

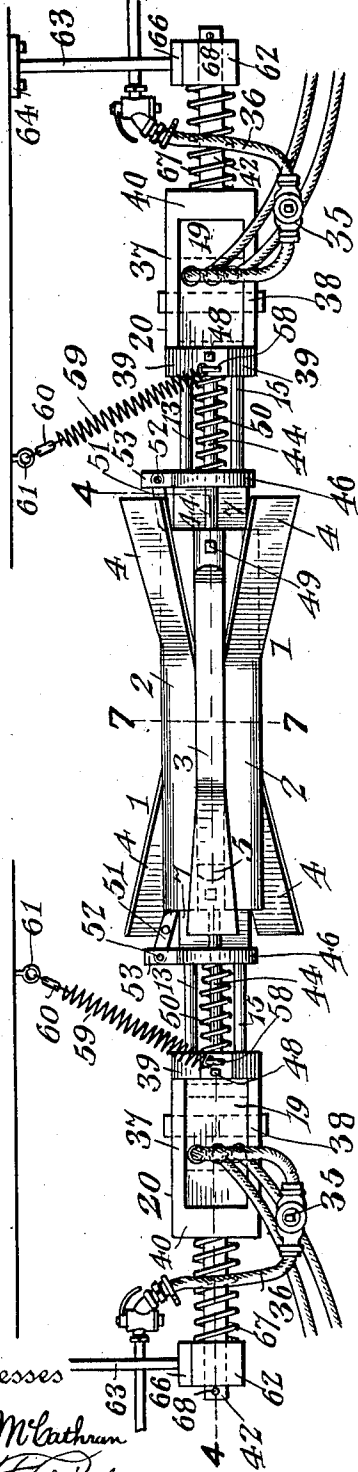
A. M. PORTER.
 AUTOMATIC TRAIN PIPE COUPLING.
 APPLICATION FILED SEPT. 14, 1911.

1,021,261.

Patented Mar. 26, 1912

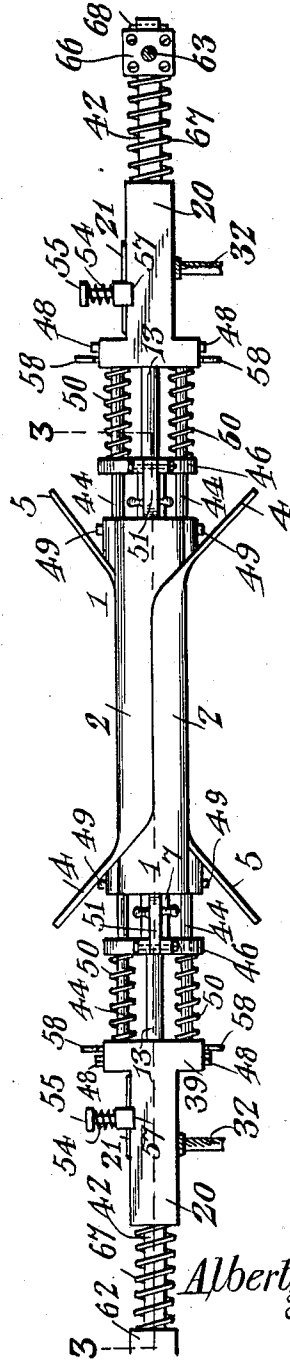
3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
 Jas. V. McLathrum
 H. J. Riley

Fig. 2.



