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F. H. ROE.
AUTOMATIC AIR BRAKE COUPLING.
APPLICATION FILED AUG. 3, 1909.

Patented June 28, 1910.

2 SHEETS—SHEET 1.

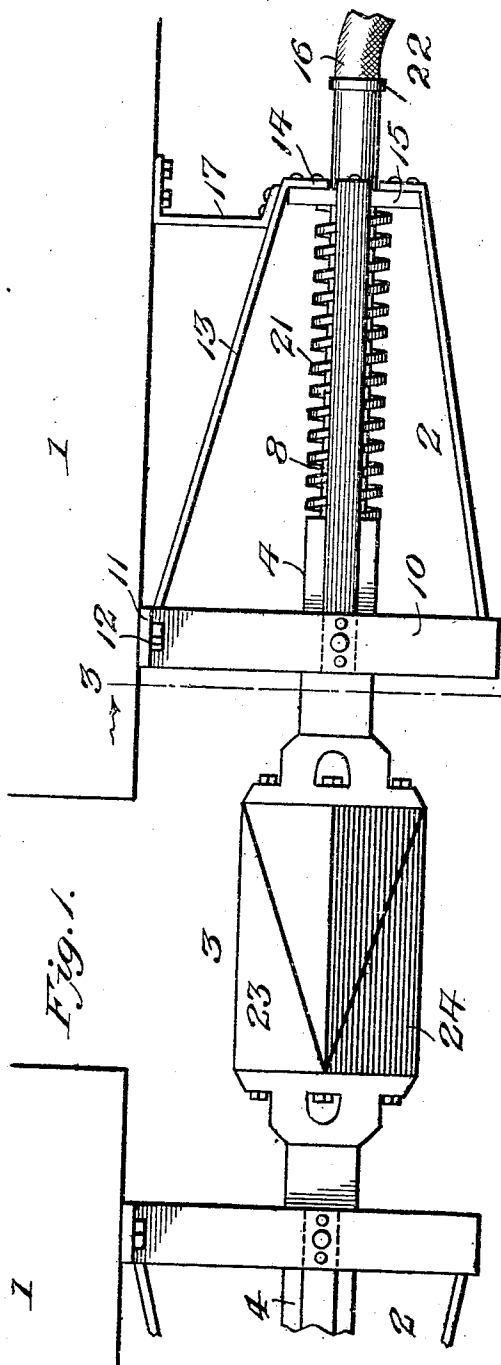


Fig. 1.

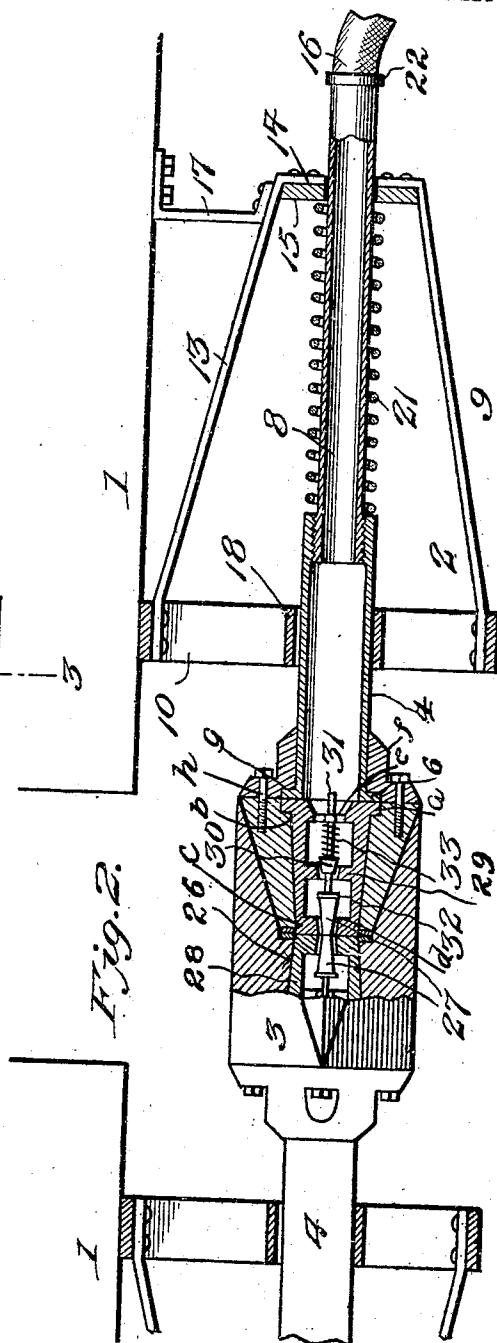


Fig. 2.

