No. 806,215. PATENTED DEC. 5, 1905.

W. T. VAN DORN.

RAILWAY COUPLING.

APPLICATION FILED APR. 24, 1905.

Fig. 1

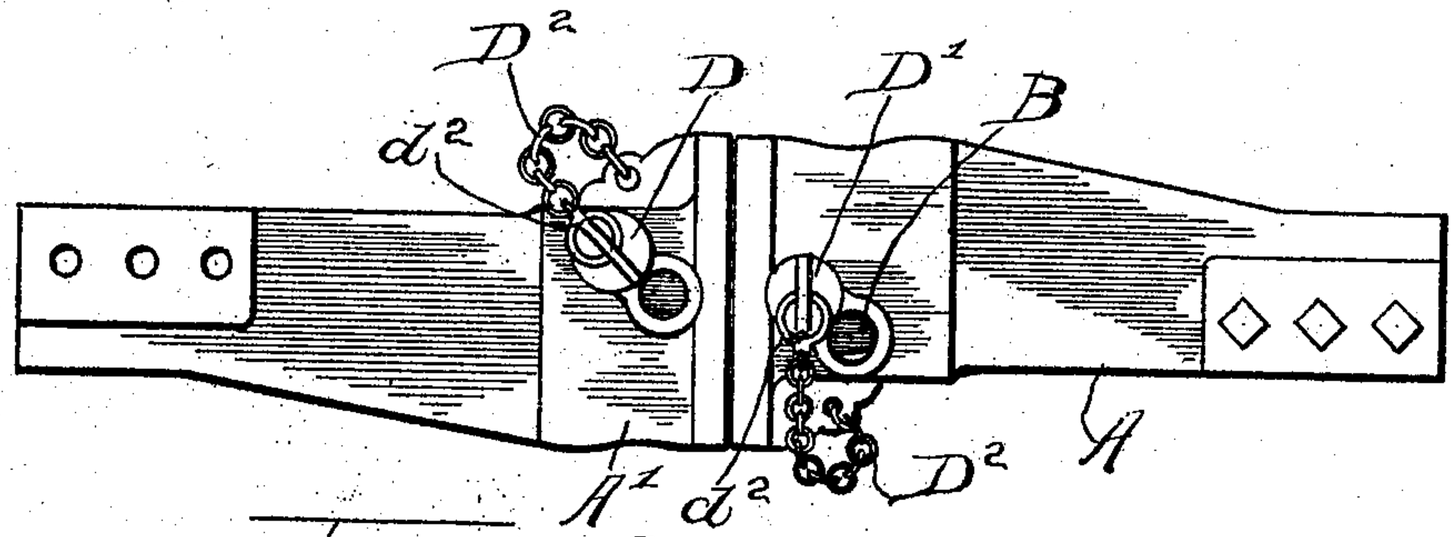


