

No. 751,682.

PATENTED FEB. 9, 1904.

J. H. PHILLIPS.
AIR BRAKE COUPLING.
APPLICATION FILED JULY 9, 1903.

NO MODEL.

Fig. 1.

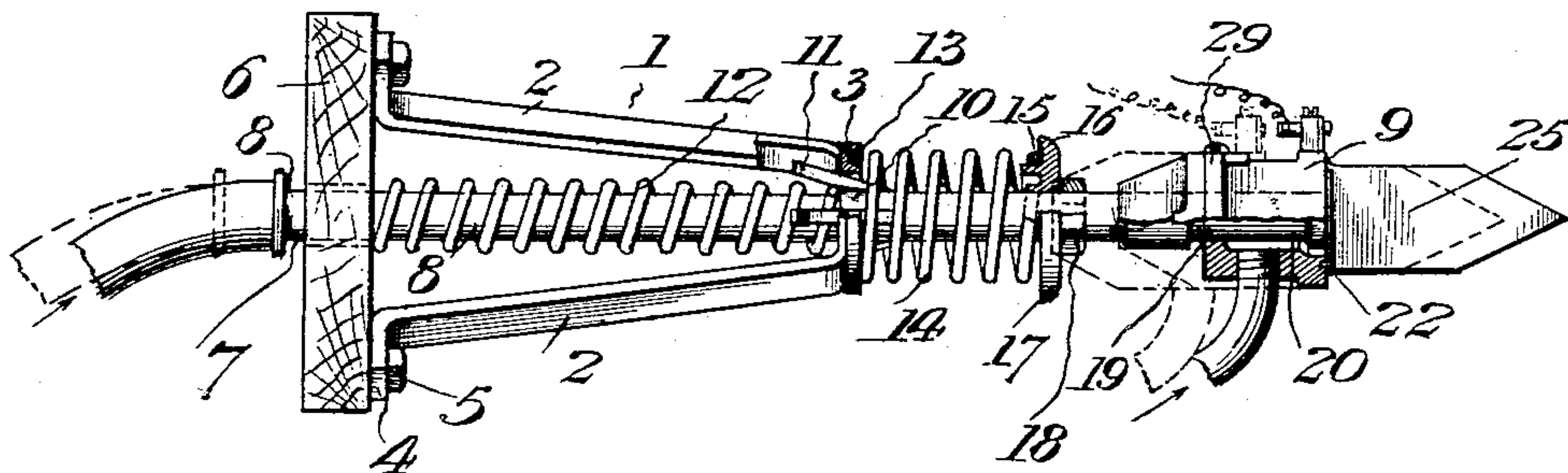


Fig. 2.