Witnesses

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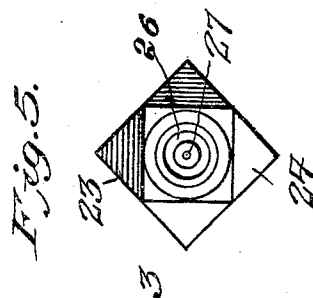
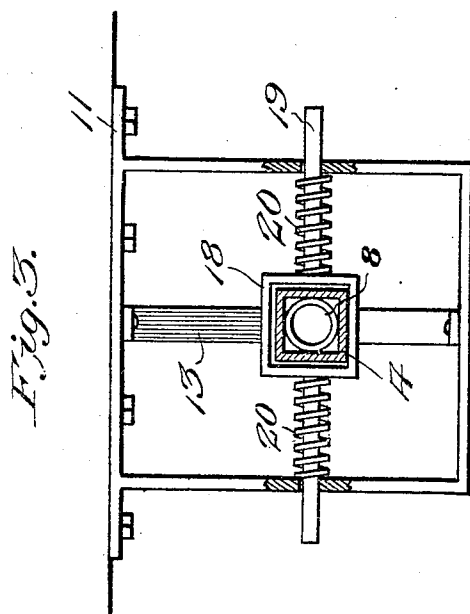
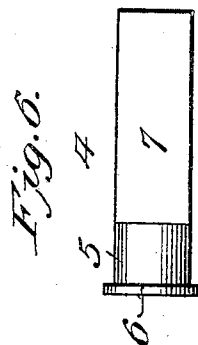
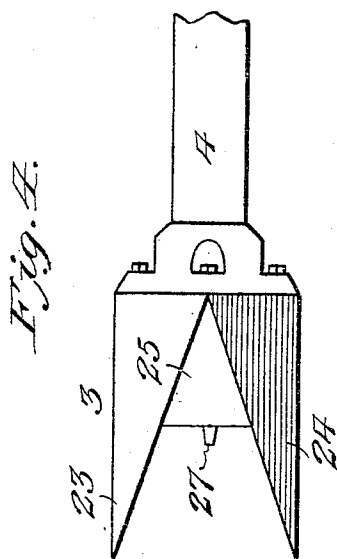
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UNITED STATES PATENT OFFICE.

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AUTOMATIC AIR-BRAKE COUPLING.

962,980.

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Application filed August 3, 1909. Serial No. 510,979.

To all whom it may concern:

Be it known that I, FORREST H. ROE, a citizen of the United States, residing at Batesville, in the county of Noble and State of Ohio, have invented new and useful Improvements in Automatic Air-Brake Couplings, of which the following is a specification.

This invention relates to pipe couplings, and is more particularly directed to that class of couplings for automatically connecting the air-brake pipes of railway coaches.

The primary object of the invention is to provide a device of this character having its abutting heads of a peculiar formation whereby each of the said heads will easily and quickly adjust itself in position with the cooperating head and be retained in its connected position without the necessity of manual interference.

Another object of the invention is to provide a device of this character which is thoroughly air-tight and which is so arranged as to provide for the rounding of the curves by the cars without interfering with the connection of the air pipes.

With the above, and other objects in view which will appear as the description progresses, the invention resides in the novel construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings there has been illustrated a simple and preferred embodiment of the device, and in which:—

Figure 1 is a side elevation of the improved air-tight coupling, showing the same in applied position upon adjoining cars. Fig. 2 is a similar view, parts being shown in section to more clearly illustrate the details of the device. Fig. 3 is a sectional view upon the line 3—3 Fig. 1. Fig. 4 is a side elevation of one of the couplings. Fig. 5 is a front elevation of the same. Fig. 6 is a side elevation of the pipe member used in connection with the device.

