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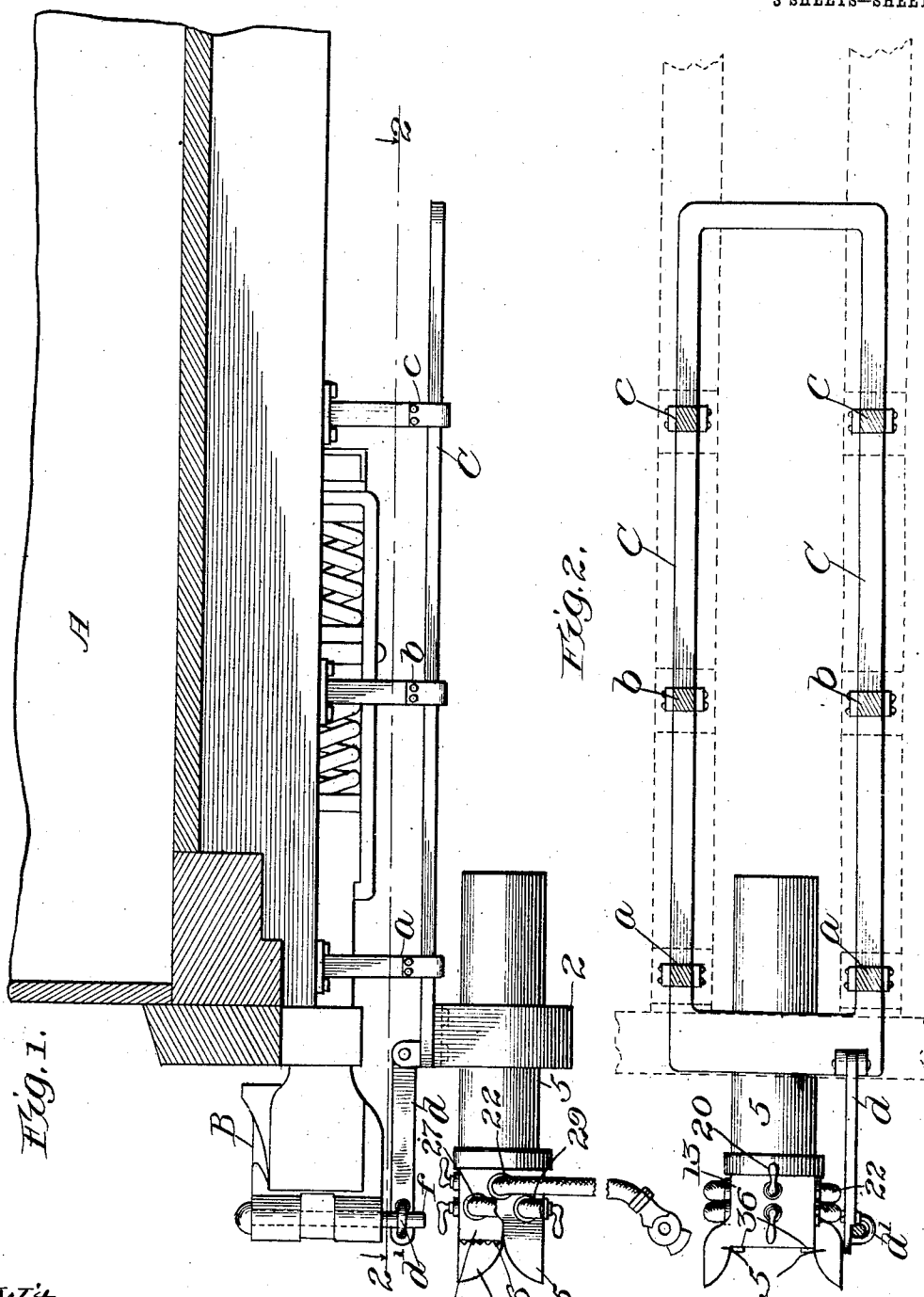
PATENTED FEB. 26, 1907.

F. H. RUTHERFORD.

AUTOMATIC AIR BRAKE COUPLING FOR RAILWAY CARS.

APPLICATION FILED APR. 14, 1906.

