P. HALEY.

AUTOMATIC AIR COUPLING.

APPLICATION FILED OCT. 7, 1910.

990,042.

Patented Apr. 18, 1911

4 SHEETS-SHEET 1

Fig. 1

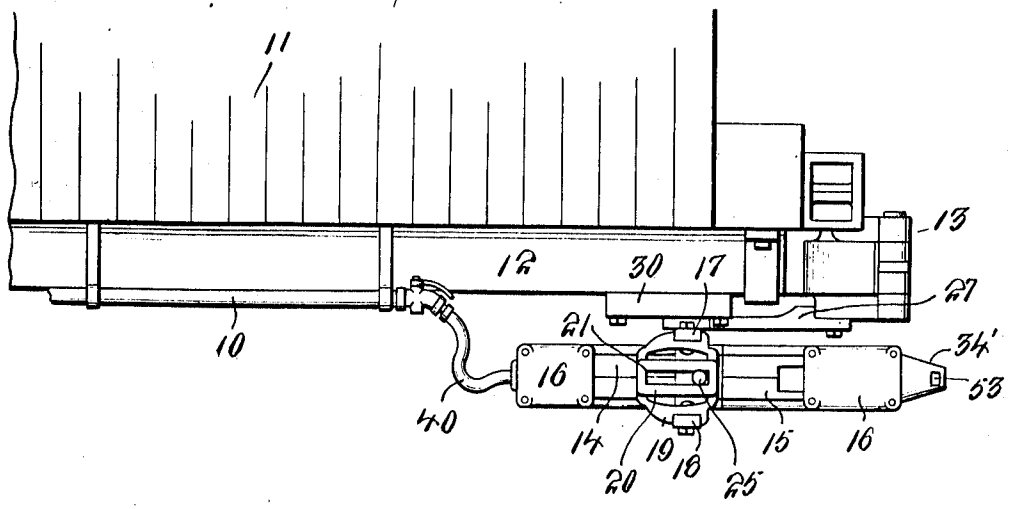
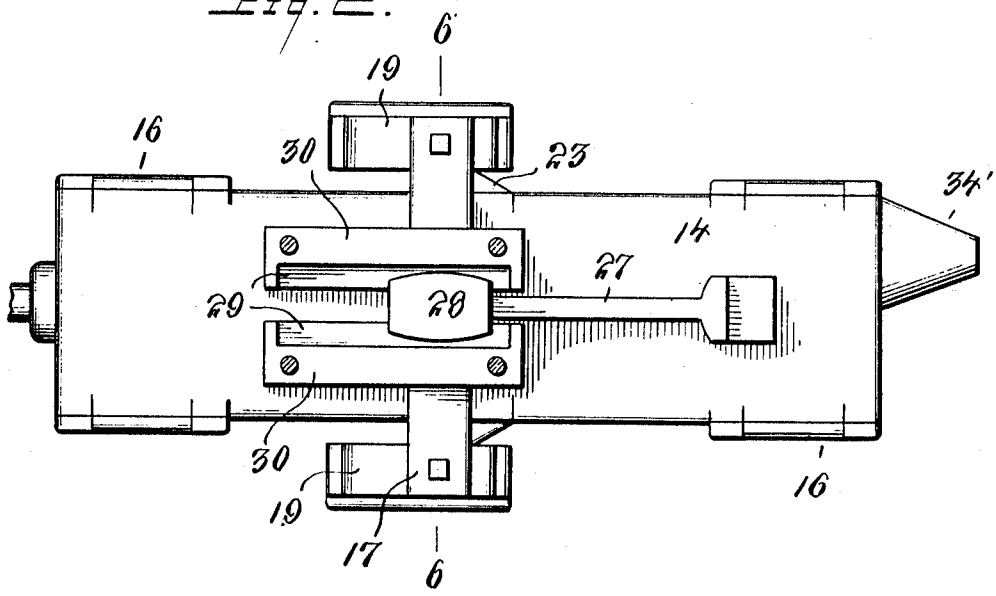


Fig. 2.