In the accompanying drawings the numerals 1 designate a pair of railway coaches of any ordinary construction, and these coaches are provided with the usual knuckle locks, which in the present instance it has not been deemed necessary to illustrate.

The numerals 2 designate the improved couplings. The couplings of one of the coaches 1 is of a precise construction to that employed upon the adjoining coach, except that the mouths of the coupling heads are

arranged at a substantially right angle to each other, and the numerals of references applied to the parts upon one of the coaches may be taken as equally applicable to the device upon the remaining coach. The numeral 3 designates the head of the coupling, which is of a peculiar formation and which will later be described in detail. The coupling head 3 is provided with a rearwardly extending pipe section or hollow member 4 which is illustrated in detail in Fig. 6 of the drawing, and which has a rounded portion 5 provided with a flange 6 and a substantially squared longitudinally extending portion 7.

The member 4 has a longitudinally extending bore which is threaded adjacent its outer squared end so as to provide for the reception of a threaded pipe member 8. The members 4 and 8 are supported in a suitable frame 9 connected with the bottom of the coach 1. The frame 9 comprises a substantially rectangular forward member 10 having its upper extremity provided with offset arms 11 which are suitably perforated and adapted for the reception of threaded elements 12, whereby the said member 10 is connected with the bottom of the coach 1. The rectangular member 10 has all of its sides provided with centrally arranged rearwardly inclined arms 13 and the said arms have their extremities provided with offset members 14 whereby they are secured to a suitable block 15. This block 15 has a central orifice through which the pipe member 8 extends, and the free end of the member 8 is provided with a flexible pipe 16 which is connected with the air system of the train. The upper horizontal bar 13 is provided with a standard 17 having its extremity offset and connected with the base of the coach 1, so as to effectively support the rear portion of the frame upon the coach, and it will be noted that by providing the frame with the inclined arms, a secure bearing is afforded for the pipe 8 and the device is raised as far as possible away from the road-bed of the railway.

In order to allow for the swinging of the head members 3, as the coaches describe curves or other irregularities in the track, the squared portion 7 of the hollow member 5 is provided with a substantially rectangular collar 18 and the said collar has oppositely extending arms 19 projecting through suitable perforations provided within the vertical arms of the rectangular frame 10.

Positioned between this collar 18 and the vertical arms of the said frame 10 are helical springs, or other resilient elements, designated by the numeral 20. By this arrangement, it will be noted that while, the member 4 is free to move longitudinally within the said collar 18, the springs 20 retain the said member in a direct central position within the frame 10 and it will be further noted that as the heads 3 of the couplings are inclined to follow the direct path of the coach, as the latter is rounding a curve, the resilient elements 20 will effectively compensate for this movement and retain the heads 3 in locked position upon each other. Positioned upon the pipe member 8, directly between the block 15 and the member 4, and adapted to exert pressure between these members is a helical spring 21. This spring is, as above stated adapted to force the head outwardly away from the frame 10 and the outward movement is limited through the medium of a collar 22 provided upon the pipe 8. It will be noted that by providing this spring or resilient element 21 the violent contact of the heads 3, when brought into engagement with each other will be effectively cushioned, thus obviating the jar and shock incident to the meeting of the said heads and also preventing the breaking of the contacting parts of the head when engaging each other. The heads 3 each provide a pair of jaws 23 and 24. The jaws are of a substantially triangular cross sectional shape and referring particularly to the coupling, illustrated in detail in Fig. 4, it will be noted that the upper edges of the said jaws 23 and 24 are in direct parallel relation with each other, and that the said jaws have their inner faces inclined rearwardly toward and terminating at its rear central portion. The device thus constructed comprises an enlarged mouth portion decreasing toward its rear, so that the said jaws may be easily and quickly positioned within the mouth of the coöperating jaw. Each of the heads 3 is provided upon its sides with a reduced portion or seat 25, and this seat is adapted to serve, in coöperation with the angular faces of the jaws 23 and 24, as a rest for the co-acting jaws of the second coupling.

By reference to Fig. 5 of the drawing, it will be noted that the walls comprising the seat 25 have their outer faces of a substantially squared formation, and this squared portion is centrally provided with a longitudinally extending opening 26.

