J. B. RAMER.

TRAIN PIPE COUPLING.

APPLICATION FILED DEC. 29, 1908. RENEWED JAN. 4, 1911.

999,869.

Patented Aug. 8, 1911.

2 SHEETS—SHEET 1.

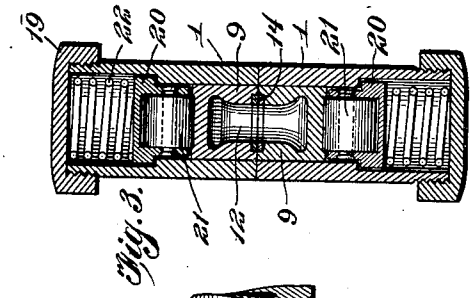


Fig. 3.

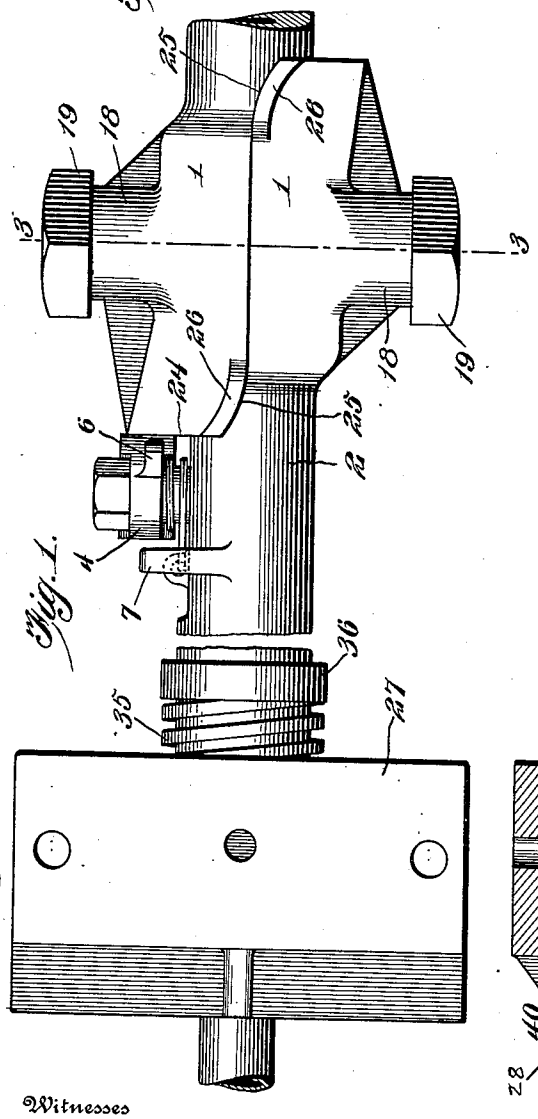


Fig. 1.

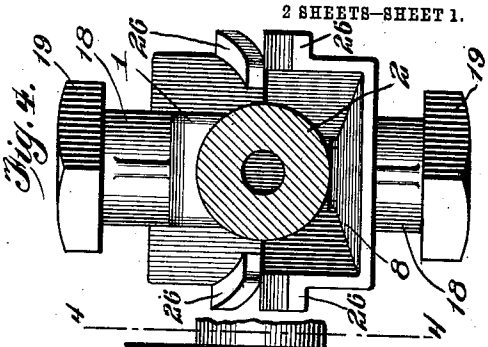


Fig. 4.

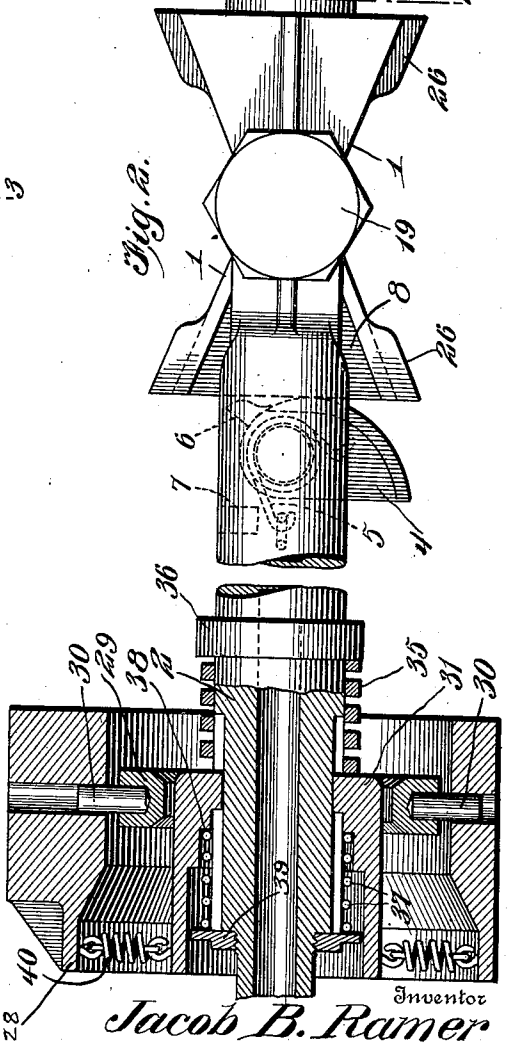


Fig. 2.