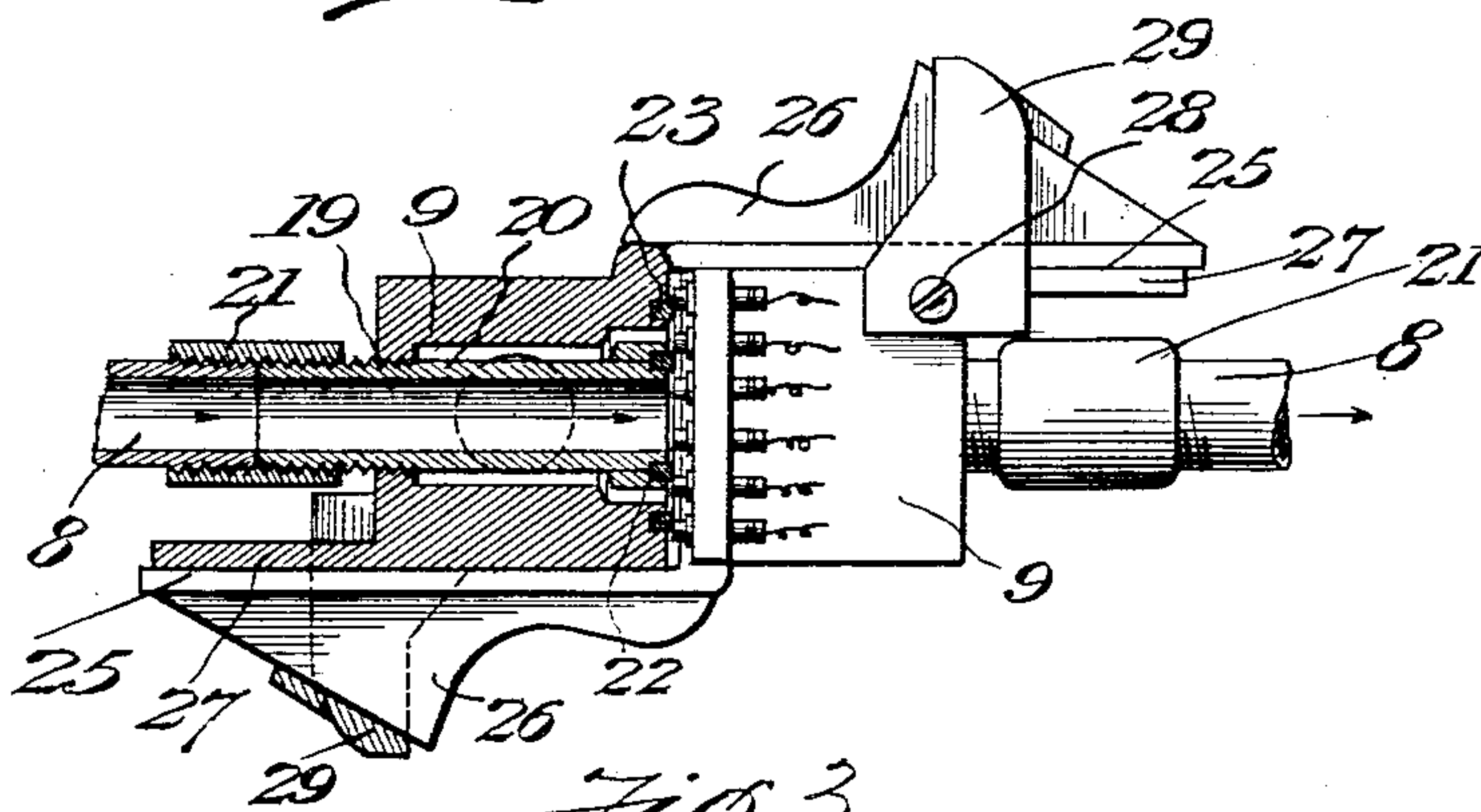
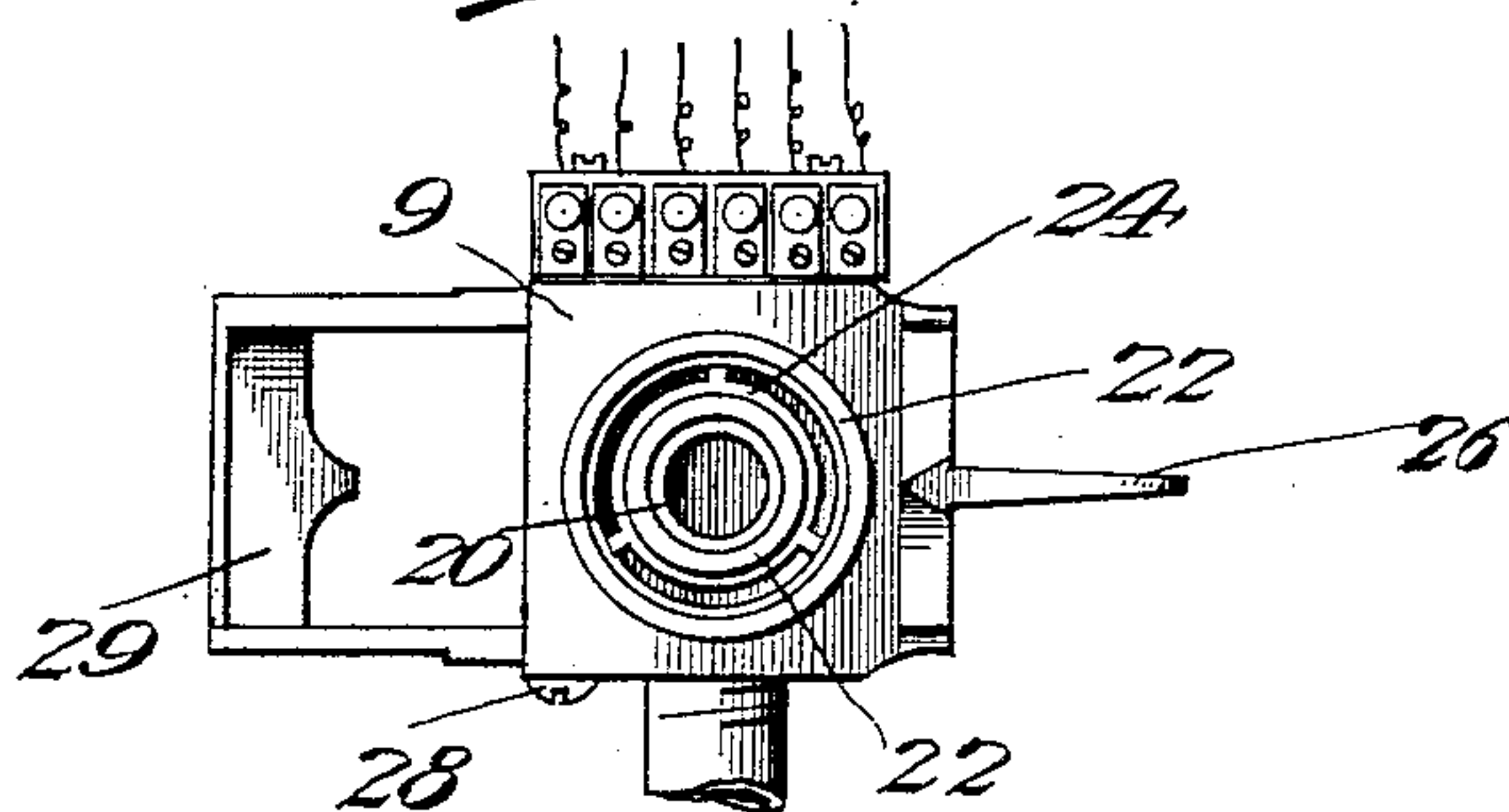


