June 2, 1931. J. ROBINSON 1,808,255

AUTOMATIC TRAIN PIPE COUPLING

Original Filed Feb. 2, 1923

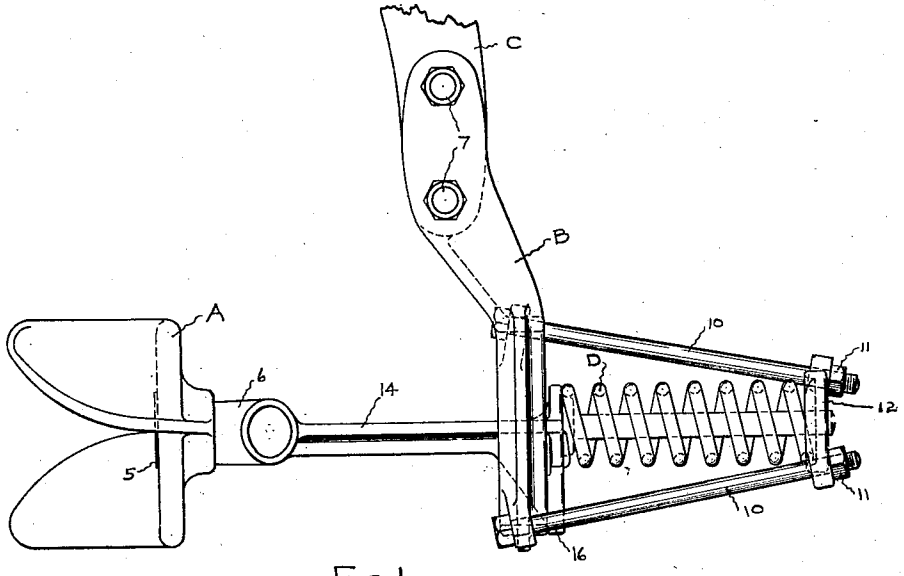


FIG. 1

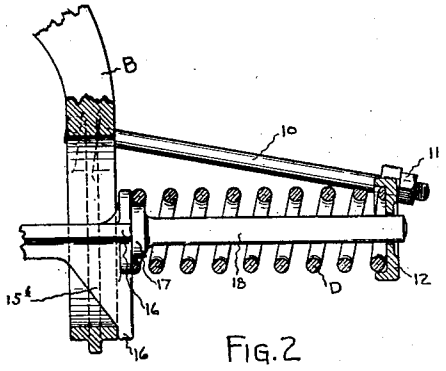


FIG. 2

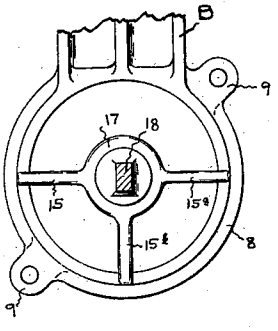


FIG. 3

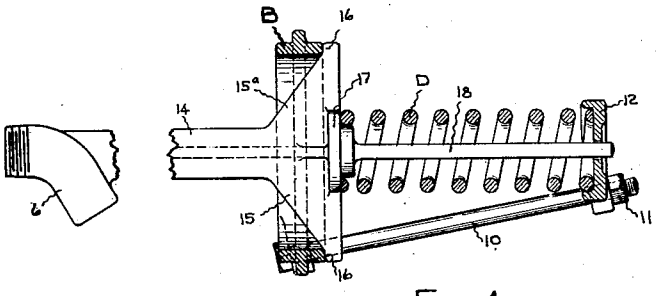


FIG. 4

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AUTOMATIC TRAIN PIPE COUPLING

Application filed February 2, 1923, Serial No. 616,593. Renewed April 13, 1929.

My invention relates to improvements in automatic train pipe couplings and has among its objects to improve the support for such devices. The invention resides in the combinations, constructions and improvements hereinafter described, pointed out in the appended claims, and illustrated in the accompanying drawings in which

Figure 1 is a side elevation of my improvement.

Figure 2 is a sectional view through the bracket, the spring D, and the spring abutment 12. In this view the coupling head A is omitted, and the upper part of the bracket is broken away.

Figure 3 is a rear view of the construction shown in Figure 2 with the anchor bolts 10 and the spring D omitted. This view is taken approximately on the line 3 3 of Figure 2, and

Figure 4 is a sectional plan view of my improvement.