Witnesses

Louis R. Heinrichs.

R. M. Smith.

Inventor

Jacob B. Ramer

By Victor J. Evans

Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

J. B. RAMER.

TRAIN PIPE COUPLING.

APPLICATION FILED DEC. 29, 1908. RENEWED JAN. 4, 1911.

999,869.

Patented Aug. 8, 1911.

2 SHEETS—SHEET 2.

Fig. 5.

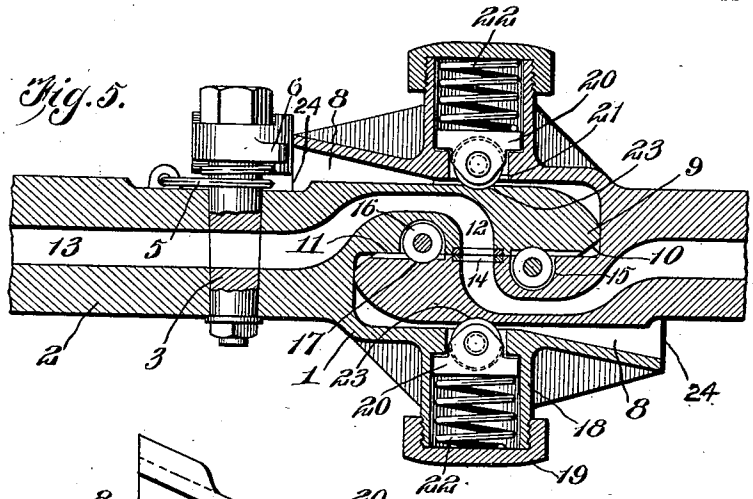


Fig. 6.

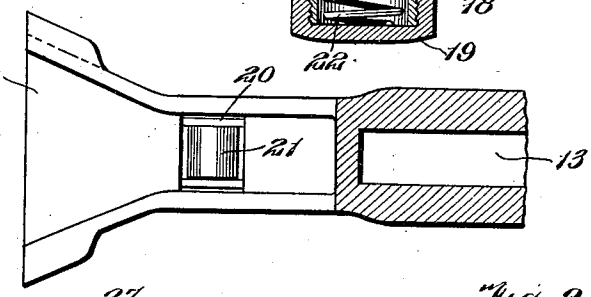


Fig. 7.

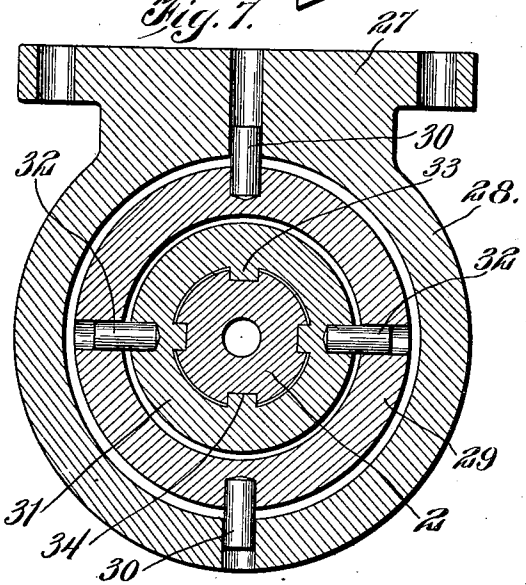
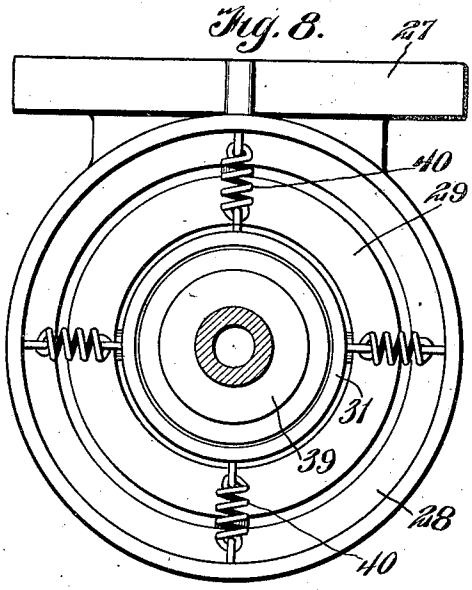


Fig. 8.