By reference to Fig. 2 of the drawings, it will be noted that the said opening 26 is substantially cone-shaped and adapted to be positioned within this opening is a cone-shaped cylinder 28. The enlarged end of this cylinder 28 is provided with an annular flange *a*, which is adapted to fit within

an annular recess *b* provided upon the inner face of the head 3. The cylinder has its outer face provided with an interiorly arranged offset portion *c* which has a cone-shaped opening *d*, the same being adapted for the reception of a resilient plug member 27. The cone-shaped member 28 has its interior centrally provided with a valve seat 29 and is also provided adjacent its inner face with a central opening alining with the openings *d* and 29. The plug 27 is provided with a rearwardly extending rod 31, which has its outer extremity positioned within the opening of the spider *e* and rigidly secured to the said rod 31 is a valve 30 which is normally forced into engagement with the valve seat 29 through the medium of a helical spring 33, the said spring being positioned between the valve 30 and the spider *e*. By this arrangement it will be noted that both the cone-shaped seats *d* and 29 are normally closed, through the medium of the spring 33 when the coupling members are not connected. The letter *f* indicates the collar member which is centrally provided with a reduced rearwardly extending portion having an annular groove which is adapted to engage with the rounded portion 5 of the hollow member 4, so as to freely rotate thereon. The collar member *f* is also provided with a central annular depression *g* adjacent its bore and which is adapted to snugly engage the offset 6 of the member 4. The collar 6 has its outer or offset portion provided with a plurality of spaced openings, the said openings being adapted for the reception of threaded securing elements *h* which are adapted to engage suitable threaded orifices provided in the member 3, as clearly illustrated in Figs. 1, 2 and 4 of the drawings. By this arrangement it will be noted that the member 3, through the medium of its collar *f* is free to revolve upon the rounded portion 5 of the member 4 so that the same may be readily positioned to engage the coacting coupler of the adjacent car. It will be further noted that by this arrangement in connection with the laterally movable collar member 18, the coacting couplers 3 will be automatically swung into engaging position when the coaches 1 are forced toward each other.

Having thus fully described the invention, what is claimed as new is:—

1. In a coupling of the character set forth, a head provided with forwardly extending jaws arranged at an angle from their center to their ends, the sides of the head between the jaws being provided with seats, a normally closed valve within the head having an outwardly extending portion, and a support for the head provided with resilient means to compensate for the longitudinal or transverse movement of the said head.

2. In a coupling for the purpose set forth, 130

a head, a pipe extension upon the head, a support for the extension, resilient means for normally forcing the head forward of its support, resilient means for normally centering the head and extension upon the support, said head being provided with jaws having their inner faces inclined from their center to their ends, the space between the jaws, adjacent the rear portion of the head being provided with seats, a central opening within the solid portion of the head, said opening having its forward portion substantially cone-shaped, a hollow cone-shaped flexible member within this opening, a valve seat within the main opening, a spring pressed valve for the seat, and a hollow disk connected with the valve and adapted to normally contact the cone-shaped plug to force the latter forward within its opening.

3. In a coupling of the character set forth, the combination with a head having a pair of jaws inclined from their outer edges toward their centers upon two sides of the head, the head being provided with seats upon its sides communicating with the inclined walls of the jaws, the solid portion of the head having an opening, a normally closed valve provided with a projecting stem within the opening, a pipe extension for the

head, a frame supporting the extension and the head, said frame comprising a forward rectangular member provided with rearwardly extending inclined arms, a connection between the inclined arms and the bottom of the car, a connection between the forward portion of the frame and the bottom of the car, an auxiliary frame loosely mounted upon the pipe extension and provided with oppositely disposed arms, resilient elements upon the arms between the collar and the sides of the frame to normally center the head upon the frame, a resilient member normally forcing the head forward of the frame, and means provided upon the pipe extension for limiting its forward movement.

4. In a pipe coupling of the character described, a revolubly headed member having a normally closed valve, a frame supporting member, and resilient elements upon the frame to provide for the longitudinal as well as the lateral movement of the member.

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

FORREST H. ROE.

Witnesses:

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C. T. EVERETT.