3 SHEETS—SHEET 1.



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Inventor:
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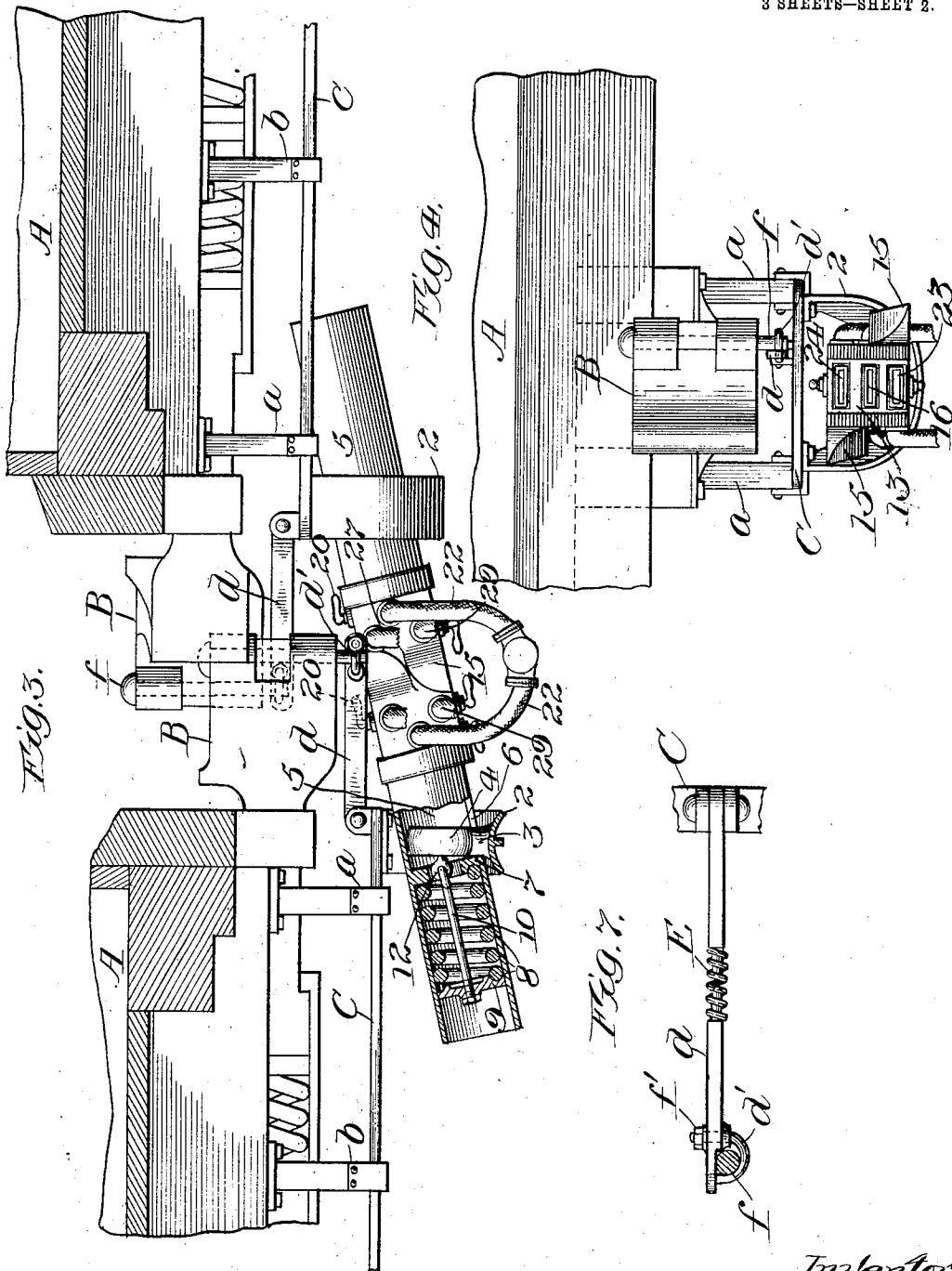
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3 SHEETS—SHEET 2.



