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TRAIN PIPE COUPLING.
APPLICATION FILED SEPT. 18, 1912.

1,066,446. Patented July 1, 1913.

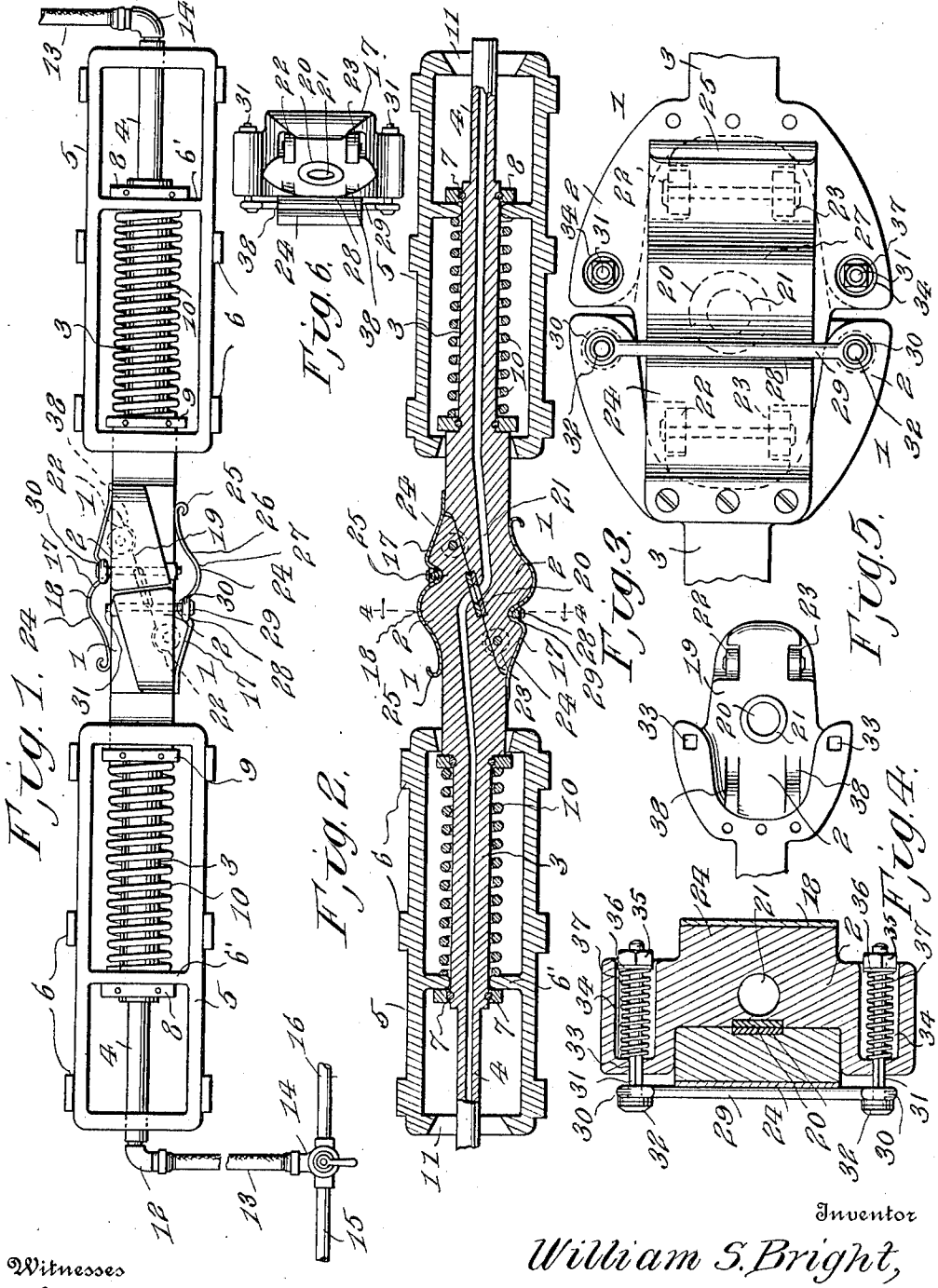

Fig. 1.

Fig. 2.

Fig. 6.

Fig. 3.

Fig. 5.

Fig. 4.

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TRAIN-PIPE COUPLING.

1,066,446. Specification of Letters Patent. Patented July 1, 1913.

Application filed September 18, 1912. Serial No. 721,002.