Witnesses

E. R. Ruppert.

Y. O. Parker.

Inventor

Peter Haley

By Victor J. Evans

Attorney

P. HALEY.

AUTOMATIC AIR COUPLING.

APPLICATION FILED OCT. 7, 1910.

990,042. Patented Apr. 18, 1911.

4 SHEETS—SHEET 2.

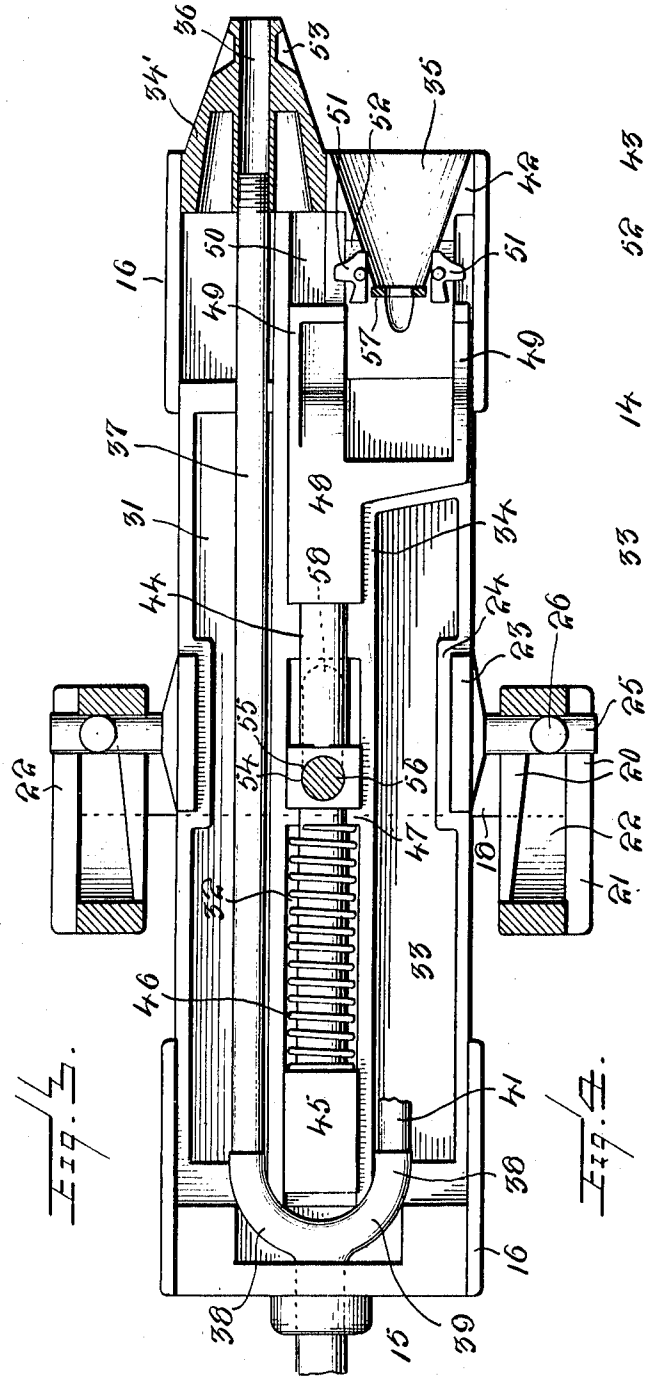


Fig. 3.