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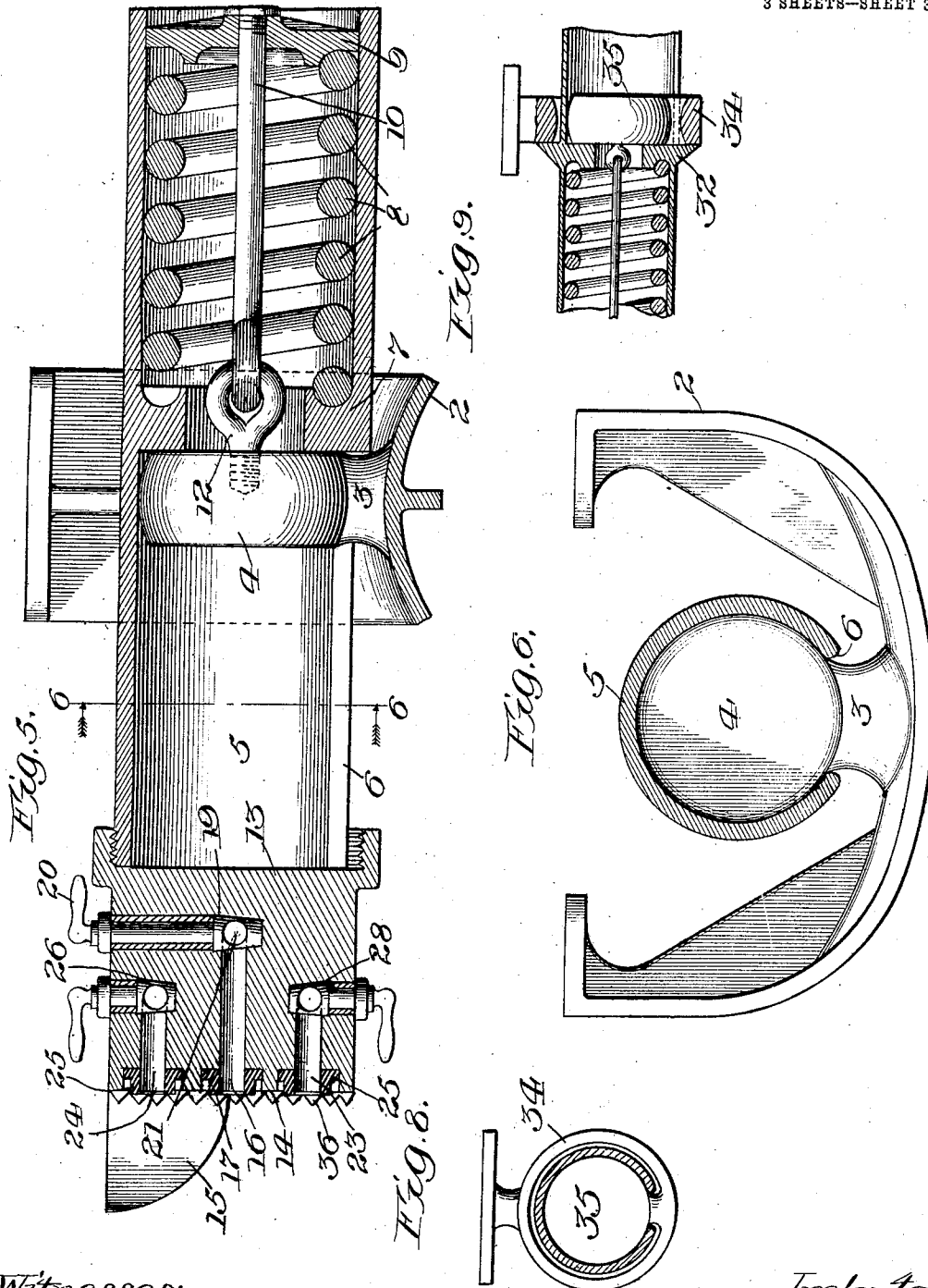
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

FRANK H. RUTHERFORD, OF CHICAGO, ILLINOIS.

AUTOMATIC AIR-BRAKE COUPLING FOR RAILWAY-CARS.

No. 845,265.

Specification of Letters Patent,

Patented Feb. 26, 1907.

Application filed April 14, 1906. Serial No. 312,709.

To all whom it may concern:

Be it known that I, FRANK H. RUTHERFORD, a citizen of the United States, and a resident of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Automatic Air-Brake Couplers for Railway-Cars, of which the following is a clear, full, and exact description.

Heretofore the efforts of manufacturers of automatic air-brake couplers have been directed to coupling the leading pipes of the air-brake systems and also of the steam-heating systems and air-signal systems of cars whose line of draft was the same height above the rails or coupling together these systems of pipes of cars differing but little in this respect.

The objects of my invention are to provide an automatic coupler of the kind referred to that will automatically couple with the engaging corresponding coupler, whether in alinement therewith or not, and will when two of the same are coupled automatically assume a position at an angle to the line of draft of the car, if needs be, and will not leak as the cars bump over obstructions or are switched from track to track or travel around curves. This I accomplish by the means hereinafter fully described, and as particularly pointed out in the claims.

In the drawings, Figure 1 is a side view of my invention applied to the end portion of the car, which latter is shown in section. Fig. 2 is a horizontal section taken on dotted line 2 2, Fig. 1, showing a plan view of my improvements. Fig. 3 shows sectional views of the ends of two connected cars each having my improvements applied thereto and having the greater portion of the cylinder of one of my air-brake couplers in section. Fig. 4 is an end view of one of my improved couplers applied to the broken-away portion of the end of the car. Fig. 5 is a longitudinal central section through one of said couplers and the bracket supporting the same drawn to a larger scale. Fig. 6 is a transverse vertical section taken on dotted line 6 6, Fig. 5. Fig. 7 is a detail view showing a plan view of a modified form of the link connecting the carrier-frame to the car-coupler drawn to a larger scale. Fig. 8 is a view similar to Fig. 6 of a modified form of a drop-frame for the swivel-head of my invention. Fig. 9 is a vertical central section of said modified

form of drop-frame and adjacent broken-away portions of the mechanism engaging the same.

In the drawings, A represents a car-body of any suitable construction having a coupler B, preferably of the Janney or similar type. Secured to and depending down from the center sills or other suitable part of the underframe of this car-body are hangers *a*, *b*, and *c*, which may be of any suitable construction and are provided with openings in their lower ends through which the side rails of an open rectangular frame C pass and have a limited sliding movement. This frame constitutes a carrier for my improved automatic air-brake coupler and is supported independently of the car-coupler, and so that when in its normal position one end thereof will be about in the same vertical plane as the end of the car.

