

No. 685,813.

Patented Nov. 5, 1901.

O. L. BROWN.

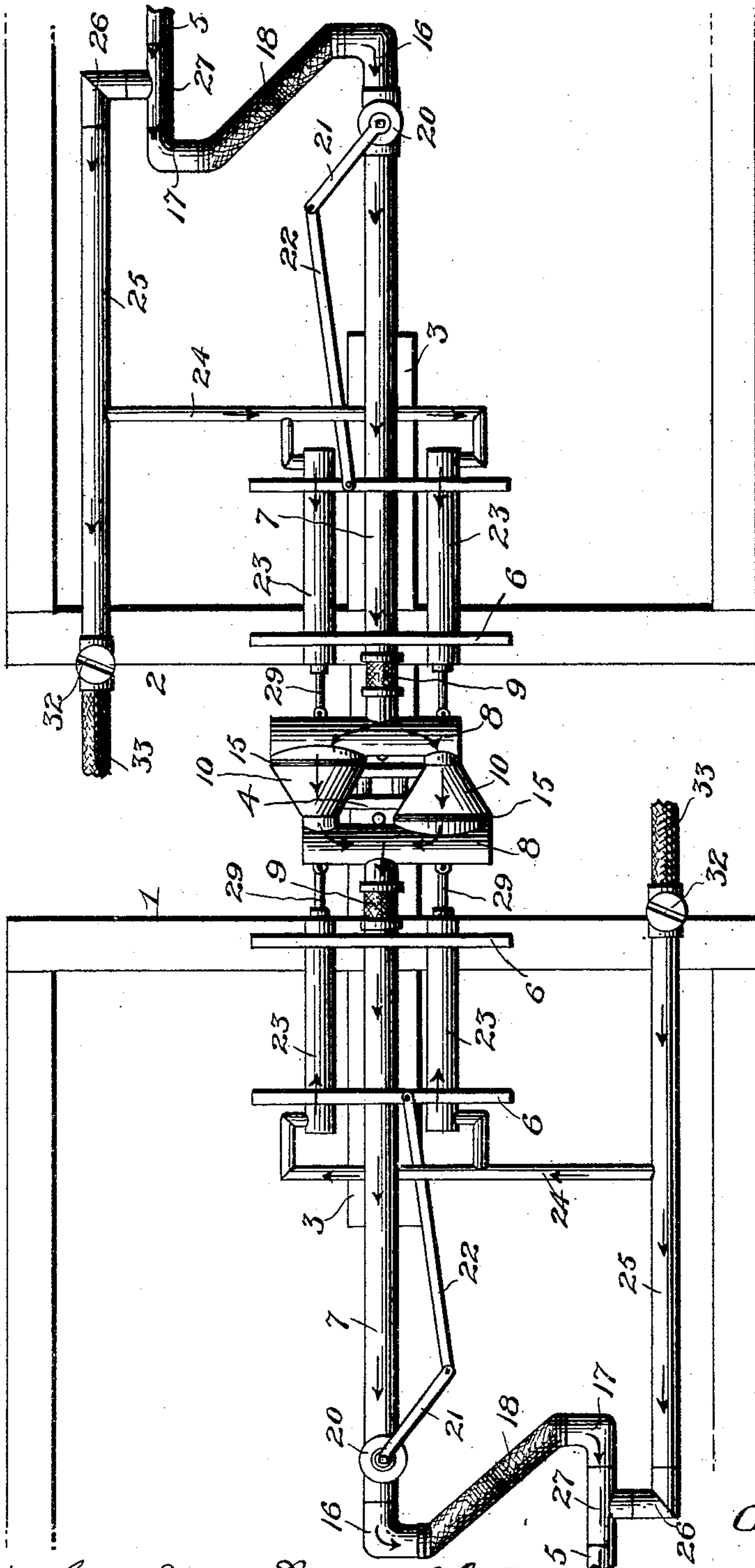
AUTOMATIC AIR COUPLING FOR RAILWAY CARS.

(Application filed July 25, 1901.)

(No Model.)