Referring now to the drawings: Any suitable type of coupling head A may be carried by my improved support. I show a well known type of head having a centrally located opening carrying a gasket 5, into which opening a suitable laterally diverging fluid conduit 6 is screwed or otherwise secured, the conduit being adapted to receive as desired the usual train pipe hose—not shown. At the rear of the coupling head A, I provide a bracket B, the upper end of which is formed to receive a lug C, substantially as shown in my co-pending application Serial 460,435 filed April 11th, 1921, for improvements in automatic train pipe connectors. The lug C is suitably secured to the usual car coupler, not shown, and the bracket B is clamped to the lug by means of bolts 7. The base or lower end of the bracket B forms a ring 8, having diagonally spaced thereon outwardly extending perforated lugs 9, all as shown in Figure 3. Loosely or otherwise secured in the perforations of the lugs 9, I mount a pair of tie rods or anchor bolts 10 which extend rearwardly of the bracket and inclined towards the center thereof, and upon the rear end of these anchor bolts I mount, as by means of the nuts 11, a spring abutment device 12. Secured to the coupling head A or to the conduit 6 in a suitable manner, preferably formed integral with the conduit, I provide a shank 14 which extends rearwardly of the head through the ring or base 8 from the bracket B. The shank is provided with three webs 15, 15*a* and 15*b*, two of which lie in the horizontal plane and the other of which lies in the vertical plane, as shown particularly in Figures 3 and 4. The webs taper abruptly from the shank 14 outwardly to the inner periphery of the ring 8, and are there provided with shoulders 16, as shown in Figures 2 and 4. At their rear end these webs are joined by an annular seat 17 for a spring, and extending rearwardly from the center of said seat is provided a stem 18 which may be regarded as a continuation of the shank 14. The stem is rectangular in cross section as shown in Figure 3 and extends slidingly, but non-rotatably, through an opening in the abutment 12 as clearly shown in Figures 2 and 4, this opening being of such size as to permit pivotal movement of the shank 18 horizontally or vertically relative to the abutment 12. Surrounding the stem 18 and interposed between the abutment 12 and the webs 15, 15*a* and 15*b*, I provide a suitable buffer spring D, the forward end of which rests upon the seat 17. The spring serves to extend the coupling head A at the limit of its forward movement, with the shoulders 16 of the webs bearing against the rear side of the ring or base 8 of the bracket B. This action of the spring not only extends the coupling head, but also centers the same with respect to the ring 8 of the bracket, and thereby properly positions the head A for coupling. For, as will be noted, as the spring D forces the head forward the

tapered webs 15, 15*a* and 15*b*, contact with the inner walls of the ring 8 and center the head with respect thereto, the lower web 15*b* serving to position the head vertically and the horizontally disposed webs 15 and 15*a* serving to position the head laterally. Thus, if the coupling head A is moved laterally from the position shown in Figure 1, the webs 15 and 15*a*, contacting with the walls of the ring 8, will cause the shank 14 to move rearwardly thereby compressing the spring D which will bring the head back to normal position again when that force employed to move it is relieved. The same operation follows the movement of the head downwardly when not in coupled position because such downward movement will cause the shank and stem 18 to move rearwardly due to the inclined forward edge of the web 15*b*. Such rearward movement of the shank and stem will compress the spring D so that the pressure of the spring will bring the shank 14 and head A back to normal position when the downward pressure on the head is released. It will of course be apparent that no resistance will be offered to upward movement of the head when in uncoupled position because such upward movement will not result in compressing the spring D. In other words, the webs 15, 15*a* and 15*b* extend only laterally and downwardly from the stem 18, there being no similar part extending upwardly therefrom with the result that the stem is capable of free upward movement at all times and in all positions. Undue rotation of the coupling head A is prevented through the medium of the stem 18 fitting closely in the abutment 12, as aforesaid.

The operation of my improvement is as follows: When opposing cars equipped with my invention couple up, the coupling heads A bring the conduits 6 into alignment. Further coupling movement of the cars will force the heads A rearwardly and compress the buffer springs D. This operation will move the webs 15, 15*a*, 15*b* rearwardly out of the ring 8, thus permitting the coupling head A to move universally with respect to the bracket B. During such movement the rear coils of the spring D will deflect laterally, and the stem 18 and the shank 14 will oscillate with respect to the opening in the ring 8 and in the abutment 12. It will be observed that the anchor bolts 10 are diagonally spaced with respect to the ring 8, as aforesaid. This is to prevent the webs 15, 15*a*, 15*b* pushing against these bolts. It is understood of course that the compression of the spring D may be varied by adjusting the nuts 11, and in this way oppose greater resistance to lateral movement of the coupling head A from the normal uncoupled position. While the bolts or rods are not rigidly secured in the bracket B, or the abutment 12, these rods are always under the tension of the spring D so that practically the rods are rigid with the bracket as well as with the abutment.