34

Albert M. Porter
 Inventor

E. J. Siggers
 Attorney

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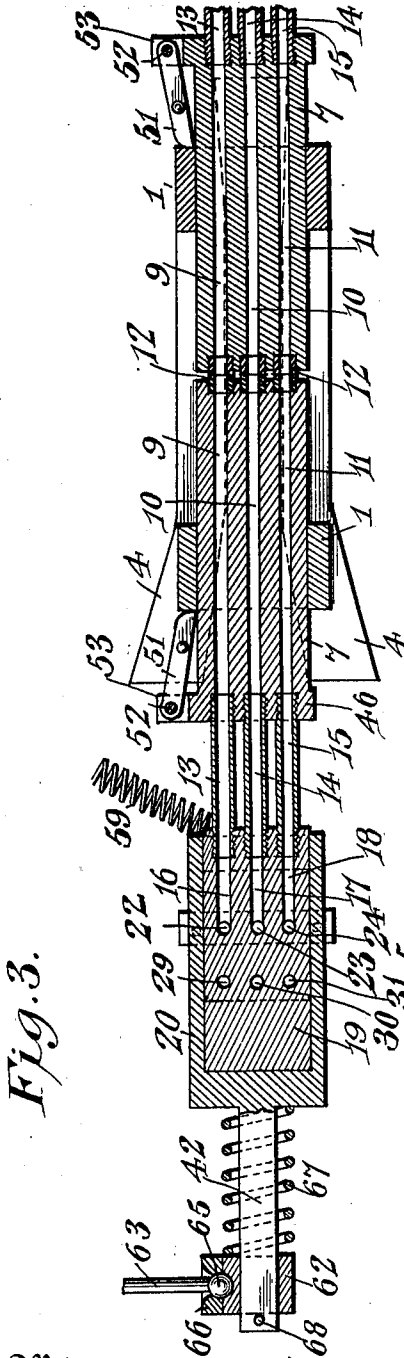


Fig. 3.

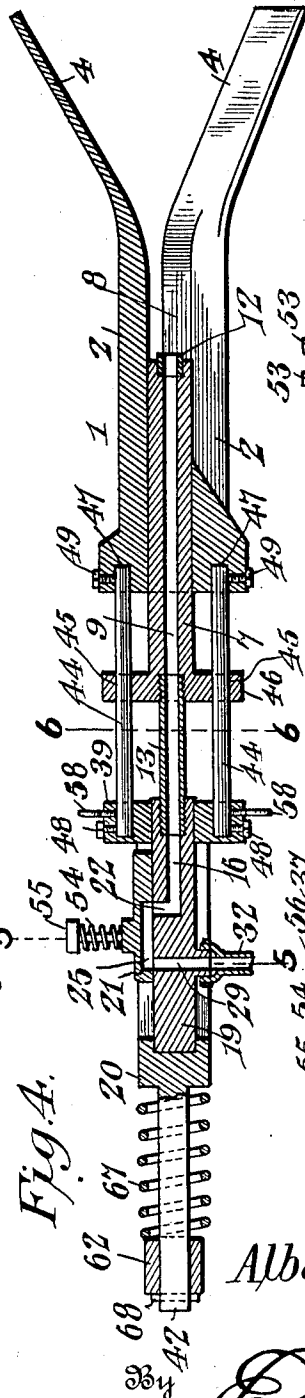


Fig. 4.

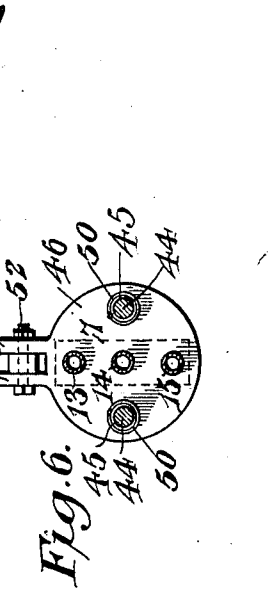


Fig. 5.

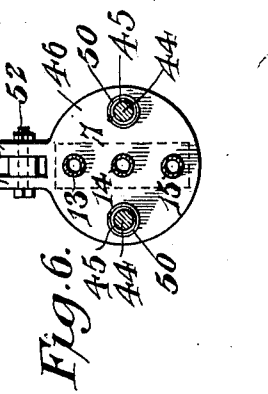


Fig. 6.

Witnesses
 Jas. K. McEachran
 H. J. Riley

Albert M. Porter,
 Inventor
 E. J. Siggers
 Attorney

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3 SHEETS-SHEET 3.