Fig. 3.



Witnesses
E. C. Stewart
Baxter Morton

John H. Phillips, Inventor
by *Chas. Snow & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

JOHN H. PHILLIPS, OF POTTSVILLE, PENNSYLVANIA.

AIR-BRAKE COUPLING.

SPECIFICATION forming part of Letters Patent No. 751,682, dated February 9, 1904.

Application filed July 9, 1903. Serial No. 164,880. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. PHILLIPS, a citizen of the United States, residing at Pottsville, in the county of Schuylkill and State of Pennsylvania, have invented a new and useful Air-Brake Coupling, of which the following is a specification.

This invention relates to coupling devices for railway-cars.

In modern railway-trains, especially trains for passengers, the most complete equipment comprises, in addition to the ordinary air-brake system connecting all the cars of the train, a system of pipes extending throughout the train to contain a heating or cooling medium, as may be desirable at different seasons of the year, telephone systems to afford communication between the different cars, telegraphic apparatus for sending messages from the moving train, and frequently electric circuits for sounding electric bells or operating other signaling devices in various parts of the train. It is therefore an object of importance to provide upon the railway-cars for use in such trains automatic coupling devices whereby the air-brake pipes, the pipes to contain a cooling or heating medium, and the various electric circuits may all be simultaneously and automatically connected when the cars are coupled together to form a train and automatically disconnected when the cars are uncoupled.

The principal object of this invention is to provide in a single coupling member adapted for engagement with a similar coupling member means for simultaneously and automatically connecting the air-brake pipes, the pipes to contain a heating or cooling medium, and the various electric circuits extending throughout the train.

A further object of the invention is to provide in a coupling device of the character specified means for positively holding the head of the coupling member in position to engage with the head of a similar coupling member, but permitting the lateral movement of the coupling device as an entirety after the heads of the members are in operative engagement.