Frame C is connected to the head of the car-coupler by means of a link *d*, one end of which is pivotally connected to lugs arising from the adjacent end of said frame and the other end of which is preferably reduced in width to provide a shoulder at its end. A hook-shaped clip *d'* has its screw-threaded end extended through a suitable transverse opening in the forward end of the link near said shoulder and has its hook-shaped end passed around and embracing the lower end of the pin *f* of the coupler B. By tightening up nut *f'* on the screw-threaded end of the clip the latter grasps the lower end of the coupler-pin sufficiently tight to prevent the accidental separation of the two. I prefer to connect the rear end of said link at about the center of width of the adjacent end of frame C and to bend the link laterally sufficiently to enable it to engage with the lower end of the coupler-pin *e*; but, if desired, this arm may be made straight and may have a coil-spring E interposed between and secured to its separated ends, so as to give it a certain amount of flexibility and prevent the extreme jar and concussion of the car-coupler being imparted to the carrier-frame C.

Secured to and depending down from the end bar of the open frame C, adjacent to the car-coupler, is a substantially U-shaped drop-frame 2, which at about its center of length is provided with an upwardly-projecting standard 3, the upper portion of which is flanged in a plane transverse to the frame C.

and made circular to form a swivel-head 4. The edges of this swivel-head are convex to conform to a curve struck from the center of width and thickness of the head substantially as shown in the drawings. This head is projected up through a suitable slot 6 in the lower segment of a cylinder 5 and extends from the forward end of said cylinder to near the center of length thereof. The diameter of the bore of the portion of the cylinder into which the head 4 projects is but slightly greater than the circumference of said head, which latter is normally kept bearing against the rear limit of slot 6 and against a partition 7, located at about the center of length of the cylinder by a coil-spring 8, located in the bore of the cylinder on the side of the partition opposite head 4. This spring has one end seated in an annular groove in the partition and has its farthest or opposite end normally pressing outward against a cap 9, which has a bolt 10 passing through a suitable opening in its center. This bolt extends longitudinally back through the spring and has an eye on its opposite end that is linked with a screw-eye 12, that is tapped into the center of the adjacent side of head 4 and projects through a central opening in the partition 7. The expansive pressure of the spring 8 keeps the swivel-head normally pressing against the partition when the coupling is not in service and when two opposing couplings engage the springs 8 are compressed, thus increasing their resistance and causing the engaging ends of the couplers to bear hard against each other and effect a perfectly tight communication of the companion passages therein, while at the same time permitting said couplers to rotate slightly on their own axes to compensate for such slight irregularities as may exist in their own positions and of the cars in connection with which they are used.

Screwed onto the forward end of the cylinder is a coupling-head 13, which consists of a rectangular body, the forward end of which presents a flat engaging face 14 substantially at right angles to its length, which is preferably rectangular. This coupling-head is provided with two forwardly-projecting guide-horns 15, one of which projects forward from the side of the head a suitable distance beyond the engaging face thereof in a plane above the center of height thereof, and the other of which projects forward from the other side of said head below the center of height of the same. These horns extend back along the side of the heads to which they are connected a short distance, and the portions of them projecting beyond the engaging face are beveled or provided with curved surfaces that curve outward and upward to a point in the horn located above the center of height of the head and outward and downward to a point in the horn projecting

on the opposite side of the head below the center of height thereof.

At about its center the engaging face 14 of the head is provided with an opening 16, which is preferably rectangular and has its mouth elongated transversely and countersunk to provide a seat for a correspondingly-shaped gasket 17 of suitable material, the edges of which project slightly beyond the plane of the face 14. This opening extends longitudinally back into the body of the coupling-head a suitable distance and forms an air-passage which terminates in a transverse passage 21, which latter at the point where the opening 16 enters it is provided with a two-way valve 19. The spindle of this valve extends vertically above the coupler-head and is provided with a handle 20. By turning this valve 19 in one direction opening 16 will be made to communicate only with the portion of passage 21 to the right of opening 16, which will hereinafter be referred to as the "air-brake lead." The portion of the passage 21 to the left of opening 16 will hereinafter be referred to as the "emergency-lead," and by turning the valve in the opposite direction the emergency-lead will communicate with the air-brake lead. The end of the emergency-lead farthest from valve 19 terminates in a nipple, to which a suitable flexible coupling-pipe and emergency-coupling 22, of the kind now in extensive use, is secured. Should my improved automatic coupler become disabled or should the car to which it is attached be coupled to a car having the old style or another style of automatic air-brake coupler, this emergency-coupler enables the air-brake system to be connected throughout the train just the same.