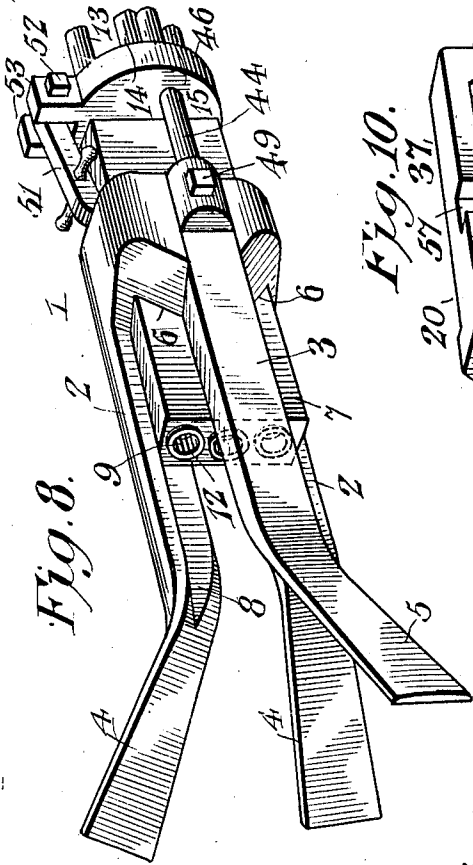


Fig. 8.

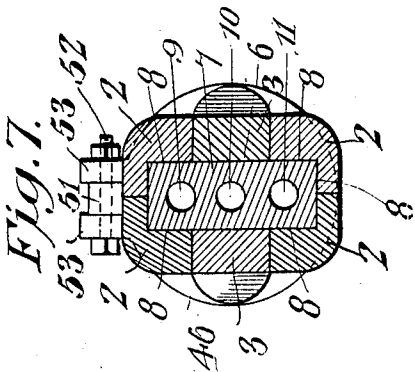


Fig. 7.

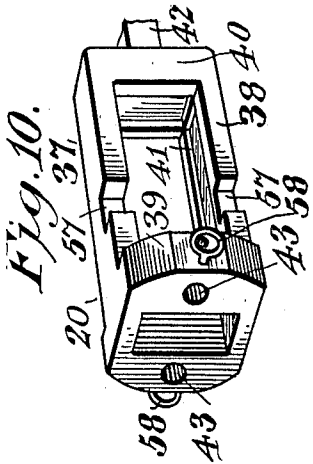


Fig. 10.

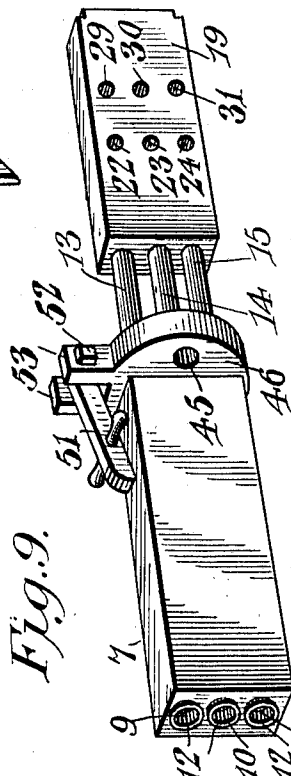


Fig. 9.

Fig. 11.

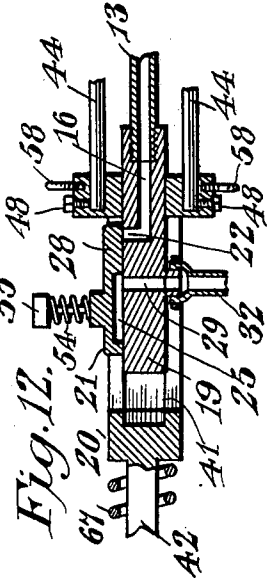
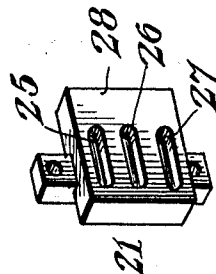


Fig. 12.

Albert M. Porter, Inventor

Witnesses
 Jas. E. McLaughlin
 H. J. Riley

By *E. G. Sizer*
 Attorney

UNITED STATES PATENT OFFICE.

ALBERT M. PORTER, OF AMSTERDAM, MISSOURI.

AUTOMATIC TRAIN-PIPE COUPLING.

1,021,261.

Specification of Letters Patent. Patented Mar. 26, 1912.

Application filed September 14, 1911. Serial No. 649,343.