To all whom it may concern:

Be it known that I, WILLIAM S. BRIGHT, a citizen of the United States, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented new and useful Improvements in Train-Pipe Couplings, of which the following is a specification.

The present invention relates to improvements in air pipe couplings for pneumatic brake system on railway cars.

In carrying out my invention, it is my purpose to provide train pipe coupling members which shall be attached directly to the ends of the coaches, and which shall be so constructed and arranged, as to automatically couple when the coaches are brought to a coupling position.

I also aim to provide couplers of this class which shall be so constructed and arranged upon the coaches of a train, as to provide for the varying undulations of the road bed over which the train travels, and the curves which the train rounds without danger of the same becoming disconnected.

It is a further object of my invention, to provide a coupler of this character, which shall be so constructed and arranged upon a coach as to readily receive and secure thereto the co-acting coupler of the adjacent coach, irrespective to the angle or inclination of either of the said couplers when the same are forced together.

A further object of the invention, is the provision of co-acting coupler members, for the purpose set forth, each embodying a head which has an inner inclined face, and which has its air port provided with a compressible gasket which projects slightly beyond its face, each of the said heads having resilient jaws arranged opposite its inclined face to provide the heads with what may be termed a flaring mouth, as well as a directing and compressing element for the co-acting head, the said heads each being provided with anti-frictional rollers which extend slightly beyond their inclined faces, and each of the said faces being recessed to provide pockets for the rollers, and the said rollers being adapted to ride upon the inclined faces of the co-acting heads to permit of the ready coupling thereof, as well as to sustain the gaskets out of contact with the inclined faces or out of contact with each other, until the rollers have traveled to their pockets and are forced therein by the resilient jaws.

A still further object of the invention, is the provision of simple, but effective means whereby the tension of the resilient jaws may be readily regulated without necessitating the uncoupling of the heads, the said means being arranged within suitable pockets or depressions provided within the heads so as to be out of contact with obstacles, as well as to protect the same against the elements.

For the purpose of illustration the accompanying drawings show a satisfactory reduction of my improvement to practice, but the important instrumentalities thereof may be varied, and so it is to be understood that the invention is not to be limited to the specific arrangement and organization shown and described.

In the drawing, Figure 1 is a top plan view illustrating co-acting couplers constructed in accordance with my invention, in applied position. Fig. 2 is a central longitudinal sectional view of the same. Fig. 3 is a side elevation of the same, taken upon an enlarged scale. Fig. 4 is a transverse sectional view taken approximately upon the line 4—4 of Fig. 2. Fig. 5 is a face view of one of the coupler heads, the resilient jaw being removed. Fig. 6 is a front elevation of one of the couplers.

Referring now to the drawings in detail, 1—1 designates the co-acting couplers. Each of these couplers embodies a substantially V-shaped head 2 which is provided with a longitudinally extending stem 3, the outer extremity of which being reduced to provide, what I shall term a pipe member 4. The stem and pipe are arranged within a suitable frame or housing 5, the said housing being provided with a plurality of spaced ears or arms 6 whereby the said housing may be secured to the under frame of a coach. The housing 5 is provided with a central partition 6′, the edges of which being rounded, and being adapted to slightly contact with the rear portion of the stem 3. The stem is preferably angular in cross section, and the portion thereof extending beyond the partition 6′ has its opposite side walls formed with depressions, within which are received removable pins 7 that pass through suitable openings which intersect

the bore of a collar 8. The opening in the outer face of the housing 5 is of a greater area than the cross sectional diameter of the end of the head which is arranged therein, so that the said head may be susceptible to an angular movement in any direction. Arranged upon the sleeve 3 and contacting with the shoulder provided between the said sleeve and the end of the head 2 is a washer 9, and surrounding the stem, and exerting a tension between this washer and the partition 6′ is a helical spring 10. The opening 11 in the rear wall or end of the housing 5 is also of a greater area than the diameter of the pipe 4, so as not to interfere with the said pipe when the head 2 is moved angularly of the housing. The pipe 4 has its rear end provided with a suitable fitting 12 to which is connected a flexible pipe 13, and the said flexible pipe communicates with a three way valve 14 that is arranged upon the train pipe 15. The pipe 15 extends from the valve 14 in opposite directions, and it will thus be noted that the fluid from the pipe may be directed to the air passage of the coupler, closed or shut off from the said coupler to deliver to the pipe 16, or shut off from both the coupler and the pipe 16. Ordinarily, however, the flexible pipe 13 communicates directly with the train pipe 15, and the pipe 16 is only employed when couplers of the ordinary construction are attached to the coach.

