of slight lateral play when the train is running on curves, as well as to prevent excessive movement during the coupling of the cars.

In some cases the coupling members may be made in the manner illustrated in Figs. 7 and 8, the male member 15' being of the construction previously described, with the exception that its opening 18' is formed at the end instead of at a point some distance from the end of the tube. The female member comprises a single tube 24', having an enlarged mouth 25', and at the rear end of the mouth is formed a valve-seat 34, against which may seat a trap-valve 35, fulcrumed at 36 and normally held by a spring 37 in closed position when the coupling members are separated, the valve moving into a chamber 38 on the entrance of the male member. On the under side of the valve 35 is a small spring 39, secured to the valve at a point near the hinge and having its opposite end free, said spring being adapted to receive the impact of the male member when the cars are being coupled and preventing injury to the valve. The forward edge of the valve is provided with a suitable packing-strip 40, which forms an air-tight joint and prevents leakage of air from the train-pipe when the cars are disconnected. The interior of the female member

is preferably made perfectly smooth in order to reduce wear on the packing-rings of the male member and the sliding valve.

While the construction herein described, and illustrated in the accompanying drawings, presents the preferred form of the invention, it is obvious that changes in the forms, proportions, size, and minor details of construction may be made without departing from the spirit or sacrificing any of the advantages of my invention.

Having thus described my invention, what I claim is—

1. In a device of the class specified, an automatic coupling comprising a male member having an opening or passage, a female member having an opening or passage in communication with the train-pipe, an automatic valve carried by the female member and adapted to be moved to open position and wholly out of the path of the flow of air by contact with the male member, said valve having a closing movement in the direction of the mouth of the female member and serving to keep the same clear from foreign matter, substantially as specified.

2. In a device of the class specified, a male member comprising a tubular portion having a closed end, there being an opening formed in the wall of said tube, packing-rings arranged on the periphery of said male member, a female member having an opening or passage in communication with the train-pipe, a spring-pressed valve situated in said female member and normally held in closed position, said valve being adapted to be opened by contact with the male member, and to be moved thereby wholly out of the path of the flow of air, and the packing-rings of the male member serving to prevent leakage of air from the female member, substantially as specified.

3. In a device of the class specified, a coupling comprising interfitting male and female members having registering and communicating openings, the opening in one of said members being elongated to permit longitudinal play of said coupling members, without diminishing the flow of air.

4. In a device of the class specified, a male member comprising a tubular portion having a closed end and an opening for the passage of air, packing-rings disposed on said male member at a point to the rear of the air-passage, a female member having at its rear end a valve-receiving chamber and coupled at a point intermediate of its length to the train-pipe, a cylindrical valve adapted to said female member, a buffer disposed on the end of said valve for contact with the male member, and a compression-spring situated within the female member and normally holding said valve in closed position.

5. In a device of the class specified, a male member comprising a tubular portion having an air-passage or opening, a female member comprising an elongated tubular body, a

coupling arranged intermediate of the length  
of the female member and having a narrow  
elongated passage in communication with the  
train-pipe, said female member having an en-  
5 larged conical mouth, a valve arranged within  
the female member, packing-rings disposed  
on said valve, and a spring situated within  
the female member and normally holding  
said valve at a point adjacent to the mouth  
10 of the tubular body and serving to prevent  
the accumulation of foreign matter therein,  
substantially as specified.

6. In a device of the class specified, a pair

of interfitting coupling members, and an auto-  
matic valve carried by one of said members 15  
and adapted to be opened by contact with the  
mating member, said valve when opened be-  
ing wholly out of the path of the flow of air.

In testimony that I claim the foregoing as  
my own I have hereto affixed my signature in 20  
the presence of two witnesses.

GUY L. BONHAM.

Witnesses:

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H. E. BONHAM.