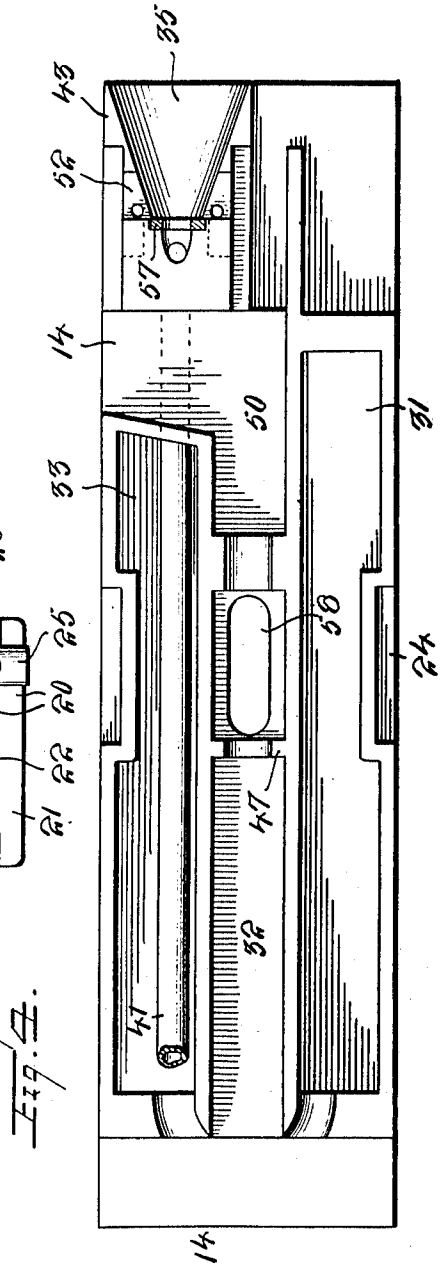


Fig. 4.

Witnesses

E. P. Ruppert

D. Lawler.

Inventor

Peter Haley

By Victor J. Evans

Attorney

P. HALEY.

AUTOMATIC AIR COUPLING.

APPLICATION FILED OCT. 7, 1910.

990,042.

Patented Apr. 18, 1911.