3 Sheets—Sheet 1.

*Fig. 1.*



Witnesses

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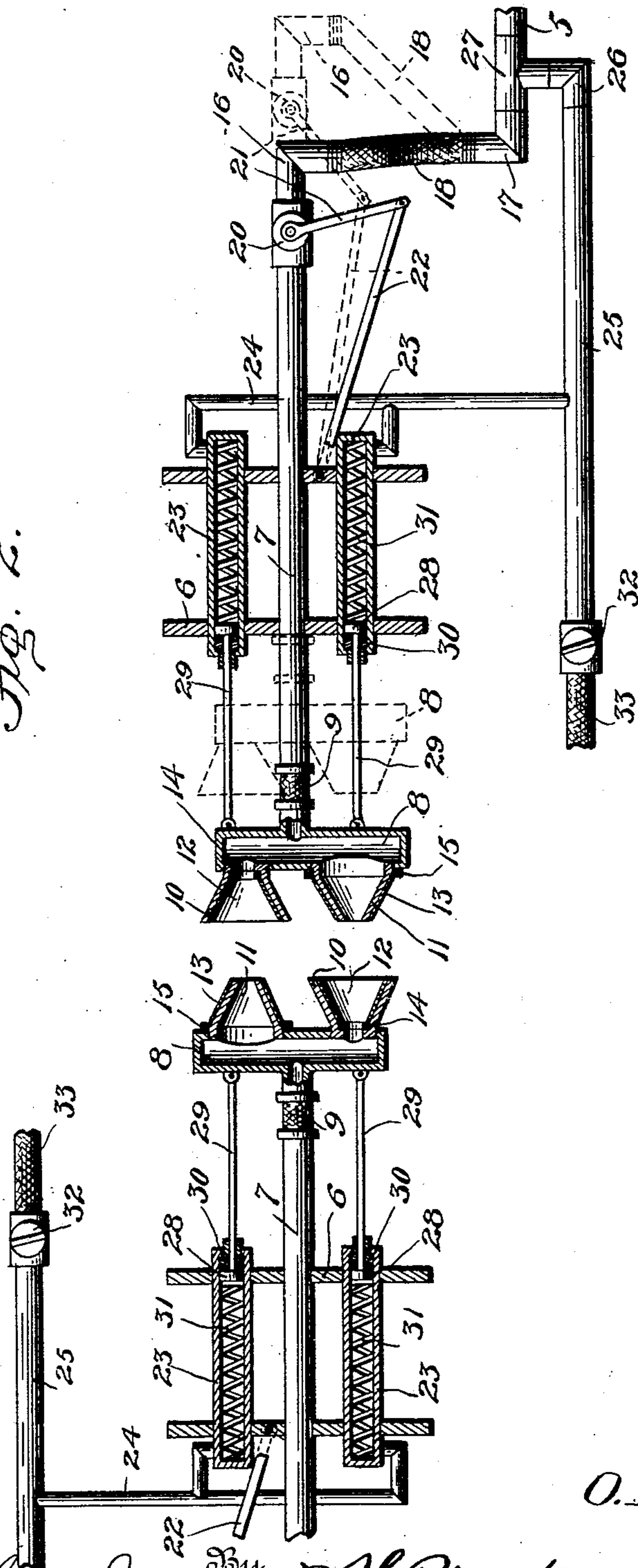
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Fig. 2.