My improved couplers can be used for connecting the steam-pipes of cars and the pneumatic signal-pipes thereof as well as the air-brake pipes. In this event I prefer, as shown in the drawings, to provide a coupling-head with an opening 23 below the air-brake opening 16 for the steam-pipe system of the car and an opening 24 above opening 16 for the signal-pipes, the mouths of both of said openings 23 and 24 being preferably elongated transversely. The entrance to these openings would, preferably, be countersunk similar to opening 16 and be provided with gaskets 25, substantially similar in every respect to gasket 17. The passage leading from the upper opening 24 is not so long as the opening 16 and at its rear end is provided with a two-way valve 26, which is similar to valve 19, through which it is normally connected to the transverse port in the head leading to the pipes of the signal system of the car. Extending transversely from the seat of valve 26, in the opposite direction from the port leading to the signal-pipes, is a suitable passage that connects with an emergency-coupling 27, similar in every substantial re-

spect to the emergency-coupling 22 and adapted for use under the same circumstances thereas.

The rear end of the lower opening 23 is likewise provided with a two-way valve 28, which connects it with the pipes of the steam-heating system of the car on one side of the coupling-head or connects the emergency-coupling 29, on the opposite side of the head, with said steam-pipes.

The object in transversely elongating the mouths of openings 16, 23, and 24 is to permit of the engaging face of the coupler being made as small in superficial area as possible. Were round mouths used, the height of the engaging face would have to be greatly increased.

In Figs. 8 and 9 I show a construction of the tubular body of the air-brake coupler and of the bracket by which the same is supported that I prefer to use in place of that hereinbefore described. In this improved design the construction and operation of said tubular body is the same as hereinbefore set forth, with the exception that the body in about the same transverse plane as the partition is provided with an outwardly-projecting circumferential flange 32, the side of which next the bracket is in a transverse plane at right angles to the axis of the coupler and is adapted to bear against the flat surface of the bracket, which instead of being U-shaped, as hereinbefore described, is made so as to form an annulus 34, that is suspended from the end of the carrier-frame in any suitable manner, has its inner circumference slightly greater in diameter than that of the tubular body of the coupler, and has the swivel-head 35 extend up from its lower segment. The advantage to be obtained from this construction is that when the contraction of spring 8 brings the partition flat against the swivel-head the transverse side of the outer circumferential flange will also bear against the annulus of the bracket and automatically restore the coupler to a position in which its axis will be parallel to the line of draft.

If desired, I can, as shown in the drawings, provide each side of the flat engaging face 14 of the coupler with a vertically-disposed series of corrugations 36 36. The object of these corrugations is when the engaging faces of two opposed couplers are about to meet to direct the finish of the movement of the couplers, so that upon completion of the engagement the openings in the faces of the couplers will perfectly align and communicate one with the other and during the engagement will prevent any independent vertical movement of either coupler.

The corrugations just referred to may be omitted and other changes made in and to the construction of the parts of my invention as hereinbefore described to meet the re-

quirements of different makes and designs of cars without departing from the spirit of my invention, the principal feature of which is the ability of the coupler to assume a position in which its length will be at an angle to the draft of the coupled cars.

What I claim as new is—

1. An automatic air-brake coupler for cars comprising a yielding integral body swiveled at a fixed point relative to the car-body and means for automatically maintaining said coupler normally at the limit of its forward movement.

2. An automatic train-pipe coupler for cars comprising a body having a plurality of independent continuous passages there-through, and valves located within said body for controlling the closure of said passages and movable to a position at an angle to the line of draft of the car.

3. An automatic train-pipe coupler for cars comprising a body having a plurality of independent continuous passages therein and emergency-passages leading therefrom, and suitable valves at the juncture of said continuous and emergency passages.

4. An automatic train-pipe coupler for cars comprising a body movable to a position at an angle to the line of draft of the car and having a plurality of independent continuous passages therein and valve-controlled connections in said body for uniting the same with the train-pipe systems of the car.

5. An automatic train-pipe coupler for cars comprising a body movable to a position at an angle to the line of draft of the car which is supported independently of the car-coupler of the car and has a plurality of independent continuous passages therein, and has valve-controlled connections in said body for uniting the same with the train-pipe systems of said car.

6. An automatic train-pipe coupler for cars comprising a longitudinally-yielding body movable to a position at an angle to the line of draft of the car, which is supported independently of the car-coupler of the car and has a plurality of independent continuous passages therein, and has valve-controlled connections for uniting the same with the train-pipe systems of said car.

7. The combination with a car, and train-pipe system secured thereto, of a coupler consisting of an integral body having a longitudinal passage therein, and movable as a whole to a position at an angle to the line of draft, a flexible pipe connecting said coupler and train-pipe system, and a valve connection within said coupler for controlling the closure of said passage.

8. An automatic train-pipe coupler comprising a swiveled, longitudinally-movable, and automatically-returnable body, having a plurality of independent continuous passages

therein, and valve-controlled connections in said body for uniting the same with the train-pipe systems of the car.

9. An automatic train-pipe coupler comprising a swiveled, longitudinally-movable and automatically-returnable body, having a flat engaging face, and a plurality of independent continuous passages therein, and valve-controlled connections in said body for uniting the same with the train-pipe systems of the car.