Each of the coupler heads 2 has one of its faces, which, for convenience I shall term its outer face or side, provided with the rearwardly extending outwardly inclined portion 17 which terminates in a rounded inwardly inclined wall 18, and this wall 18 provides a shoulder or bearing face for the resilient jaw of the co-acting coupler as will presently be fully set forth. The inner face 19 of each of the coupler members is flat beveled or inclined from the outer end of the head toward the opposite side of the coupler, and the said inclined face is, approximately centrally provided with a port or opening which communicates with the air passage 20 of the said coupler. The inclined face 19 is provided with an annular depressed portion which surrounds the port, and arranged within the said depression is a compressible gasket or washer 21, the same comprising a face or body portion which projects beyond the inclined face 19 a slight distance. Both the upper and lower portions of the jaw 2 adjacent its outer edge or apex are depressed to provide for the reception of anti-frictional rollers 22 and 23. The rollers are mounted upon suitable shafts or trunnions, and one of their peripheral edges extends beyond the face 19 a distance greater than the extending portion of the gasket 21.

Secured to the face or side of the head opposite that provided with the rounded shoulder 18, and at the terminal of the inclined face 19, is a resilient jaw 24. This jaw comprises a flat spring which is bent or formed to correspond to the inclined outer wall 17, and rounded shoulder 18 upon the opposite face or side of the head 2. The outer or free end of the jaw 24 is curved inwardly to provide a lip 25, and the outwardly beveled or inclined portion 26 of the said jaw is bent inwardly adjacent the rounded portion 27 thereof to provide a pocket 28 for a vertically disposed rod 29. This rod 29 has its opposite ends provided with eyes 30, and passing through the said eyes is the stem 31 of a headed element 32. The stem 31, adjacent the head 32 is non-circular, and passes through a non-circular opening 33 provided in the head 2, and the said opening communicating with a transversely arranged depression forming a pocket 34. The stem 31 has its opposite end rounded and threaded, and is adapted to receive a nut 35 which may be wholly received within the pocket 34. Arranged within the pocket 34, and surrounding the stem 31, and exerting a tension between its inner wall and a washer 36, which contacts with the nut 35 is a helical spring 37. By such an arrangement it will be noted that the tension of the resilient jaw 24 may be readily regulated, and further that the regulating means may be arranged within the pockets 34, and thus wholly concealed and protected against contact or against the elements.

The inner face 19 of each of the heads 2 is provided with recesses or depressions 38 which provide housings or pockets for the rollers 22—23 of the co-acting heads, and it will be apparent that when the coaches provided with the couplers, are forced together to couple the said coaches, the pointed end of one of the heads 2 will pass between the lip 25 and the pointed end of the companion coupler, and when contacted by the jaw the anti-frictional rollers 22—23 will ride upon the inclined face 19 until the same reach their pockets 38, when the said resilient jaws will force the same within their pockets and the compressible gaskets tightly against each other. The jaws, as stated conform to the outer faces of the heads and will, of course, resiliently engage with the said heads, and the inwardly curved ends of the jaws lie snugly against the rounded shoulders 18 together with the rollers engaging with the walls of their pockets will prevent an accidental uncoupling of the jaws in a longitudinal direction except when great exertion, such as the parting of the coaches, is exerted upon the jaws.

By reference to Figs. 5 and 6 of the drawing, it will be noted that the portions

of the heads forming the pockets 34 are disposed both above and below the engaging faces of the heads, and furthermore, that the outer and lower edges of the said portions are rounded. With such an arrangement it will be noted that the engaging portions of one of the couplers when disposed either slightly above or slightly below its companion coupler will have its V-shaped end contact with either of the rounded walls and be thus properly guided to its engaging position with its companion head. This is also true should either of the heads be disposed out of longitudinal alinement, the peculiar mounting of the shanks of the heads being such as to permit a movement of either of the said heads in any direction, as has been stated, and thus it will be seen that the said heads will be surely and effectively coupled irrespective of the angular arrangement of the cars or coaches when the said coaches are brought to a coupling position. It will be further noted that, by such an arrangement, should a vertical movement or strain be imparted upon either of the coaches which is not altogether absorbed by the free movement of the shanks of the heads in their free arrangement within the housing, the gaskets will serve as a pivot point to permit of the heads moving in this direction until the anti-frictional rollers forcibly contact with the longitudinal walls of the pockets 38. Such a movement, under any circumstances is slight, and while the same does not often occur, it will be noted, that such an emergency is provided for.