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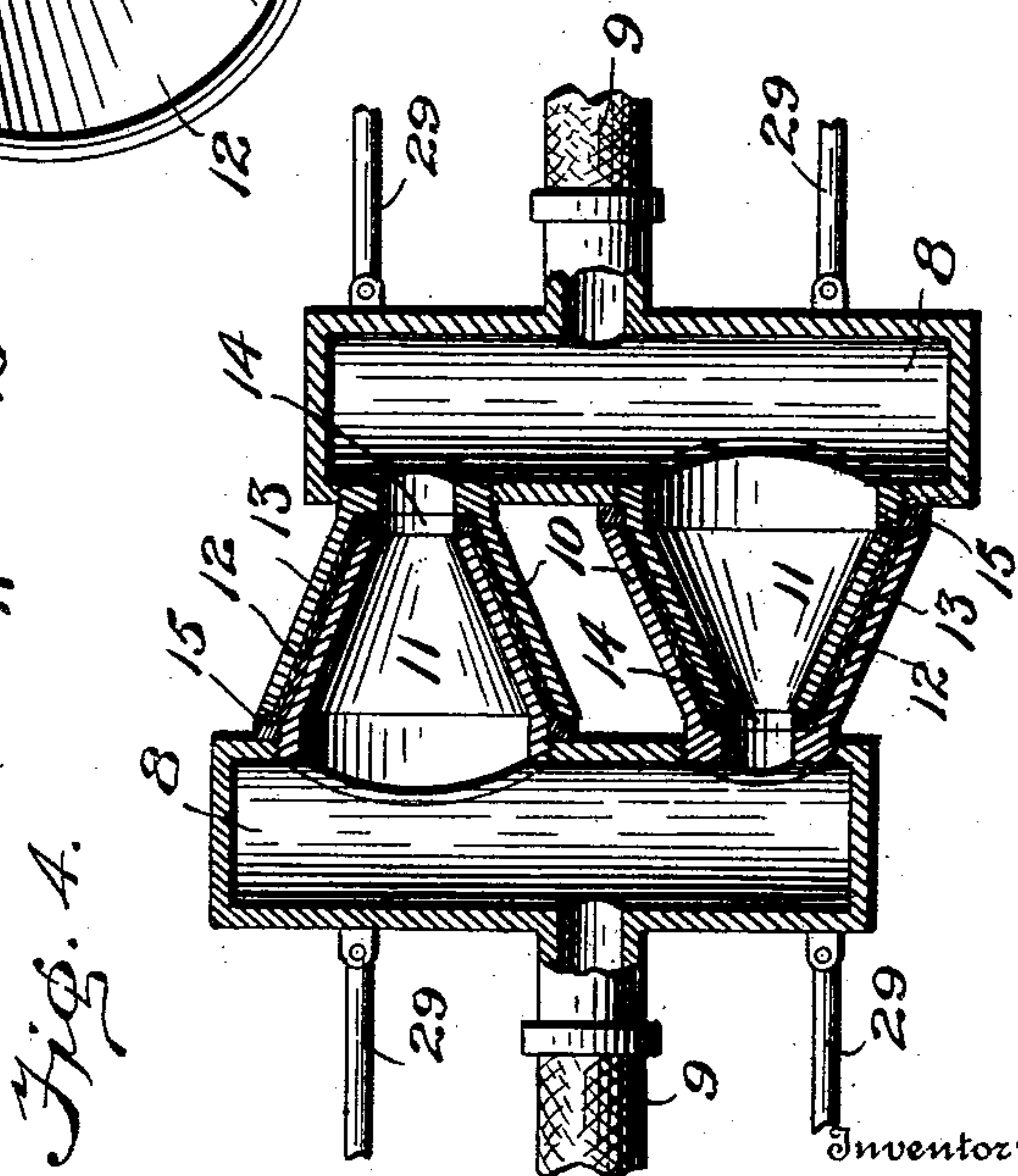
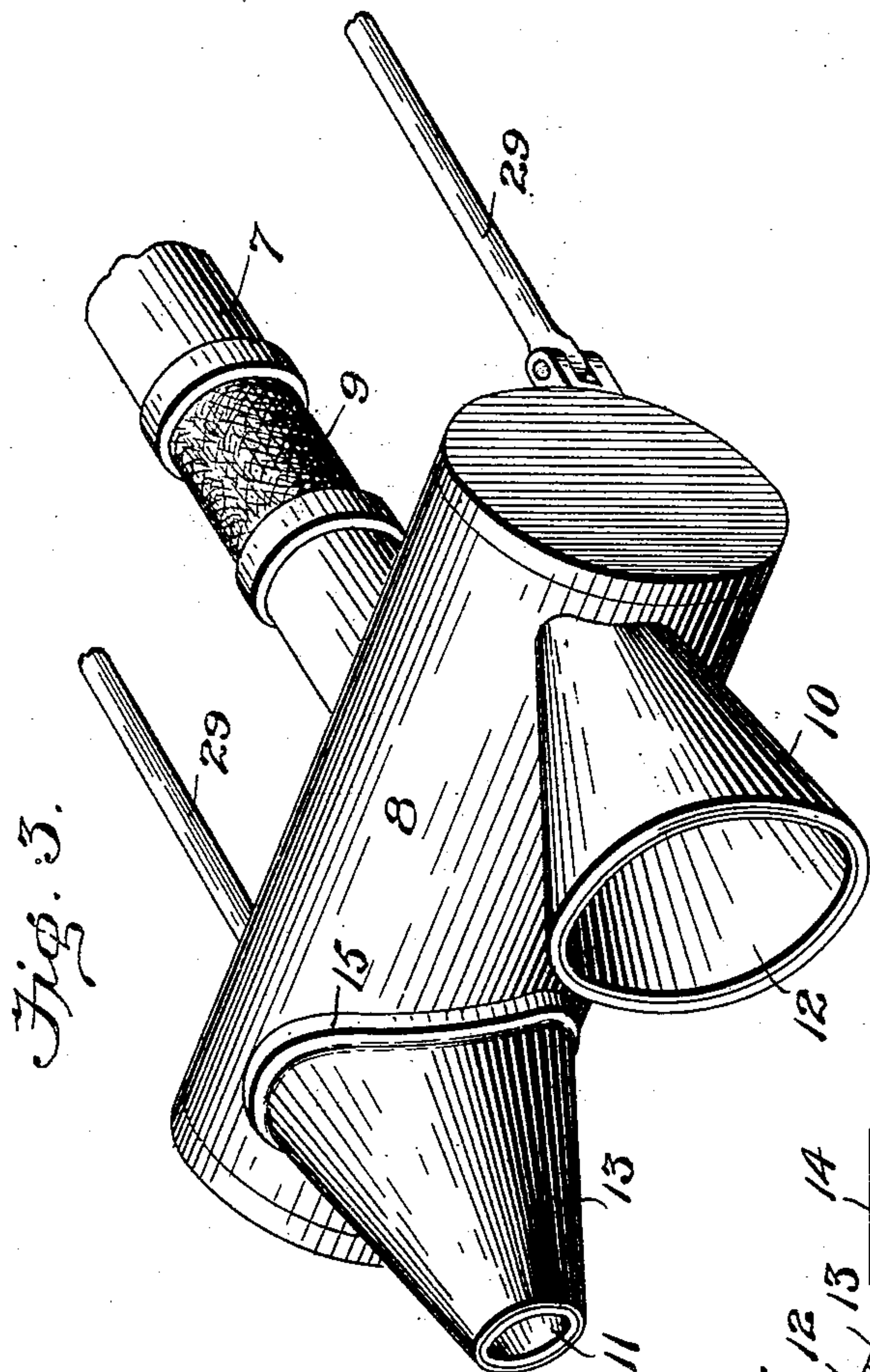
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3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC AIR-COUPLING FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 685,813, dated November 5, 1901.