4 SHEETS—SHEET 3.

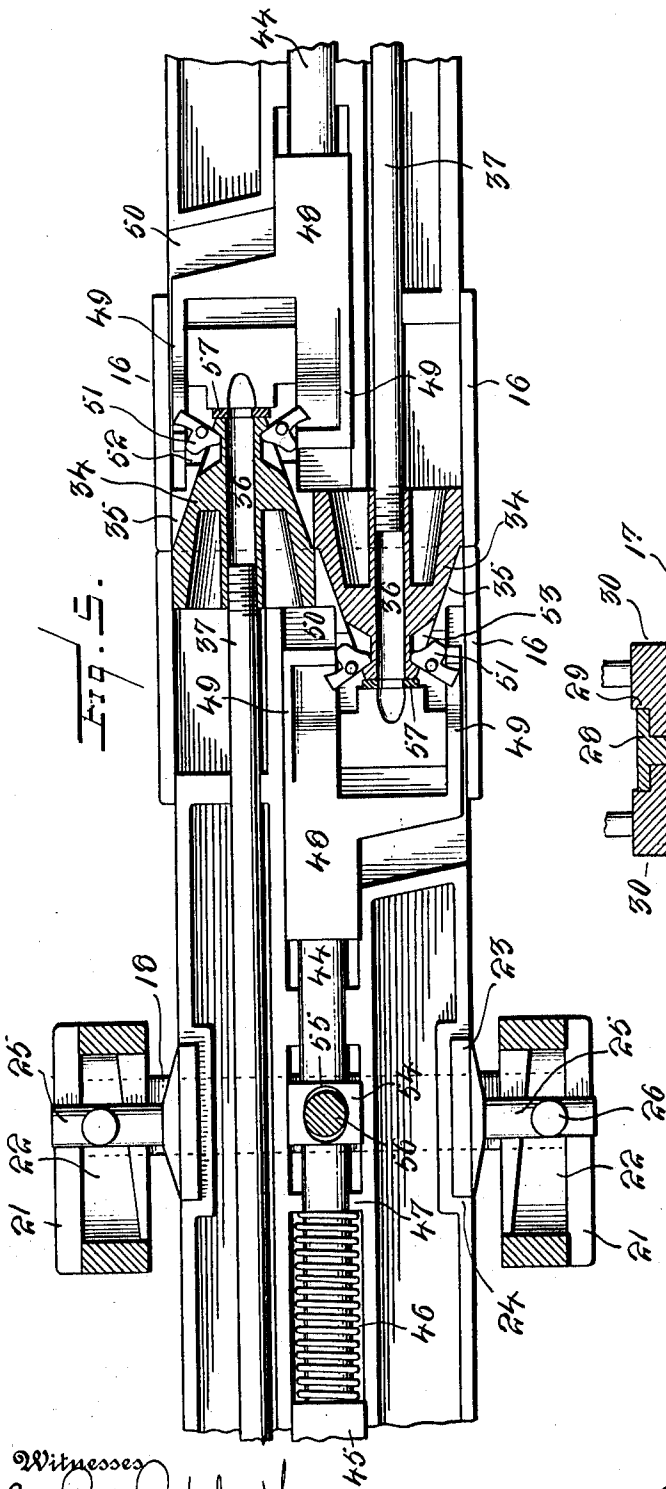


Fig. 5.

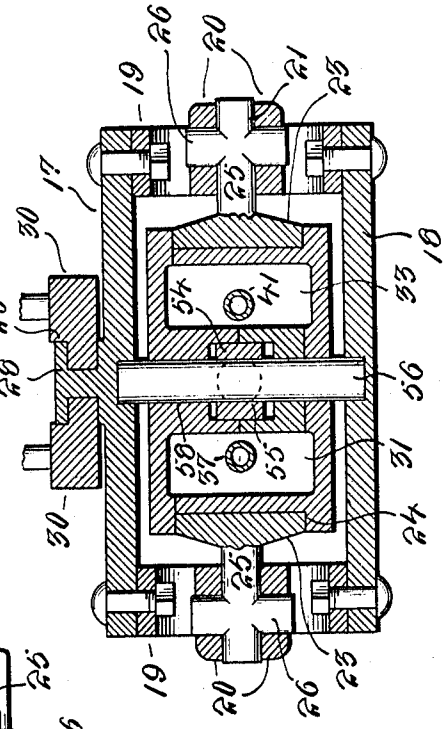


Fig. 6.

Witnesses

E. R. Ruppert.

L. O. Parker.

Inventor

Peter Haley

By Victor J. Evans

Attorney

P. HALEY.

AUTOMATIC AIR COUPLING.

APPLICATION FILED OCT. 7, 1910.

990,042.

Patented Apr. 18, 1911.

4 SHEETS—SHEET 4.

Fig. 8.

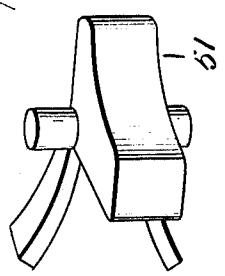


Fig. 7.