10. An automatic train-pipe coupler comprising a swiveled, longitudinally-movable, automatically-returnable body, having a flat engaging face in a plane at right angles to its length, and having a plurality of independent continuous passages therein the mouths of which in said face are elongated transversely, and valve-controlled connections for uniting said passages with the train-pipe systems of the car.

11. An automatic train-pipe coupler comprising a swiveled, longitudinally-movable, automatically-returnable body, having a flat engaging face in a plane at right angles to its length, and having a plurality of independent continuous passages therein, the mouths of which in said face are elongated transversely, and countersunk correspondingly-shaped gaskets seated therein the edges of which project beyond the plane of said face, and valve-controlled connections for uniting said passages with the train-pipe systems of the car.

12. An automatic train-pipe coupler for cars, consisting of an integral body having a longitudinally-disposed passage extending back from the engaging face thereof, and having a laterally-disposed passage communicating with said first-mentioned passage, an emergency-coupling operatively connected to said lateral passage, a flexible pipe for connecting the rear end of said first-mentioned passage to the pipe system of the car, and a valve at the juncture of said passages for alternately opening and closing the same.

13. An automatic train-pipe coupler for cars, comprising a body movable to a position at an angle to the line of draft of the car, and having a longitudinally-disposed passage therein, an emergency-passageway open when said longitudinal passage is closed and closed when the longitudinal passage is open, and valve connections within said body for controlling said passages.

14. An automatic train-pipe coupler for cars, comprising a longitudinally-yielding body, movable to a position at an angle to the line of draft of the car and having a longitudinally-disposed passage therein, an emergency-passageway open when said longitudinal passage is closed, and closed when the longitudinal passage is open, and valve connection within said body for controlling said passages.

15. An automatic train-pipe coupler for cars, comprising a body movable to a position

at an angle to the line of draft of the car, and supported independently of the car-coupler of the car, and having a longitudinally-disposed passage therein, an emergency-passageway open when said longitudinal passage is closed, and closed when the longitudinal passage is open, and valve connections within said body for controlling said passages.

16. An automatic train-pipe coupler for cars, comprising a longitudinally-yielding body movable to a position at an angle to the line of draft of the car, and supported independently of the car-coupler of the car and having a longitudinally-disposed passage therein, an emergency-passageway open when said longitudinal passage is closed, and closed when the longitudinal passage is open, and valve connections within said body for controlling said passages.

17. An automatic train-pipe coupler comprising a swiveled, longitudinally-movable, automatically-returnable body, having a longitudinally-disposed passage therein, and an emergency-passageway open when said longitudinal passage is closed and closed when said longitudinal passage is open.

18. An automatic train-pipe coupler comprising a longitudinally-yielding body, having a flat engaging face in a plane substantially at right angles to its length, and having a longitudinally-disposed passage therein, an emergency-passageway open when said longitudinal passage is closed, and closed when the longitudinal passage is open, and valve connections within said body for controlling said passages.

19. An automatic train-pipe coupler comprising a swiveled, longitudinally-movable, automatically returnable body having a flat engaging face, having a longitudinally-disposed passage therein, and an emergency-passageway open when said longitudinal passage is closed and closed when said longitudinal passage is open.

20. An automatic train-pipe coupler, comprising a longitudinally-yielding body having a flat engaging face in a plane substantially at right angles to its length, having a longitudinal passage, and an emergency-passageway intersecting the same, which is open when said longitudinal passage is closed and closed when the longitudinal passage is open, and provided with a horn projecting forward from one side thereof above its center of height, a corresponding horn projecting from the opposite side thereof below its center of height, and valve connections within said body for controlling said passages.

21. An automatic train-pipe coupler comprising a longitudinally-yielding body, having a longitudinal passage and an emergency-passageway intersecting the same which is open when said longitudinal passage is closed and closed when said longitudinal passage is open, which coupler is engaged endwise, and is pro-

vided with a horn projecting forward from one side thereof above its center of height having its under surface curved upward and side nearest said engaged end curved outward, and a corresponding horn projecting from the opposite side thereof below the center of height with its upper side curved downward and side facing said end curved outward.

22. In a car the combination with the car-body, and the car-coupler yieldingly connected thereto, of a normally stationary longitudinally-movable frame supported by said car-body independently of the car-coupler, and an automatic train-pipe coupler supported by said frame.

23. In a car the combination with the car-body, and the car-coupler yieldingly connected thereto, of a longitudinally-movable normally stationary frame supported by said car-body independently of the car-coupler, and an automatic train-pipe coupler supported by said frame but capable of movement independent of the same.

24. In a car the combination with the car-body, and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of the car-coupler, and an automatic train-pipe coupler supported by said frame but capable of movement to a position at an angle to the line of draft of the car independently of the same.

25. In a car the combination with the car-body, and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of the car-coupler, and an automatic train-pipe coupler supported by said frame but capable of a yielding movement independent of the same.