Application filed July 25, 1901. Serial No. 69,651. (No model.)

*To all whom it may concern:*

Be it known that I, OSCAR LEE BROWN, a citizen of the United States, residing at Ellisville, in the county of Jones and State of Mississippi, have invented certain new and useful Improvements in Automatic Air-Couplers for Railway-Cars; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an automatic coupling for the air-brake connections of railway-cars.

The object of the invention is to provide an air-brake coupling which is entirely automatic in character, simple of construction, reliable in operation, and designed to wholly obviate the necessity of a railway employee going between the cars to join the coupling members of the air-brake system together.

With this and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a bottom plan view of the adjacent ends of two railway-cars, showing the application of the invention thereto, the coupling members being connected. Fig. 2 is a sectional plan view of the coupling connections of the cars detached. Fig. 3 is a detail view of the conical coupling members of a car and their immediate connections. Fig. 4 is a detail section through the couplings of two cars in coupled position.

Referring now more particularly to the drawings, the numerals 1 and 2 represent the adjacent ends of two coupled cars; 3, the draw-heads of the cars; 4, the couplings connecting the cars together and carried by said draw-heads, and 5 the train-pipes of the air-brake system.

In carrying my invention into practice I provide upon the under side of each car, at each end thereof, a suitable supporting-frame 6, the parts whereof are suitably connected and braced and also suitably secured to the car, the said frame being located immedi-

ately beneath the draw-head 3 and in rear of the coupling 4. In this frame is slidably mounted an air-conducting pipe 7, which is attached at its outer end to a tubular head or cross-pipe 8 through the medium of a flexible coupling 9, said coupling preferably being in the form of a short section of hose-pipe constituting a universal joint, whereby the tubular head or cross-pipe 8 is adapted to have an up and down as well as a lateral or side-wise swing to compensate for the vertical and lateral motion of the cars. The head 8 carries two cone-shaped coupling members 10 and 11, which are in open communication therewith and are detachably secured thereto in any preferred manner, the coupling 10 having its reduced end connected with the tubular head and its base or widened end outwardly disposed, while the coupling member 11 has its base or wide end connected with said tubular head and its reduced end outwardly disposed, the purpose of this arrangement being to provide for the perfect guidance of the coupling members of two cars into interlocking engagement when the cars are brought together. In order to secure an air-tight joint between the opposing coupling members of two cars, I provide the inner and outer surfaces of the coupling members 10 and 11, respectively, with linings 12 and 13, of rubber or other suitable material, and also provide each coupling member at its base and reduced end or apex with gaskets or washers 14 and 15 of similar material to form cushioned air-tight seats for the opposing coupling members when brought to interlock together. Air from the conducting-pipe 7 enters the tubular head or cross-pipe 8 and is then supplied, as indicated by the arrows, which show the course of the air, to the coupling members 10 and 11, from whence it flows, when the air-brake couplings of a train are connected together, from car to car throughout the length of the train in the usual manner. The air-conducting pipe 7 is connected at its inner end by means of elbows 16 and 17 and an interposed hose-pipe 18 with the train-pipe 5, the hose-pipe 18 being of such length as to form a flexible connection between the two pipes 7 and 5 to allow the pipe 7 to have ample longitudinal sliding movement to com-



pensate for the play of the coupling members  
 when such members of two cars are brought  
 together and to allow for the forward motion  
 or projection of said coupling members into  
 5 coupling position, as indicated by broken  
 lines in Fig. 2. At a suitable point in the  
 pipe 7 is provided a plug or other form of os-  
 cillatory valve 20, which controls the flow of  
 air through said pipe, and to the stem of which  
 10 is connected an operating-lever 21, which is  
 attached to the frame 6 through the instru-  
 mentality of a connecting-rod 22, so that when  
 the coupling members are projected forward  
 to the position shown in full lines in Fig. 2  
 15 the valve will be closed to cut off the flow of  
 air and so that when the coupling members  
 on one car are moved back by being coupled  
 with the opposing coupling members on  
 another car the said valve will be opened to  
 20 allow air to flow through the pipe 7 and con-  
 nected couplings.

Mounted upon the frame 6 are two fixed  
 cylinders 23, which are supplied with air from  
 a feed-pipe 24, connected with a pipe 25, at-  
 25 tached at its inner end by elbow 26 and T-joint  
 27 with the elbow 17 and pipe 5, the pipes 24  
 and 25 thus forming a by-pass for the supply  
 of air from the train-pipes to the inner ends  
 of said cylinders 23. In said cylinders 23 are  
 30 mounted plungers or pistons 28, each having  
 attached thereto a stem 29, which projects to  
 the exterior through a stuffing-box 30 in the  
 front end of the cylinder 23 and is connected  
 with the tubular head or cross-pipe 8, the  
 35 points of connection of the said two stems 29  
 on the said tubular head or cross-pipe 8 being  
 on opposite sides of the center of said head and  
 the pipe 7, so that both pistons and their re-  
 spective rods will exert the same or approxi-  
 40 mately the same pressure upon the head and  
 coupling members. The pistons or plungers  
 28 are normally pressed outwardly or for-  
 wardly by the action of the air in the rear ends  
 of the cylinders 23 to maintain the coupling  
 45 members in the operative position shown in  
 full lines in Fig. 2, and to assist also in this  
 action coiled springs 31 are arranged, one in  
 each cylinder, to act upon said pistons or plun-  
 50 gers 28. These springs also serve the func-  
 tion of cushions to take up the jar of impact  
 when the coupling members of the two cars  
 come together and interlock to prevent in-  
 jury to the parts of the coupling. The air  
 contained in the inner or rear ends of the two  
 55 cylinders also serves the purpose of a cushion  
 to take up the jar of impact of the coupling  
 members; but I find that the use of air and  
 springs in connection with each other is more  
 effective than the use of either alone and is  
 60 much safer and surer, as in the event of the  
 exhaust of air from either cylinder the spring  
 will take up the jar of impact, and in case of  
 injury to the spring the air will perform this  
 function.