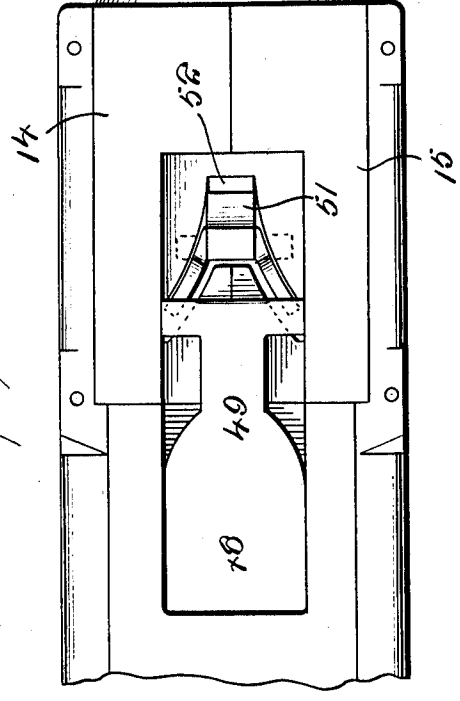
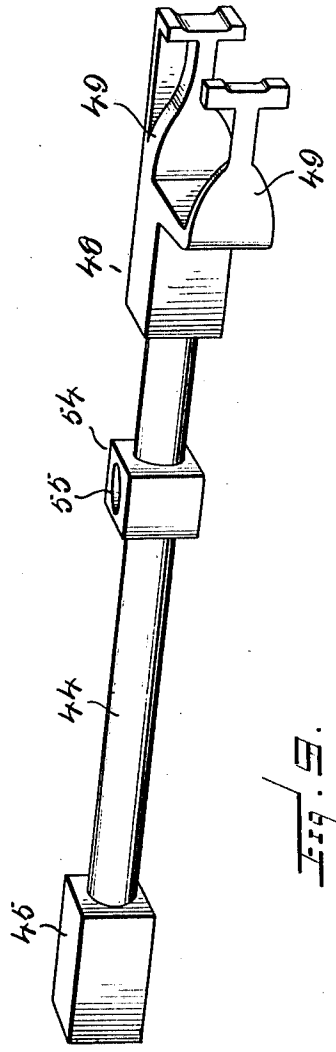


Fig. 5.



Witnesses

E. R. Ruppert.

L. O. Parker.

Inventor

Peter Haley

By Victor J. Evans

Attorney.

UNITED STATES PATENT OFFICE.

PETER HALEY, OF WELLSTON, OHIO.

AUTOMATIC AIR-COUPLING.

990,042. Specification of Letters Patent. Patented Apr. 18, 1911.

Application filed October 7, 1910. Serial No. 585,827.

To all whom it may concern:

Be it known that I, PETER HALEY, a citizen of the United States, residing at Wellston, in the county of Jackson and State of Ohio, have invented new and useful Improvements in Automatic Air-Couplers, of which the following is a specification.

The invention relates to an improved train pipe coupling and is particularly directed to a construction whereby the train pipe may be automatically connected and disconnected as the cars are coupled and uncoupled, whereby the time required and danger incident to the usual hand coupling is obviated.

One of the objects of the present invention is the provision of a coupling head connected to and movable with the car coupling head, whereby as the latter yields under the pressure contact in the coupling operation, a simultaneous and similar movement will be effected in the train pipe coupling head.

A further object of the invention is the connection of the train pipe coupling head to permit its yielding under pressure from the opposing coupling head independently of the car head, and the connection with such independently movable part of means whereby, under such independent movement, the coöperating sections of the respective coupling heads are interlocked to provide an uninterrupted air-tight communication between said coupling heads for the passage of the fluid in the train pipe.

The invention in its preferred details of construction will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a view in elevation illustrating the application of the improved coupling head to the car coupler head and to the car frame. Fig. 2 is an enlarged plan of the improved train pipe coupling head. Fig. 3 is a plan of the lower section of the improved coupling head, the operative parts of the head being shown housed therein and the side supports in horizontal section. Fig. 4 is a bottom plan of the upper section of the head. Fig. 5 is a view similar to Fig. 3 showing the two heads in coupled relation. Fig. 6 is a transverse section on the line 6—6 of Fig. 2. Fig. 7 is an enlarged broken side elevation of one of the heads. Fig. 8 is a perspective view of the locking dog. Fig. 9 is a perspective view of the locking plunger.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to the drawings by numerals, 10 designates the air brake, train, signal or other pipe of a railway car 11, the pipe being connected with the car throughout its length in the ordinary well-known manner and at each end of this car 11 between the adjacent longitudinal beams or bolsters 12 thereof is the ordinary "Janney" type coupler 13 for the joining or coupling of adjacent cars in the usual way.