Witnesses

Louis S. Heinrichs.

R. M. Smith.

Inventor

Jacob B. Ramer

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

JACOB B. RAMER, OF CHAMBERSBURG, PENNSYLVANIA.

TRAIN-PIPE COUPLING.

999,869. Specification of Letters Patent. Patented Aug. 8, 1911.

Application filed December 29, 1908, Serial No. 469,742. Renewed January 4, 1911. Serial No. 600,852.

To all whom it may concern:

Be it known that I, JACOB B. RAMER, a citizen of the United States, residing at Chambersburg, in the county of Franklin and State of Pennsylvania, have invented new and useful Improvements in Train-Pipe Couplings, of which the following is a specification.

This invention relates to automatic train pipe couplings, the object of the invention being to provide a simple and practical device for automatically coupling and uncoupling them.

A further object of the invention is to provide means for insuring the proper contact between the meeting faces of the coupling heads and the bringing together and moving apart of the gaskets in planes transverse to the direction of movement of the heads in the coupling and uncoupling operation.

A further object of the invention is to provide means for effecting an interlock between the coupling heads at the moment they are brought into proper working relation to each other.

A further object of the invention is to provide means whereby in the coupling or uncoupling of the heads, the air valve or valves will be automatically thrown, or in other words, opened as the heads are brought together and closed as the heads are separated.

A further object of the invention is to so mount the air pipe sections immediately adjacent to the head as to admit of the necessary relative play in all directions to allow for the coupling and uncoupling operations and also to allow for the necessary flexure in turning curves.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as herein fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a plan view of a pair of coupling heads in their operative relation to each other, showing also the mounting of one of the heads and parts connected therewith. Fig. 2 is a vertical longitudinal section through the hanger, showing the coupling heads, etc., in elevation. Fig. 3 is a cross section on the line 3—3 of Fig. 1. Fig. 4 is a cross section on the line 4—4 of Fig. 2. Fig. 5 is a horizontal longitudinal section taken through the coupling heads in their working position. Fig. 6 is a vertical longitudinal section through one of the heads, looking toward the presser roller which is shown in elevation. Fig. 7 is a vertical transverse section through the hanger and the parts supported thereby. Fig. 8 is a rear face view of the same, showing the air pipe in cross section.

The coupling device of this invention embodies essentially two coöperating heads 1 each of which is mounted on and preferably formed integrally with a pipe section 2 forming a part of the train pipe, the latter being of the usual construction and arrangement and not being shown. Adjacent to each head is arranged an air valve 3 of taper plug form, the same being provided at one end with a valve operating arm 4 and the valve being normally held closed by means of a coiled spring 5 one end of which may be connected with a fixed lug while the other end is connected with the arm 4. The arm is also provided with a stop shoulder 6 which normally bears against the fixed stop 7 when the valve is closed, the tension of the spring 5 being utilized to hold the arm in a position in which the stop shoulder 6 rests against the stop 7, the valve being closed so as to prevent the passage of air through the bore of the pipe.

Each coupling head is provided with a flaring entrance throat 8 and is also provided with a longitudinally extending tongue 9 having a beveled end or nose 10, the tongue of one of the coupling heads being adapted to find its way into the flaring entrance throat on the other head until both tongues are brought into the overlapping relation illustrated in Fig. 5, wherein, it will be observed that at one side said tongues come together on the meeting line 11. Each of the tongues 9 is provided with a lateral port 12 which communicates with the bore 13 of the pipe with which said tongue is connected as clearly shown in Fig. 5.

The meeting faces of the tongues are rabbeted as shown, to admit of the insertion of gaskets or packing rings 14 which by

bearing against each other form an air-tight contact between the coupling heads thereby preventing the escape of air at the point where the meeting faces of the tongues 9 come together.

Each of the tongues 9 is provided in its meeting face with a recess 15 in which is journaled a combined bearing and locking roller 16 which is adapted to travel along the meeting face of the opposite tongue and drop into a notch 17 in such meeting face thereby forming an interlock between the tongues of the coupling heads, said interlock being effected when the two gaskets 14 are opposite and in contact with each other as shown in Fig. 5.