To all whom it may concern:

Be it known that I, ALBERT M. PORTER, a citizen of the United States, residing at Amsterdam, in the county of Bates and State of Missouri, have invented a new and useful Automatic Train-Pipe Coupling, of which the following is a specification.

The invention relates to improvements in automatic train pipe couplings.

The object of the present invention is to improve the construction of train pipe couplings, and to provide a simple, efficient and comparatively inexpensive train pipe coupling, designed for use on passenger and freight cars, and capable of enabling the same to couple automatically when the cars are coupled and equipped with valves closable automatically to cut off the air and adapted to be locked against such closing movement so that in event of accidental separation of the cars, the brakes will be automatically set through reduction in the pressure of the train line.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a side elevation of an automatic train pipe coupling, constructed in accordance with this invention. Fig. 2 is a plan view of the same. Fig. 3 is a longitudinal sectional view on the line 3—3 of Fig. 2. Fig. 4 is a horizontal sectional view on the line 4—4 of Fig. 1. Fig. 5 is a transverse sectional view on the line 5—5 of Fig. 4. Fig. 6 is a transverse sectional view on the line 6—6 of Fig. 4. Fig. 7 is a transverse sectional view on the line 7—7 of Fig. 1. Fig. 8 is a perspective view of one of the coupling heads. Fig. 9 is a similar view of the longitudinally slidable spring actuated member with its slidable valve. Fig. 10 is a detail perspective view of the guide frame. Fig. 11 is a detail perspective view of the yieldably mounted valve plate. Fig. 12 is a detail longitudinal sectional view showing the slidable valve in its closed position.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

In the accompanying drawings in which is illustrated the preferred embodiment of the invention, 1—1 designate hollow coupling heads provided with interlocking arms or extensions 2 and 3, having inner parallel portions and outer diverging or guiding portions 4 and 5. The arms or extensions 2 are arranged at the right hand side of the coupling head and are spaced apart, being located at the top and bottom portions of the coupling head. The other arm 3 is located at the left hand side of the coupling head in a central position mid-way between the top and bottom thereof. When two cars come together for coupling, the diverging portions of the arms or extensions are adapted to guide the coupling heads into engagement with each other, and the centrally arranged left hand arm or extension 3 of one coupling head fits into the space between the top and bottom right hand arms or extensions of the other coupling head. The two coupling heads are slidably interlocked with each other when coupled, as clearly illustrated in Fig. 2, of the drawings. By having the outer portions 4 and 5 of the arms 2 and 3 extended outwardly at an angle, they will guide the two coupling heads into engagement with each other even when the same are considerably out of alignment, which may occur in coupling cars on curves and under other conditions. The hollow coupling head 1 is provided with a longitudinal opening 6 oblong in cross section, the greater width of the opening being from top to bottom. The opening 6 receives a spring pressed yieldably mounted longitudinally slidable member 7, guided in the said opening 6 and between the parallel longitudinal portions of the arms 2 and 3, the arms 2 being provided at their inner sides with longitudinal grooves 8, corresponding with the opening 6 and receiving the upper and lower portions of the slidable member 7 at one side thereof.

The longitudinally slidable member 7 is provided with a vertical series of longitudinal passages 9, 10 and 11, the intermediate or central passage 10 being for the air brake, the upper passage 9 for the signal and the lower passage 11 for the steam, but any other arrangement may, of course, be employed. The slidable member 7 is