Connected with the draw bar of each coupler 13 is a train or other pipe coupling head comprising a casing or shell including upper and lower sections 14 and 15, respectively, detachably connected by means of side plates 16, the casing or shell being mounted for tipping and longitudinal movement independent of the coupler 13 in a supporting frame comprising spaced transversely disposed cross bridge pieces or bars 17 and 18, the ends thereof being suitably secured to trunnion bearings, each having a substantially circular-shaped rim 19, with centrally arranged spaced cross webs 20 providing inner and outer side and upper and lower guide slots 21 and 22, respectively, the inner and outer side slots 21 being uniform throughout their length, and the upper and lower guide slots 22 being forwardly tapered or substantially wedge-shaped.

Suitably secured medially of the shell or casing, at opposite sides thereof, are blocks 23, the same being mounted in counter seats 24 in the lower section 15 of said shell or casing, and are provided with outwardly extending trunnions 25, the same being formed with cross branch lugs or trunnions 26, which engage in the wedge-shaped upper and lower slots 22 in the bearings of the suporting frame, and the trunnions 25 engage in the inner and outer slots 21, whereby the casing or shell of the coupling head may tilt or move longitudinally and laterally with respect to the car and independently of the coupling 13 thereon when the coupling heads of the adjacent cars have been connected together.

Integral with the upper cross bridge piece 17, centrally thereof, is one end of a bracket

or arm 27, the latter being connected or formed integral with the draw bar of the coupling 13 and the end of the arm or bracket 27 connected with the bridge piece 17 is provided with a head 28, the latter being slidably mounted in guide ways or grooves 29 formed at the inner edges of spaced parallel guide cleats 50, the same being suitably secured to the bolsters 12 of the car 11, the arm or bracket being adapted to connect the supporting frame and the draw bar of the coupler 13 together, so that on movement of the coupler 13, simultaneous movement will be imparted to the supporting frame for the pipe coupling head.

The lower section 15 of the shell or casing is provided interiorly with independent compartments 31, 32 and 33, the same being divided or separated from each other by means of vertical partitions 34, and the upper section 14 of said casing or shell is likewise provided with compartments 31, 32 and 33 adapted to register with the compartments in the lower section 15, respectively, when the sections of the coupling head have been joined or connected together. In the outer end of the shell or casing of the coupling head is formed an outwardly tapering nozzle 34′ protruding beyond the outer end of the said shell or casing, and an inwardly tapering socket 35 arranged in horizontal alinement with the said nozzle and in juxtaposition with respect thereto, the nozzle 34′ being provided with a central bore 36 opening through opposite ends thereof, and in which is inserted the outer end of a tube or pipe section 37, the latter being passed through the compartment 31 in the sections of the shell or casing and has its inner end connected with one branch 38 of a union coupling 39, the latter being suitably connected with one end of a flexible pipe section 40 connected with the train or other pipe 10. This union coupling 39 has its other branch 38 connected with the upper end of a further pipe section 41 arranged within the compartment 33 of the upper and lower section of the shell or casing, the outer end of this pipe 41 being in communication with the socket 35 which latter is formed in a split block forming upper and lower separable parts 42 and 43, the latter being suitably fixed in the upper section 14 and the other in the lower section 15 of the shell or casing.

Arranged within the registering compartments 32 of the sections 14 and 15 of the casing is a plunger rod 44, the same being formed at one end with an abutment block 45, with which contacts one end of a coiled expansion spring 46 surrounding the said plunger rod 44 and having its opposite end bearing against alining cross webs 47 of the sections 14 and 15 of the casing or shell. The opposite end of the plunger rod 44 is formed with a forked striker head 48, the spaced parallel forked arms 49 of which being disposed in guide recesses 50 formed in the upper and lower sections 14 and 15 of the casing or shell at opposite sides of the parts 42 and 43 of the split block containing the socket 35 and are adapted to move in the path of pivoted locking dogs 51 disposed in cavities 52 intersecting the socket 35 near the inner end of the said socket 35 whereby upon movement of the said casing or shell in one direction, the fork arms 49 of the striker head 48 on the plunger rod 44 will engage the locking dogs 51 for moving the same into position for locking the nozzle 34′ of an adjacent coupling head in the socket 35 when adjacent cars are being connected together.