A further object of the invention is to provide in a coupling device of the character specified a plurality of independently-yieldable contact-pieces adapted to engage with a plurality of similarly-arranged contact-pieces upon a corresponding coupling device and which will be effective in maintaining complete circuits while the train is in motion.

With the objects above stated and others in view, as will appear as the invention is more fully disclosed, the same consists in the construction and novel combination and arrangement of parts of a coupling device hereinafter fully described, illustrated in the accompanying drawings, forming part of this specification, in which corresponding parts are designated by the same characters of reference throughout the several views and having the novel features thereof particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view, partly in side elevation and partly in section, of a coupling device of the character hereinafter described. Fig. 2 is a view looking down upon the heads of two coupling devices when in operative engagement, one of the heads being shown in horizontal section and the other being shown in plan. Fig. 3 is a face view of the head of one of the coupling devices as shown in Fig. 2.

Referring to the drawings in detail, 1 designates a frame comprising a plurality of arms 2, disposed in a substantially horizontal direction, but converging slightly toward their outer ends, where they are attached to or formed integral with a ring 3 and having at their other ends lugs 4, provided with openings for the passage of bolts 5, by means of which the frame is rigidly secured to a transverse timber 6 on the bottom of a railway-car. The cross-timber 6 is provided with an opening 7, equidistant from the lugs at the ends of the arms 2 of the frame, and an air-brake pipe 8 extends through the opening 7, in which it is sufficiently loose to have free longitudinal movement therein and be susceptible to some slightly pivotal and lateral movement. Intermediate of its ends the air-brake pipe 8 has rigidly associated therewith, as by

brazing, a conical guide member 10, provided on its outer surface with a plurality of ribs 11, arranged at equal intervals thereon and disposed longitudinally of the guide member, as shown. Between the guide member 10 and the cross-timber 6 is arranged a spiral spring 12 of such diameter that it encircles the pipe 8 without contact therewith and fits within the ribs 11 on the guide member 10. The spring 12 is of such length that it holds the pipe 8 normally forward, so that the ribs 11 on the guide member contact with the inner margin of the ring 3 at the forward end of the frame 1.

As the ribs 11 are all disposed at the same angle to the pipe 8 and the opening 7 in the cross-beam 6 is disposed equidistant from the rear ends of the arms 2, the spring 12 will hold the pipe 8 normally in the center of the ring 3 and keep its axis in alinement with a line extending longitudinally of the car.

On the forward surface of the ring 3 is provided an annular groove 13, which forms a seat for the rear end of a spring 14 of larger diameter than the spring 12, the front end of which engages with a groove 15, formed on the rear face of a flange 16, formed integral with a collar 17, which is threaded on the pipe 8 between the ring 3 and the coupler-head 9 above-mentioned. The collar 17 is adjustable in position upon the pipe 8, which is threaded for a suitable distance to permit the necessary range of adjustment and is secured in adjusted position by means of a jam-nut 18, which is provided on the pipe 8 in front of the collar 17.

The coupler-head 9 consists, preferably, of a block of substantially square cross-section, having on the under surface a threaded opening 19 for the reception of the threaded end of a pipe for steam or a cooling medium, leading into the interior of the block, through which extends a pipe 20 of the same diameter as the pipe 8, to which it is secured by means of a threaded coupling 21 of the ordinary type.

The face of the head 9 is formed in a plane at right angles to the axis of the pipe 8, and the pipe 20 terminates substantially flush with said face. The pipe 20 is somewhat smaller than the cavity in the interior of the block and passes through the center of said cavity, leaving an annular space external to the pipe for the passage of steam from the pipe, which is threaded into the opening 19 above-mentioned.

In order to prevent the escape of steam and air between the heads of cooperating coupling devices when the coupling devices are in use, there are provided around the end of the pipe 21 and around the outer rim of the cavity in the head 9 and projecting slightly beyond the face of said head two gaskets or packing-rings 22 and 23, the former being secured in position by means of a spider 24, which sur-

rounds the gasket and rests against an annular shoulder formed in the cavity in the head 9, as shown in Fig. 3.