To assemble my improvement the shank 14 and the stem 18 are passed into the opening in ring 8 from the front of the bracket B and at an angle to the longitudinal axis of the ring 8, similar to the manner shown in my United States Patent #1,245,800 dated November 6th, 1917. Thereafter the bolts 10 are inserted and the spring D is put in position, after which the abutment 12 is mounted on the bolts 10 and the nuts 11 are screwed up sufficiently to place the spring D under the compression necessary to properly support the coupling head A centrally with respect to the ring 8 of the base B.

While various detail changes may be made within the scope of my invention, such for instance as replacing the bolts 10 with a distance piece cast integral with the bracket B and the abutment 12, I preferably construct it as shown, this being a very simple and efficient construction.

What I claim is:—

1. In an automatic train pipe connector the combination of a coupling head, a bracket having an opening in its lower end, an abutment arranged rearwardly of and spaced from said bracket, a member secured to said head and extending rearwardly through said opening and engaging said abutment and universally movable relatively thereto, a coiled spring surrounding said member and bearing at one end against said abutment and at the other end against said member and serving to normally force said member forwardly, said opening in the bracket being substantially larger than the body of said member, a web on each side of said member extending laterally thereof and a web extending downwardly therefrom, the front edge of each of said webs being inclined to contact with said bracket, whereby said member will be centered in said opening when the same is moved forwardly under the action of said spring, the portion of said opening above said member being substantially unoccupied whereby free upward movement of said member is permitted at all times.

2. In an automatic train pipe connector, the combination of a coupling head, a bracket having an opening therein, a plurality of rods extending rearwardly from said bracket, an abutment supported on said rods rearwardly of the bracket, a member secured to said head and extending rearwardly through said opening and through said abutment and universally movable relative to the latter, a coiled spring carried by said member and bearing against said abutment and serving to normally force said member forwardly, said opening in the bracket being substantially larger than said member, said member having a plurality of webs extending laterally therefrom and adapted to engage said bracket, the

front edge of each of said webs being inclined rearwardly whereby said member is centered in said opening when the same is forced forwardly under the action of said spring.

3. In an automatic train pipe connector, the combination of a coupling head, a bracket having an opening in its lower end, an abutment arranged rearwardly of and spaced from said bracket, a member secured to said head and extending rearwardly through said opening and engaging said abutment and universally movable relative thereto, a spring bearing against said member and serving to normally force the same forwardly, said opening in said bracket being substantially larger than the body of said member, said member having thereon portions which extend only laterally on each side thereof and downwardly therefrom, the front edge of each of said portions being inclined to contact with said bracket, whereby said member will be centered in said opening when the same is moved forwardly under the action of said spring, the portion of said opening above said member being substantially unoccupied whereby free upward movement of said member is permitted at all times.

4. In an automatic train pipe connector, the combination of a coupling head, a bracket having an opening in its lower end, an abutment arranged rearwardly of and spaced from said bracket, a member secured to said head and extending rearwardly through said opening and engaging said abutment and universally movable relative thereto, a coiled spring surrounding said member and bearing at one end against said abutment and at the other end against said member and serving to normally force said member forwardly, said opening in the bracket being substantially larger than the body of said member, means positioned only on each side of and beneath said member to center the same in said opening when said member is forced forwardly by said spring, the portion of said opening above said member being substantially unoccupied whereby free upward movement of said member is permitted at all times.

5. In an automatic train pipe connector, the combination of a coupling head, a bracket having an opening in its lower end, an abutment arranged rearwardly of and spaced from said bracket, a member secured to said head and extending rearwardly through said opening and engaging said abutment and universally movable relative thereto, a coiled spring surrounding said member and bearing at one end against said abutment and at the other end against said member and serving to normally force said member forwardly, said opening in the bracket being substantially larger than the body of said member, said member having thereon portions which extend only laterally on each side thereof and downwardly therefrom, a front edge of each of said portions being inclined to contact with said bracket to center the same when the member is moved forwardly under the action of said spring, the portion of said opening above said member being substantially unoccupied whereby free upward movement of said member is permitted at all times.

In testimony whereof I hereunto affix my signature.

JOSEPH ROBINSON.