equipped at its front or outer end with gaskets 12 of rubber, or other suitable material, adapted when the coupling heads are coupled to be compressed to provide a tight joint or connection between the two coupling heads. The passages 9, 10 and 11 of the slidable member 7 are connected by short tubes 13 14 and 15 with corresponding passages 16, 17 and 18 of a slidable valve 19, guided in a frame 20 and co-acting with a valve plate 21. The passages of the valve are provided with lateral extensions 22, 23 and 24, which by the sliding of the valve are moved into and out of communication with grooves or passages 25, 26 and 27 of the valve plate 21. The grooves or passages 25, 26 and 27 are formed in the inner faces of the valve plate 21 at the rear portion thereof, and when the longitudinally slidable member is moved inward or rearward, the terminals 22, 23 and 24 of the passages of the valve 19 are carried inwardly or rearwardly from a solid imperforate portion 28 of the valve plate to the channels or passages 25, 26 and 27. The channels or passages 25, 26 and 27 establish a communication between the longitudinal passages 16, 17 and 18 and transverse passages or perforations 29, 30 and 31 in the rear portion of the slidable valve. The valve plate is arranged at one of the faces of the slidable valve, which is provided at its opposite face with rubber hose 32, 33 and 34, designed to be equipped with the ordinary couplings 35 for connecting them with the ordinary flexible connections 36 of the pipe of the train. This will enable the air brake or train pipe coupling to be readily applied to an ordinary car connected with the rubber hose thereof without necessitating any alteration in the pipe connections, but the transverse passages of the slidable valve may be connected with the pipes of the train in any other suitable manner.

The guide frame 20, which is open at the sides, is composed of parallel top and bottom portions 37 and 38, spaced vertical front connecting portions 39 and a rear vertical connecting portion 40, arranged in the vertical plane of the top and bottom portion of the guide frame. The top and bottom portions 37 and 38 are provided in their inner faces with grooves 41 for guiding the upper and lower edges of the slidable valve. The guide frame 20 is also provided at its inner or rear portion with a central horizontal shank 42. The spaced front side portions 39 are provided with centrally arranged openings 43 in which are secured the rear ends of the horizontal guide rods 44, located at opposite sides of the air brake or train pipe coupling and passing through openings 45 of lateral extension 46 of the slidable member 7 and having their front or outer terminals secured in sockets 47 in the inner or

rear portions of the coupler head. Clamping screws 48 and 49, which are mounted on the front vertical portions 39 of the frame and on the rear portion of the coupling head, are preferably employed for securing the terminals of the guide rods in the openings of the front portions 39 and in the sockets of the coupling head. The guide rods receive coiled springs 50, interposed between the guiding frame and the lateral extensions of the slidable member 7 and adapted to urge the latter forwardly or outwardly in engagement with the slidable member of a corresponding coupling and also for moving the slidable valve 19 outwardly to its closed position to cut off the air and the steam. In order to prevent the springs from closing the valve and to cause the brakes to be automatically applied, should the cars of a train accidentally separate, the slidable member is equipped with a locking device 51, pivoted by a transverse pin 52 in a recess formed by lugs 53, extending upwardly at the rear end of the slidable member 7. When the air brake coupling or connector is coupled, the locking device is adapted to be swung either inwardly or outwardly, and when it is swung outwardly, it is supported upon the rear portion of the slidable member and is arranged back of the coupling head and is in position to engage the same to prevent the slide valve from automatically closing. When the locking device is swung inwardly or rearwardly, the slide valve will close automatically when the cars are uncoupled and separated.

The valve plate 21, which is rectangular, is arranged at one side of the guiding frame in the opening between the top and bottom portions thereof, and it is yieldably held against the slidable valve by means of springs 54, mounted upon transverse screws 55 and interposed between the heads thereof and projecting upper and lower portions of the valve plate. The screws 55, which pierce the projecting portions or lugs of the valve plate, are mounted in threaded transverse bores or openings in the top and bottom portions 37 and 38 of the guiding frame, and they are capable of adjustment to vary the tension of the spring to secure the proper contact between the valve plate and the slidable valve. The terminal projecting portions or lugs fit in recesses 57 in the top and bottom portions of the guiding frame, whereby the valve plate is held against movement longitudinally of the frame and the screws relative of the lateral strain.

The automatic air brake or train pipe coupling may be suspended from a car by any suitable hanger mechanism, and in practice it will be located below the car coupling and will project in advance of the same to cause the slidable spring actuated member

to be compressed sufficiently to produce a tight joint between the slidable members of the two coupling heads. In the accompanying drawings, the outer or front end of the guide frame is provided with eyes 58 to which are connected the lower ends of the coiled springs 59, and the latter are connected at their upper ends to short chains 60, designed to be connected with the framework of a car, or other suitable supporting means by hooked bolts 61, or similar fastening devices.