26. In a car the combination with the car-body, and car-coupler yieldingly connected thereto, of an automatic air-brake coupler supported by the car-body independently of said car-coupler, but detachably tied thereto.

27. An automatic train-pipe coupler for cars, comprising an integral body capable of a slight rotation on its one axis and movable to a position at an angle to the line of draft of the cars.

28. An automatic train-pipe coupler for cars, comprising a longitudinally-yielding integral body capable of a slight rotation on its own axis and movable to a position at an angle to the line of draft of the car.

29. An automatic train-pipe coupler for cars, comprising an integral body capable of a slight rotation on its own axis, and movable to a position at an angle to the line of draft of the car, and supported independently of the car-coupler of the car.

30. An automatic train-pipe coupler for cars, comprising a longitudinally integral

yielding body capable of a slight rotation on its own axis, and movable to a position at an angle to the line of draft of the car, and supported independently of the car-coupler of the car.

31. An automatic train-pipe coupler, comprising a swiveled, longitudinally-movable and automatically-returnable body capable of a slight rotation on its own axis.

32. An automatic train-pipe coupler, comprising a longitudinally-yielding body capable of a slight rotation on its axis, and having a flat engaging face in a plane substantially at right angles to its length.

33. An automatic train-pipe coupler, comprising a swiveled, longitudinally-movable, automatically-returnable body capable of a slight rotation on its own axis, and having a flat engaging face.

34. In a car the combination with the car-body, and car-coupler connected thereto, of a longitudinally-movable frame, and an automatic air-brake coupler carried by said frame.

35. In a car the combination with the car-body, and car-coupler connected thereto, of a longitudinally-movable frame, and an automatic air-brake coupler carried by said frame, and capable of movement independent of the same.

36. In a car the combination with the car-body, and car-coupler connected thereto, of a longitudinally-movable frame, and an automatic air-brake coupler carried by said frame, and capable of moving to a position at an angle to the line of draft of the car independently of said frame.

37. In a car, the combination with the car-body, and car-coupler connected thereto, of a longitudinally-movable frame, and an automatic air-brake coupler carried by said frame and having a yielding movement independent of the same.

38. In a car, the combination with the car-body, and car-coupler connected thereto, of a longitudinally-movable frame, and a swiveled, longitudinally-movable and automatically-returnable air-brake coupler carried by said frame.

39. An automatic train-pipe coupler for cars unattached, directly, to either the car or car-coupler thereof.

40. An automatic train-pipe coupler for cars unattached, directly, to either the car or car-coupler thereof, and comprising an integral body movable to a position at an angle to the line of draft of the car.

41. An automatic train-pipe coupler for cars unattached, directly, to either the car or car-coupler thereof, and comprising a longitudinally-yielding body movable to a position at an angle to the line of draft of the car.

42. An automatic train-pipe coupler for cars unattached, directly, to either the car or

car-coupler thereof, and comprising a swiveled, longitudinally-movable, and automatically-returnable integral body.

43. An automatic air-brake coupler comprising a swiveled, longitudinally-movable, and automatically-returnable body having a flat engaging face having transversely-elongated openings.

44. An automatic air-brake coupler comprising a swiveled, longitudinally-movable, and automatically-returnable body having a flat engaging face having transversely-elongated countersunk openings, and correspondingly-shaped gaskets seated therein, the edges of which project beyond the plane of said face.

45. An automatic air-brake coupler comprising a yielding, and automatically-returnable body having a flat engaging face with transversely-elongated openings therein.

46. In a car, the combination with the car-body, and car-coupler yieldingly connected thereto, of a yielding automatic air-brake coupler supported by the car-body independently of said car-coupler, but detachably tied thereto.

47. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler, but detachably connected thereto, and an automatic air-brake coupler carried by said frame.

48. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler, a link detachably connecting said frame to said car-coupler, and an automatic air-brake coupler carried by said frame.

49. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler, a coupling-pin, a link detachably connecting said frame to said pin, and an automatic air-brake coupler carried by said frame.

50. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler, a coupling-pin therefor, a link suitably connected to said frame at one end, a suitable clip connected to the opposite end of said link and engaging the lower end of the coupling-pin, and an automatic air-brake coupler carried by said frame.

51. In a car the combination with the car-body, a car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler, a coupling-pin therefor, a

hook-shaped link suitably connected to said frame at one end, a suitable clip connected to the opposite end of said link and engaging the lower end of the coupler-pin, and an automatic air-brake coupler carried by said frame.

52. In a car, the combination with the car-body, and car-coupler yieldingly connected thereto, of a yielding swiveled automatic air-brake coupler supported by the car-body independently of said car-coupler, but detachably tied thereto.

53. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler but detachably connected thereto, and a swiveled automatic air-brake coupler carried by said frame.

54. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler, a link detachably connecting said frame to said car-coupler, and a swiveled automatic air-brake coupler carried by said frame.

55. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler, a coupling-pin, a link detachably connecting said frame to said pin, and a swiveled automatic air-brake coupler carried by said frame.

56. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler, a coupling-pin therefor, a link suitably connected to said frame at one end, a suitable clip connected to the opposite end of said link and engaging the lower end of the coupling-pin, and a swiveled automatic air-brake coupler carried by said frame.

57. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler but detachably tied to the latter, a frame secured to and depending from said first-mentioned frame and an automatic air-brake coupler swiveled to said last-mentioned frame.

58. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler but detachably tied to the latter, a frame secured to and depending from said first-mentioned frame and an automatic air-brake coupler extending through and swiveled to said last-mentioned frame.

59. In a car the combination with the car-

body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler but detachably tied to the latter, a frame secured to and depending from said first-mentioned frame and a longitudinally-yielding automatic air-brake coupler swiveled to said last-mentioned frame.

60. In a car-body the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler but detachably tied to the latter, a frame secured to and depending from said first-mentioned frame and a longitudinally-yielding automatic air-brake coupler extending through and swiveled to said last-mentioned frame.

61. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler but detachably tied to the latter, an open frame depending from the forward end of said first-mentioned frame having a swiveling standard projecting upwardly therefrom and an automatic air-brake coupler swiveled upon said standard.

62. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler but detachably tied to the latter, an open frame depending from the forward end of said first-mentioned frame having a swiveling standard projecting upwardly therefrom and an automatic air-brake coupler extending through and swiveled upon said standard.

63. In a car the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler but detachably tied to the latter, an open frame depending from the forward end of said first-mentioned frame having a swiveling standard projecting upwardly therefrom and a longitudinally-yielding automatic air-brake coupler swiveled upon said standard.

64. In a car-body the combination with the car-body and the car-coupler yieldingly connected thereto, of a longitudinally-movable frame supported by said car-body independently of said car-coupler but detachably tied to the latter, an open frame depending from the forward end of said first-mentioned frame having a swiveling standard projecting upwardly therefrom and a longitudinally-yielding automatic air-brake coupler extending through and swiveled upon said standard.

65. The combination with an automatic air-brake coupler comprising a coupler-head, and a tubular body extending to the rear

therefrom and having a longitudinal slot therein, of means for swiveling said coupler which enters the bore of said tubular body through said slot.

66. In an automatic air-brake coupler, a carrier-frame, a drop-frame secured to the forward portion thereof, a swivel-head projecting therefrom, and an automatic air-brake coupler comprising a coupler-head and a tubular body secured to the forward end of which said head is secured, and which is provided with a longitudinal slot therein extending back from said coupler-head through which said swivel-head projects into the bore of said tubular body.

67. In combination with a longitudinally-movable and automatically-returnable automatic air-brake coupler comprising a coupler-head, and a tubular body extending to the rear therefrom and having a longitudinal slot therein, of means for swiveling said coupler which extends through said slot into the bore of said cylinder.

68. The combination with a longitudinally-movable and automatically-returnable automatic air-brake coupler comprising a coupler-head, and a tubular body extending to the rear therefrom, the bore of which is provided with a partition mediate its ends and has a longitudinal slot therein between said head and partition, of means for swiveling said coupler which extends through said slot into the bore of said tubular body.

69. An automatic air-brake coupler comprising a coupler-head, and a tubular body having a transverse perforate partition mediate its ends extending from the rear of said head, of a swivel-head supporting said coupler which extends through said slot into the bore thereof, and means for normally keeping the said coupler at the limit of its forward movement.

70. An automatic air-brake coupler for cars comprising a swiveled yielding integral body movable to a position at an angle to the line of draft of the car, and means for automatically maintaining said coupler normally at the limit of its forward movement.

71. An automatic air-brake coupler for cars comprising a swiveled yielding integral body movable to a position at an angle to the line of draft of said cars, and means for automatically maintaining said coupler normally in a position parallel to said line of draft.

72. An automatic air-brake coupler for cars comprising a swiveled longitudinally-yielding integral body movable to a position at an angle to the line of draft of said cars, and means for automatically maintaining said coupler normally at the limit of its forward movement in a position parallel to said line of draft.

73. An automatic air-brake coupler for cars comprising a swiveled longitudinally-yielding integral body movable to a position

at an angle to the line of draft of said cars, and means contained within said body for automatically maintaining said coupler normally at the limit of its forward movement in a position parallel to said line of draft.

74. An automatic air-brake coupler comprising a coupler-head, and a tubular body having a transverse perforate partition mediate its ends extending from the rear of said head, of a swivel-head supporting said coupler which extends through said slot into the

bore thereof, a coil expansion spring in the bore of said tubular body to the rear of said partition, and a bolt connecting the rear end of said spring to said swivel-head.

In testimony whereof I have hereunto set my hand and seal this 7th day of April, 1906.

FRANK H. RUTHERFORD. [L. s.]

Witnesses:

FRANK D. THOMASON,
E. K. LUNDY.