Upon one side of the head 9 there is provided an extension consisting of a plate 25, disposed in a vertical plane and tapering to a point and provided on the back with a fin 26, the outer edge of which presents at its forward end an incline at an acute angle to the face of the plate. Upon the opposite side of the head 9 there is a rearwardly-extending plate 27 in alinement with the side of the head, and there is rigidly attached to the head by screws 28 or other suitable fastening means a loop 29, having an inclined inner face adapted to conform to the incline on the forward end of the fin 26 upon a cooperating coupling device.

The dimensions of the coupling device are such that when a car is uncoupled the head 9 will be held somewhat in advance of the car-coupler, and when two cars are coupled the engagement of the head 9 on one car with the head upon the other will force each coupling device rearward against the action of springs 12 and 14 until the coupler occupies a position shown in dotted lines in Fig. 1. The engagement of two coupling members will cause the extension 25 on one to enter the loop 29 on the other, and the engagement of the inclined outer surface of the fin on each extension with the inclined surface of the loop on the other coupling member will hold the two heads 9 in rigid association, so that the hard-rubber gaskets 22 23 in the faces of the coupling-heads will be held in complete contact and prevent any escape of air or steam from the coupling-heads.

The rearward movement of each of the pipes 8 will cause the ribs 11 on the conical guide members 10 to pass out of engagement with the inner surfaces of the ring 3, and lateral movement of the pipes 8 within said rings will be permitted, so that the bending of a train as it passes around a curve will not cause any separation of the faces of the coupling-heads 9.

The springs 14 have a tendency at all times when adjacent cars in a train are disalined in going around a curve in the track and the pipes 8 are shifted laterally in the rings 3 to return the pipes to their normal position, and said springs also supplement the action of the springs 12 to force the heads 9 forward and into contact.

Associated with each of the coupling-heads 9, and preferably secured by screws 30 upon the upper surface thereof adjacent to the face, is a block 31, insulated from the head 9 by a strip of insulating material 32 and provided with a plurality of transverse openings in which are seated a number of spring-supported contact members 33, in this instance six in number. The contact members 33 are of course insulated from each other and from the block 31 and are adapted to contact with

and form complete electrical circuits through similar members provided on a corresponding coupling member. Each of the contact members projects normally beyond the face of the head 9 of the coupling device upon which it is secured, and when the coupling device is in operation, as shown in Fig. 2, the contact members will be forced back to the position shown by engagement with the corresponding contact members upon another coupling device.

Each of the spring-supported contact members is to be provided with means for associating an electrical conductor therewith, and it is to be understood that the contact members and conductors will be arranged in pairs, so that each pair of contact members will be associated with a single circuit, so that each circuit will be complete in itself and distinct from the others.

While six contact members have been shown and described herein, that number being sufficient to complete three circuits to serve, for example, for telephones, telegraph connections, and for a call-bell system or other signal apparatus, it is to be understood that the number of contact members may be increased to meet the requirements of any train without departing from the spirit of the invention.

The coupling above described is designed, primarily, for use upon passenger-trains; but it will be obvious that it may be employed to advantage upon freight-trains, mine-trains, and, indeed, upon any kind of trains upon which air-brakes are employed. As the electrical contact members are mounted in a block which is removable from the coupling-head, the electrical contacts may be removed from the coupling member when it is to be used upon trains in which electric circuits are not employed for the transmission of signals.

The coupling device is so constructed that it is impossible for cars provided with such devices to be coupled without bringing the brake-couplers into engagement, and when so engaged the possibility of disengagement while the cars remain coupled is absolutely prevented.

While it is desirable that trains be supplied throughout with coupling devices of the character described, it will be obvious that two or more cars in a train may be so supplied and the coupling devices thereon used separately to connect the air-brakes and other mechanisms, while other coupling devices are employed for analogous purposes on the other cars. The action of any pair of the coupling devices is necessarily independent of that of any other pair, and consequently it is unnecessary, though desirable, to have every car in the train equipped with coupling devices of this character.