The shank 42 of the guiding frame is rectangular in cross section, and it passes through a square opening in a guiding sleeve 62, which is suspended from a car by means of a bracket 63. The bracket 63, which is provided at its upper end with an attaching plate 64, has a head 65 at its lower end. The head 65, which is in the form of a ball fits in a socket formed by the top portion of the sleeve 62 and a plate 66. The plate 66, which is secured over a recess in the top of the sleeve 62, is provided with an opening through which the bracket passes, and the opening is flared at the upper portion and presents a concave face at the lower portion to fit the ball 65 of the bracket 63. The bracket and the sleeve form a ball and socket joint or connection and permit a limited movement of the rear portion of the air brake or train pipe coupling. A cushioning spring 67, which is disposed upon the shank 42, is interposed between the supporting sleeve and the rear end of the guiding frame for urging the air brake or train pipe coupling forwardly or outwardly and for yieldably maintaining the same in engagement with a similar air brake or train pipe coupling. The outward movement of the air brake or train pipe coupling is limited by a transverse pin or key 68, piercing the inner or rear end of the shank 42 and engaging the inner or rear end of the supporting sleeve 62, which is adapted to prevent rotary movement of the air brake or train pipe coupling.

While three passages are illustrated in the accompanying drawings, yet it will be apparent that the air brake or train pipe coupling may be equipped with only a single passage for the air brake line when it is desired to construct the coupling for freight car equipments. As the air brake or train pipe couplings of passenger and freight car equipments will be otherwise the same and as the air brake passage of the passenger equipment is centrally arranged, freight car and passenger equipments will couple automatically and will be effective with respect to the central or air brake passage.

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

1. An automatic air brake or train pipe

coupling including a hollow coupling head provided with outwardly projecting arms, and a slidable member mounted in the hollow coupling head and guided by the arms thereof and provided with a passage.

2. An automatic air brake or train pipe coupling including a hollow coupling head provided at one side with spaced arms and having a single arm at the opposite side, the spaced arms being provided with longitudinal grooves, and a slidable member mounted in the coupling head and guided between the arms thereof and fitting in the said grooves and having a passage.

3. An automatic air brake or train pipe coupling including a hollow coupling head, a yieldably mounted member slidable in the coupling head and having a passage, means for connecting the passage with the pipe of a train, and valve mechanism for the said passage located in rear of the slidable member and exteriorly of the hollow coupling head and operated by the sliding movement of the said member.

4. An automatic air brake or train pipe coupling including a hollow coupling head, a yieldably mounted member slidable in the coupling head and having a passage, means for connecting the passage with the pipe of a train, valve mechanism for the said passage located in rear of the slidable member and exteriorly of the hollow coupling head and operated by the sliding movement of the said member, and an exteriorly arranged locking device for holding the valve in one position.

5. An automatic air brake or train pipe coupling including a coupling head, a slidable member movable through the coupling head and having a passage, means for connecting the passage with the pipe of a train, valve mechanism for the said passage located in the rear of the slidable member and exteriorly of the coupling head and operated by the sliding movement of the said member, a spring for urging the slidable member outwardly and for closing the valve mechanism, and an exteriorly arranged locking device for holding the slidable member against outward movement to maintain the valve mechanism open.

6. An automatic air brake or train pipe coupling including a coupling head, a slidable member movable through the coupling head and having a passage, means for connecting the passage with the pipe of a train, valve mechanism for the said passage located in rear of the slidable member and exteriorly of the coupling head and operated by the sliding movement of the said member, a spring for urging the slidable member outwardly and for closing the valve mechanism, and a locking device pivotally mounted on the exterior of the slidable member and arranged to engage the coupling head to

lock the slidable member against outward movement.

7. An automatic air brake or train pipe coupling including a coupling head, a slidable member movable through the coupling head and having a passage, means for connecting the passage with a pipe of a train, and valve mechanism for the said passage located in rear of the slidable member and exteriorly of the coupling head and provided with a slide valve connected with and operated by the slidable member and movable outwardly to close the passage and inwardly to open the same, and a spring for urging the slidable member outwardly and for automatically closing the valve.