The coupling heads are further provided with outwardly extending tubular housings 18 normally closed at their outer ends by means of caps 19 in the form of nuts which screw upon said tubular housings as shown in Fig. 1. Within each of said housings there is mounted a slide 20 in which is journaled a presser roller 21. The slide 20 is pressed inward by means of a coiled spring 22 which is interposed between the slide and the cap or nut 19, said spring acting to urge the slide inward and force the presser roller 21 into engagement with the outer face of the adjacent tongue carried by the opposite head as clearly shown in Fig. 5. When the parts are in their working relation as shown in Fig. 5, the presser rollers 21 lie in notches 23 in the outer faces of the tongues thereby acting as additional interlocking means and being complemental to the locking and bearing rollers 16, above described.

From the foregoing description it will be observed that as the coupler heads are brought into engagement with each other and as the tongues slide along into overlapping relation, the meeting faces and the gaskets of the tongues are maintained out of contact with each other until the rollers 16 drop into the notches 17 and at the same time the presser rollers 21 drop into the recesses 23. This occurs just when the gaskets 14 are exactly opposite each other and in this way the gaskets are brought together laterally and prevented from sliding, one upon the other. In the same manner as the coupling heads are drawn apart, the first movement of the gaskets is away from each other, there being an absence of any sliding movement upon one another. Then when the rollers move out of their recesses, they travel along the surfaces of the tongues, holding the gaskets clear and preserving the working faces of the gaskets during both the coupling and uncoupling operation. It will thus be observed that the coupling and uncoupling is effected automatically by the coming together or separation of the cars themselves.

By reference particularly to Figs. 1 and 2, it will be observed that each of the coupling heads is provided with a valve operating extension or flange 24 which operates against the arm 4 of the valve to swing said arm and open the valve when the coupling heads are brought together as shown in Fig. 2. When the heads are drawn apart, the springs 5 operate to instantly close the valves 3 to cut off the air. It is also desirable to bevel or round off the inner corners of the heads as shown at 25 and such portions of the heads may also be provided with extended flanges or wings 26 to provide broad and ample faces for the heads as they are brought together in the operation of coupling the same.

In order to provide for the necessary flexure and normal displacement of the heads in the coupling and uncoupling operations and in rounding curves, I provide in connection with the pipe leading to each head a bracket or hanger 27 adapted to be secured to the car body and embodying a circular frame 28 in which is mounted a swivel ring 29, the same being swung on diametrically opposite pivots 30. Within the ring 29 is arranged a swivel head or sleeve 31 and this head is mounted on diametrically opposite pivots 32 which are arranged at right angles to the first-named pivots 30. In this way, the sleeve or head 31 is mounted on a universal joint so that it may be turned in any direction. The head is provided on its inner surface with ribs 33 arranged at suitable intervals and lying in corresponding grooves 34 in the pipe 2 leading to the coupling head above referred to. At one side of the head a bumper or cushion spring 35 encircles the pipe 2 and is interposed between the head or sleeve 31 and a collar 36 on the pipe, while a relief spring 37 encircles said pipe within the collar or sleeve 31 and is interposed between an internal shoulder 38 in said sleeve and a collar 39 on the pipe 2, as clearly shown in Fig. 2. The swiveled head or sleeve 31 is held yieldingly in a central position by means of coiled springs 40 secured at their inner ends to said sleeve and at their outer ends to the circular portion 28 of the cylinder 27 as shown in Figs. 2 and 8. These springs serve to center and balance the swivel head 31 so as to hold the coupler head connected therewith in a substantially central position while allowing said head to swing in any direction under the influence of the opposing head coupled therewith. This swiveled and centering spring arrangement not only facilitates the coupling or uncoupling of the heads but also provides for the necessary flexure required when the train is rounding a curve.

I claim:—

1. In a train pipe coupling, the combination of two coupling heads having ported

lateral meeting faces, a roller carried by one head, and a depression in the other head to receive said roller.

2. In a train pipe coupling, the combination of two coupling heads having ported lateral meeting faces, and spring-pressed slides carrying rollers which act on the heads to press the meeting faces yieldingly together.

3. In a train pipe coupling, the combination of two coupling heads having ported lateral meeting faces, and spring-pressed slides operating with an inward pressure against the heads to force the meeting faces yieldingly together.

4. In a train pipe coupling, the combination of two coupling heads having ported lateral meeting faces, and spring pressed rollers for urging the meeting faces yieldingly together.

5. In a train pipe coupling, the combination of two coupling heads having ported lateral meeting faces, spring-pressed rollers for pressing the meeting faces yieldingly together, and means for restricting the inward movement of the said rollers.

In testimony whereof I affix my signature in presence of two witnesses.

JACOB B. RAMER.

Witnesses:
GEO. T. RUMMEL,
W. F. DEARDORFF.