At diametrically opposite points of the nozzle 34′ near the outer end thereof are provided notches or recesses 53 in which engage the locking dogs 51 when the nozzle 34′ of an adjacent coupling head is inserted in the socket 35 of the other coupling head during the coupling of adjacent cars.

Formed on the plunger rod 44 is a squared enlargement 54, the latter being provided with a suitable elongated opening 55 through which is passed a vertical pin 56, the ends of which engage in suitable sockets formed in the inner face of the cross bridge pieces or bars 16 and 17 of the supporting frame, so that when adjacent coupling heads for joining the train or other pipe 10 are brought together in the coupling operation, each head will be moved inwardly longitudinally from the end of the car 11, thus causing the contraction of the expansion spring 46, as the pin 56 will maintain the plunger rod 44 passive during the movement of the shell or casing, thereby bringing the fork arms 49 into engagement with the locking dogs 50 forcing the same into the notches 53 of the nozzle 34′ of an adjacent coupling head on the insertion of the said nozzle 34′ in the socket 35 in the other coupling head, thereby connecting the coupling heads of adjacent cars simultaneously with the coupling of the draw bars of the couplers 13 of the said cars.

At the inner end of the socket 35 in the split block and held in suitable recesses formed in the separable parts 42 and 43 is a resilient gasket 57, with which contacts the outer end of the nozzle 34′, thereby forming a fluid tight union between the split block and the said nozzle of adjacent coupling heads during the coupling operation.

The upper and lower sections 14 and 15 of the shell or casing are provided with elongated slots 58 to allow play of the pin 56 on the vertical tilting of the shell or casing, when the coupling heads of adjacent cars are being connected or during the travel of a train over a rough bed.

When the coupling heads of adjacent cars have been connected together, it is of course

understood that the springs 46 are maintained under tension so that when it is desired to uncouple the said coupling heads of the train or other pipe 10, immediately upon detachment of the draw bars of the car couplers 13, these springs 46 will serve to automatically move the casings or shells of the coupling heads in an outward direction at the end of the car and move the plunger rods 44 in a reverse direction, whereby the fork arms 49 of the members 48 will move the locking dogs 51 out of engagement in the notches 53 in the nozzles 34′, thus permitting the same to disengage from the recesses 35 and on the disengagement of the nozzles 34′ from the recesses 35 in the coupling heads, the outward movement of the said shells or casings is limited by the lugs 26 being wedged in the smaller ends of the wedge-shaped slots 22 of the supporting frames for the said coupling heads.

When the coupling heads have been joined or connected in the foregoing manner, the train or other pipes 10 of adjacent cars will have communication with each other, and on the disconnecting of the coupling heads, the train or other pipes 10 of said adjacent cars will communicate directly with the atmosphere in the ordinary well-known manner for the application of the brakes.

From the foregoing, it is thought that the construction and operation of the invention will be readily understood without requiring a more extended explanation.

What is claimed is:

1. In an air pipe coupler, a supporting frame slidably connected with a car body and fixed to its coupler for movement therewith, and having trunnion bearings provided with side, upper and lower guide slots, the upper and lower slots being forwardly tapered, while the remaining slots are uniform throughout their length, an air brake coupler shell held within the frame, and laterally extending substantially cross-shaped trunnions on the shell and engaging said slots in the bearings whereby the shell will move longitudinally, laterally, and vertically in arcuate directions independently of the car coupler.

2. In an air pipe coupler, a supporting frame slidably connected with a car body and fixed to its coupler for movement therewith, and having trunnion bearings provided with side, upper and lower guide slots, the upper and lower slots being forwardly tapered, while the remaining slots are uniform throughout their length, an air brake coupler shell held within the frame, laterally extending substantially cross-shaped trunnions on the shell and engaging said slots in the bearings, whereby the shell will move longitudinally, laterally and vertically in arcuate directions independently of the car coupler, and automatically operated trip latches in the shell for the locking and unlocking thereof with an adjacent shell on the receding and advancing thereof within the frame.