8. An automatic air brake or train pipe coupling comprising a coupling head, a slidable member mounted in the coupling head and having a passage, means for connecting the passage with a train pipe including a slide valve having inner and outer passages, the outer passage being in communication with the passage of the slidable member, a relatively fixed part having a passage for connecting the inner and outer passages of the slide valve, the movement of the latter carrying the passages into and out of register to open and close the communication between the passage of the slidable member and the pipe of the train.

9. An automatic air brake or train pipe coupling comprising a coupling head, a slidable member having a passage and movable in the coupling head, means for connecting the passage with the pipe of a train including a slide valve having inner and outer passages, a tube or pipe connecting the outer passage of the slide valve with the passage of the slidable member, a valve plate co-acting with the slide valve and having a passage for connecting the inner and outer passages of the said slide valve, and a spring connected with the slidable member and adapted to move one of the passages of the slide valve out of register with the passage of the valve plate.

10. An automatic air brake or train pipe coupling including a coupling head, a slidable member movable in the coupling head and provided with a plurality of passages, a slide valve having corresponding passages, pipes or tubes connecting the slide valve with the passages of the slidable member, flexible means for connecting the passages of the slide valve with the pipes of a train, and means co-acting with the slide valve and controlled by the movement thereof for establishing and interrupting communication in the said passages.

11. An automatic air brake or train pipe coupling comprising a coupling head, a slidable member mounted in the coupling head and having a passage, and means for connecting the passage of the slidable member

with the pipe of a train including a slide valve having a passage connected with that of the slidable member, and a hose connected with the slidable member and communicating with the passage of the slide valve and having a coupling for connecting it with the hose of the pipe of a train.

12. An automatic air brake or train pipe coupling including a hollow coupling head, a guiding frame, rods connecting the coupling head and the guiding frame, a slidable member mounted in the coupling head, a slide valve guided in the said frame, a pipe or tube connecting the slidable member and the slide valve, springs disposed on the rods and connected with the slidable member for moving the same outwardly, and means for connecting the slide valve with the pipe of a train.

13. An automatic air brake or train pipe coupling including a coupling head, a slidable member having a passage and movable in the coupling, a guiding frame connected with the coupling head, a slide valve guided in the said frame and having inner and outer passages, the outer passage communicating with the passage of the slidable member, means for connecting the inner passage with the pipe of a train, and a relatively fixed part supported by the guiding frame and having a groove or channel to connect the inner and outer passages of the slide valve and provided with an imperforate portion for closing one of the passages of the slide valve.

14. An automatic air brake or train pipe coupling including a coupling head, a slidable member having a passage and movable in the coupling, a guiding frame connected with the coupling head, a slide valve guided in the said frame and having inner and outer passages, the outer passage communicating with the passage of the slidable member, means for connecting the inner passage with the pipe of a train, a valve plate located at one side of the guide frame and having a groove or channel to connect the inner and outer passages of the slide valve and provided with an imperforate portion for closing one of the said passages, and yieldable means mounted on the frame and engaging the valve plate for maintaining the same in contact with the slidable valve.

15. An automatic air brake or train pipe coupling comprising a hollow coupling head, a guiding frame, rods connecting the guiding frame with the coupling head, a slidable member movable in the coupling head and having a passage and provided with lateral extensions slidable in the said rods, springs disposed on the rods and engaging the lateral extensions for urging the slidable member outwardly, and means for connecting the passage of the slidable member with the pipe of a train.

16. An automatic air brake or train pipe coupling comprising a hollow coupling head, a guiding frame, rods connecting the guiding frame with the coupling head, a
5 slidable member movable in the coupling head and having a passage and provided with lateral extensions slidable on the said rods, springs disposed on the rods and engaging the lateral extensions for urging the
10 slidable member outwardly, and means for connecting the passage of the slidable member with the pipe of a train and including valve mechanism for the said passage operated by the sliding movement of the said
15 member, springs mounted on the rods and engaging and bearing against the lateral ex-

tensions for moving the slidable member outwardly, and a pivoted locking device connected with the slidable member and arranged to engage the inner or rear end of
20 the coupling head for holding the slidable member against outward movement and for maintaining the valve mechanism in one position.

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

ALBERT M. PORTER.

Witnesses:

J. S. AMY,
D. R. HUGHES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