65 The pipe 25 is provided with a valve 32 for  
 controlling the flow of air therethrough and

has connected therewith an ordinary form of  
 hose-coupling 33 for connection with a cor-  
 responding coupling upon a car unprovided  
 with my improved automatic coupling. 70

In operation the coupling members 10 and  
 11 are normally held projected to the full-line  
 position shown in Fig. 2 by the action of the  
 air and springs contained within the cylin-  
 ders 23. The pipe 7 is also held projected for-  
 75 wardly by the same agency a sufficient dis-  
 tance to cause the connections 21 and 22 to  
 hold the valve 20 closed, thereby preventing  
 the escape of air through the couplings.  
 When the couplings on the adjacent ends of 80  
 two cars come together in the act of coup-  
 ling the said coupling members, the tubular  
 head 8 and the pipe 7 are forced rearwardly  
 and the springs and air within the cylinders  
 23 take up the jar of impact, while the in- 85  
 ward movement of the pipe 7 causes the valve  
 20 to be opened to allow air to flow to and  
 through said couplings, thus establishing  
 communication between the train-pipes of the  
 two cars. When the coupling members are 90  
 disengaged, the action of the compressed air  
 and the springs within the cylinders 23 causes  
 the plungers or pistons 28 and their stems to  
 be forced outwardly, whereby the pipe 7 and  
 coupling device are restored to their normal 95  
 position and the valve 20 closed to cut off the  
 flow of air. Leakage of air through the con-  
 nected couplings is prevented by the rubber  
 linings 12 and 13 and the gaskets 14 and 15,  
 which form absolutely air-tight joints, while 100  
 the flexible connection 9 of the pipe 7 allows  
 the coupling to play up and down and side-  
 wise to compensate for the oscillation of the  
 cars.

Should it be desired to connect the train- 105  
 pipe of a car provided with my improved  
 coupling with the train-pipe of another car  
 unprovided therewith, the hose-coupling 33,  
 connected with the pipe 17, is coupled up with  
 the corresponding ordinary form of hose-coup- 110  
 ling upon the latter-named car and the valve  
 32 opened, thus establishing communication  
 between the train-pipe sections upon the cars.

From the foregoing description, taken in  
 connection with the accompanying drawings, 115  
 the construction, mode of operation, and ad-  
 vantages of the invention will be readily un-  
 derstood, and it will be seen that the said in-  
 vention provides an air-brake coupling which  
 is entirely automatic and adapted to operate 120  
 in an effective manner and which entirely ob-  
 viates the necessity of a railway employee go-  
 ing between or under the ends of two adja-  
 cent cars for the purpose of joining the coup-  
 lings together, which practice is necessary in 125  
 connecting hose-couplings of the ordinary  
 construction now in general use.

Changes in the form, proportion, and minor  
 details of construction may be made within  
 the scope of the invention without departing 130  
 from the spirit or sacrificing any of the ad-  
 vantages thereof.



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

1. In an automatic air-brake coupling, the combination of a stationary frame, a train-pipe, a conductor-pipe slidable in the frame and flexibly connected with the train-pipe, a tubular transverse coupling-head attached to the coupling-pipe and carrying coupling members, cylinders fixed to the stationary frame, pistons in said cylinders and connected to the coupling-head, springs in said cylinders and acting on the pistons, an air-feed pipe for supplying air from the train-pipe to the cylinders, a valve in the conductor-pipe, and connections between the stationary frame and valve for opening and closing said valve upon the movement of the conductor-pipe in one direction or the other, substantially as described.

2. In an automatic air-brake coupling, the

combination of a train-pipe, a slidable conductor-pipe flexibly connected with the train-pipe, a coupling-head attached to the conductor-pipe and carrying coupling members, cylinders, pistons in said cylinders and connected to the coupling-head, springs in said cylinders and acting on the pistons, an air-feed pipe for supplying air from the train-pipe to the cylinders, a valve in the conductor-pipe, means for opening and closing said valve as the conductor-pipe slides in one direction or the other, and an air-pipe for the attachment of an ordinary form of hose-coupling, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

OSCAR LEE BROWN.

Witnesses:

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J. T. BROWN.