From the above description, taken in connection with the drawing, the simplicity and advantages of my device, together with the operation of the same will, it is thought, be perfectly apparent to those skilled in the art to which such inventions appertain without further detailed description.

Having thus described the invention, what I claim is:—

1. In a coupler for train pipes, loosely mounted longitudinally arranged co-acting heads each having inclined co-acting faces, a flat spring jaw for each of the heads and arranged opposite its inclined face, a rod co-acting with each of the jaws, and an adjustable tension member co-acting with the opposite ends of each of the jaws to force the said jaw into engagement with its co-acting head.

2. In a coupler for train pipes, heads provided with inclined engaging faces, each of said heads having its upper and lower portion rounded from the said faces, flat resilient jaws for each of the heads, and disposed opposite its inclined face, and adapted to engage with the outer face of the co-acting head, the rounded portions of the heads being recessed to provide pockets, and tension elements co-acting with the jaws arranged within the said pockets.

3. In a coupler for train pipes, loosely mounted longitudinally arranged heads, each of said heads having an inclined co-acting face, each of the heads having its opposite face inclined and terminating in a rounded stop, flat resilient jaws for each of the outer faces of the heads and adapted to engage with the said stop and to compress the engaging faces of the jaws, a rod member for each of the jaws, and a spring pressed member arranged within the opposite sides of the jaws and adjustably connected with the opposite ends of each of the rods.

4. In a coupler for train pipes, loosely mounted co-acting heads having inclined engaging faces, each of the said faces having anti-frictional roller members which project over the co-acting faces of the heads, the heads being further provided with pockets which are adapted to receive the anti-frictional rollers of the co-acting head, each of the heads having its outer face provided with co-acting spring jaws which are adapted to compress the engaging faces of the heads to seat the anti-frictional rollers of one of the heads within the pockets of the co-acting heads, and adjustable tension members for each of the jaws.

5. In a coupler for train pipes, longitudinally disposed spring pressed heads loosely mounted in housings, each of said heads having a flat inclined engaging face, a portion of which being depressed to provide for the reception of the co-acting head, each of the inclined faces having projecting anti-frictional rollers arranged adjacent their outer ends, the inner and closed ends of the heads at the inner portions of their inclined faces being longitudinally depressed to form pockets for the reception of the anti-frictional rollers of the co-acting heads, each of the heads having a resilient jaw which overlies its engaging face and which is adapted to engage with the co-acting head, each of the faces having a registering port, a normally projecting compressible gasket within each of the ports, a rod contacting with the outer face of each of the jaws, and adjustable spring means carried by the heads and engaging with the opposite ends of each of the rods.

6. In a coupler for train pipes, longitudinally disposed spring pressed heads loosely mounted in housings, each of the heads having a flat inclined engaging face, anti-frictional members for each of the said faces, housings for the antifrictional members arranged upon the faces of the adjacent heads, to receive the same when the heads are coupled, each of the heads being provided with registering ports, compressible members for the ports, spring jaws for the heads and

adapted to engage with the outer faces thereof, each of said jaws having its extremity provided with a rounded lip, a rod member for each of the jaws, and tension elements arranged upon the heads and co-acting with the opposite ends of the rod.

7. In a coupler for train pipes, a housing connected to the under face of a coach adjacent the ends thereof, said housing having open faces and a centrally arranged partition, the inner walls of which being rounded, co-acting couplers, each of said couplers embodying a substantially V-shaped head having a resilient jaw arranged thereon to provide a substantially flared mouth for the head, each of the jaws being provided with a shank which passes within the housing and which is engaged by the rounded walls of the partition, a removable collar upon the shank and disposed adjacent the partition, a second collar upon the shank, a spring surrounding the shank and exerting a tension between the last named collar and the partition, the shank being provided with a pipe extension which projects through the opposite end of the housing, and a flexible connection between the pipe extension and the train pipe.

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

WILLIAM S. BRIGHT.

Witnesses:

WM. KOERTH,

BENNETT S. JONES.

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