It is to be understood that while I have described and illustrated the preferred form of embodiment of the invention various changes in the form, proportions, and exact mode of

assemblage of the elements thereof may be made without departing from the spirit of the invention or sacrificing any of its advantages. I therefore reserve the right to make such changes in the apparatus as do not depart from the spirit of the invention and lie within the scope of the appended claims.

Having described the nature and use of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A coupling device for railway-cars, comprising a coupling member normally held positively against lateral movement but rendered susceptible of lateral movement by engagement with a corresponding member.

2. A coupling device for railway-cars, comprising a coupling member yieldably held against longitudinal movement and normally held positively against lateral movement, but rendered susceptible of lateral movement by operative engagement with a corresponding member.

3. In a coupling device for railway-cars, a coupling member mounted for lateral movement and means, displaceable by contact of said member with an opposing coupling member, for normally holding said member against lateral movement.

4. In a coupling device for railway-cars, a coupling member mounted for longitudinal and lateral movements and means, displaceable by longitudinal movement of the member for normally holding the member against lateral movement.

5. In a coupling device for railway-cars, a movable coupling member and means releasable by longitudinal movement of the member for normally holding said member positively in position to engage with a corresponding coupling member.

6. In a coupling device for railway-cars, a frame, a movable coupling member, and centering means normally operative to hold said coupling member in the center of said frame, said centering means being releasable by the contact of the coupling member with an opposing coupling member.

7. In a coupling device for railway-cars, a frame, a coupling member movable within said frame, and centering means rigidly associated with said coupling member, said centering means being normally operative to hold said coupling member in the center of said frame and being releasable by contact of said coupling member with an opposing coupling member.

8. In a coupling device for railway-cars, a frame, a coupling member supported within said frame and held against lateral movement at its rear end, and means releasable by contact of the coupling member with an opposing coupling member, for normally engaging with the forward end of said frame to hold the coupling member against lateral movement therein.

9. In a coupling device for railway-cars, a rigidly-supported frame having an opening in the forward end, a movable coupling member supported in said frame, a tapering centering member carried by said coupling member, and means for normally holding said centering member normally in engagement with the inner wall of the opening in the end of the frame.

10. In a coupling device for railway-cars, a rigidly-mounted frame having a circular opening in the forward end thereof, a coupling member movably supported in said frame, a conical centering member carried by said coupling member and means for forcing said conical centering member normally into engagement with the inner wall of the opening in the end of said frame.

11. In a coupling device for railway-cars, a rigidly-mounted frame having a circular opening in its outer end, a coupling member movably supported in said frame, a conical centering member having longitudinal ribs on the outer surface thereof, and means releasable by the contact of said coupling member with an opposing coupling member for normally holding the ribs of the centering member in engagement with the inner wall of the opening in said frame.

12. In a coupling device for railway-cars, a rigidly-mounted frame terminating at its forward end in a ring, a coupling member movably supported in said frame and extending through said ring, a conical centering member rigidly mounted on said coupling member, and means for normally holding said centering member in engagement with the inner wall of said ring.

13. The combination in an air-brake coupling, of a frame adapted to be supported on a

transverse car-beam and terminating in a ring, an air-brake pipe having a conical centering member rigidly associated therewith and adapted to contact with said ring, a spring engaging said centering member to hold it normally in engagement with said ring, a head on the forward end of said pipe normally projected beyond the position occupied thereby when the coupling device is in use, and interlocking means on said head to engage with interlocking means on a similar head to hold said heads in operative engagement.

14. The combination in an air-brake coupling of a frame adapted to be mounted on a transverse car-beam and terminating in a ring having an annular groove on its forward surface, an air-brake pipe extending through said ring and having rigidly associated therewith a conical centering device adapted to contact with the interior of said ring, a spring engaging said centering device to hold it normally in engagement with said ring, a collar mounted on said pipe in advance of said ring, a spring seated in the groove on said ring and engaging said collar to project said pipe forward, a head mounted on the forward end of said pipe and normally projected beyond the position occupied thereby when the coupling device is in use, and interlocking devices on said head to engage with interlocking devices on a similar head to hold said heads in operative engagement.

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

JOHN H. PHILLIPS.

Witnesses:

JOHN H. WILLIAMS,
FRANK LITTLE.