3. In an air pipe coupler, a supporting frame slidably connected with a car body and fixed to its coupler for movement therewith, and having trunnion bearings provided with side, upper and lower guide slots, the upper and lower slots being forwardly tapered, while the remaining slots are uniform throughout their length, an air brake coupler shell held within the frame, laterally extending substantially cross-shaped trunnions on the shell and engaging said slots in the bearings, whereby the shell will move longitudinally, laterally and vertically in arcuate directions independently of the car coupler, automatically operated trip latches in the shell for the locking and unlocking thereof with an adjacent shell on the receding and advancing thereof within the frame, and a stationary element fixed to the frame and held within the shell in the path of movement of the trip latches for actuating the latter.

4. In an air pipe coupler, a supporting frame slidably connected with a car body and fixed to its coupler for movement therewith, and having trunnion bearings provided with side, upper and lower guide slots, the upper and lower slots being forwardly tapered, while the remaining slots are uniform throughout their length, an air brake coupler shell held within the frame, laterally extending substantially cross-shaped trunnions on the shell and engaging said slots in the bearings, whereby the shell will move longitudinally, laterally and vertically in arcuate directions independently of the car coupler, automatically operated trip latches in the shell for the locking and unlocking thereof with an adjacent shell on the receding and advancing thereof within the frame, a stationary element fixed to the frame and held within the shell in the path of movement of the trip latches for actuating the latter, and means for advancing the shell on the detachment thereof from such adjacent shell.

5. In an air pipe coupler, a supporting frame slidably connected with a car body and fixed to its coupler for movement therewith, and having trunnion bearings provided with side, upper and lower guide slots, the upper and lower slots being forwardly tapered, while the remaining slots are uniform throughout their length, an air brake coupler shell held within the frame, laterally extending substantially cross-shaped trunnions on the shell and engaging said slots in the bearings, whereby the shell will move longitudinally, laterally, and vertically in arcuate directions independently of the car coupler, automatically

operated trip latches in the shell for the locking and unlocking thereof with an adjacent shell on the receding and advancing thereof within the frame, a stationary element fixed to the frame and held within the shell in the path of movement of the trip latches for actuating the latter, means for advancing the shell on the detachment thereof from such adjacent shell, and branch pipes within the shell and having connection with a train pipe.

6. The combination with a train pipe coupling head having trunnions, of a supporting frame therefor, comprising slotted bearings receiving said trunnions, cross bridge pieces connecting the said bearings, means connecting the frame to a car coupler, means slidably suspending the frame from a car body, means within the head for automatically locking it with an adjacent coupling head, and stationary means connected with the frame and arranged within the coupling head in the path of said last-named means to lock and unlock the same on movements of the coupling head in the frame.

7. The combination with a train pipe coupling head having trunnions, of a supporting frame therefor, comprising slotted bearings receiving said trunnions, cross bridge pieces connecting the said bearings, means connecting the frame to a car coupler, means slidably suspending the frame from a car body, means within the head for automatically locking it with an adjacent coupling head, stationary means connected with the frame and arranged within the coupling head in the path of the said last-named means to lock and unlock the same on movements of the coupling head in the frame, and branch pipes within the coupling head and having connection with a train pipe.

8. The combination with a train pipe coupling head having trunnions, of a supporting frame therefor, comprising slotted bearings receiving said trunnions, cross bridge pieces connecting the said bearings, means connecting the frame to a car coupler, means slidably suspending the frame from a car body, means within the head for automatically locking it with an adjacent coupling head, stationary means connected with the frame and arranged within the coupling head in the path of said last-named means to lock and unlock the same on movements of the coupling head in the frame, branch pipes within the coupling head and having connection with a train pipe, and expansion means acting upon the second-named means and the said coupling head to effect automatic movements thereof relatively to each other.

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

PETER HALEY.

Witnesses:
JOHN PETTYJOHN,
JOHN LOFTUS.