Fig. 2

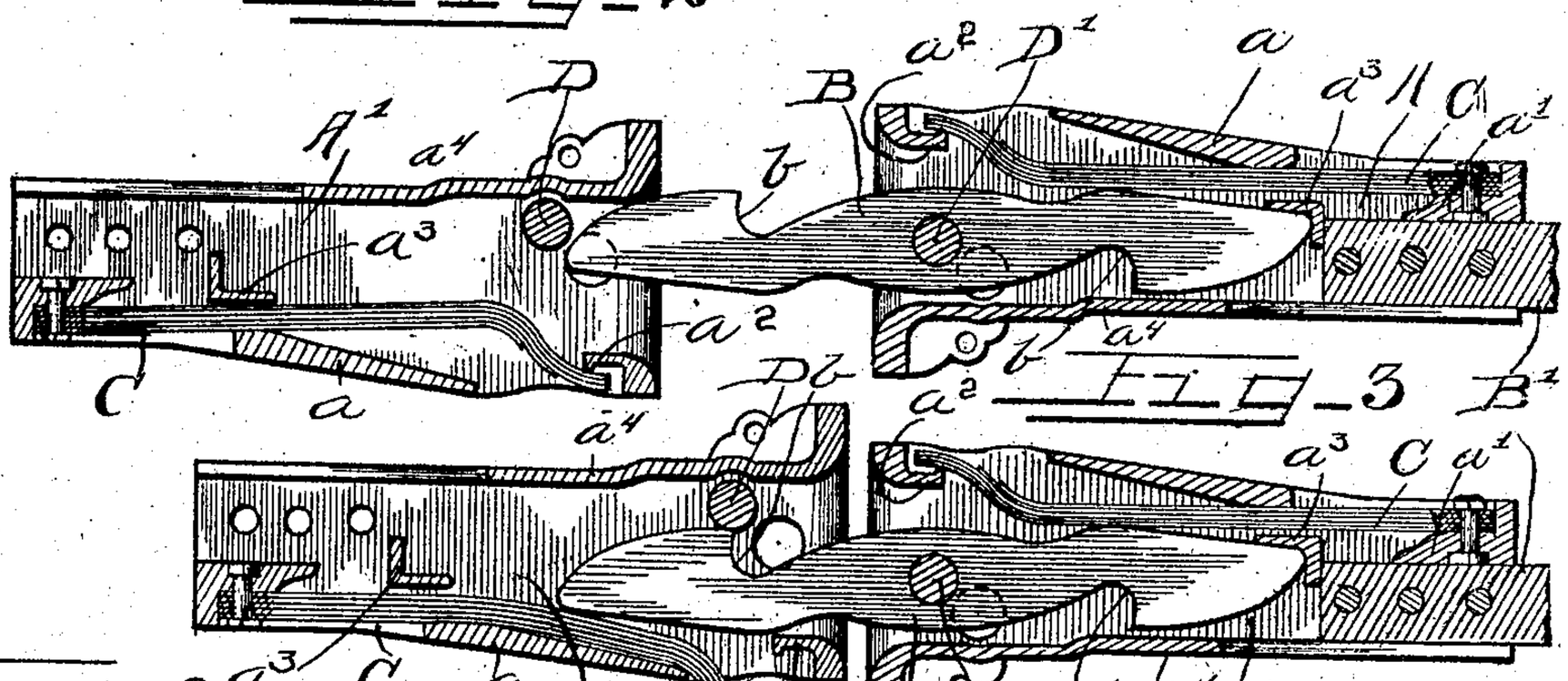


Fig. 3

Fig. 6

Fig. 4

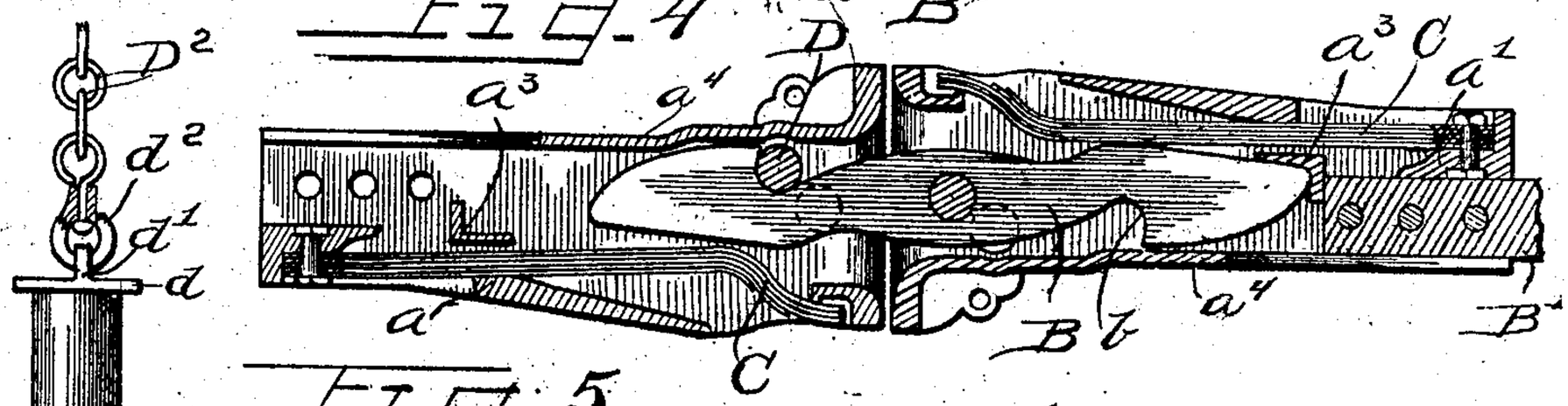
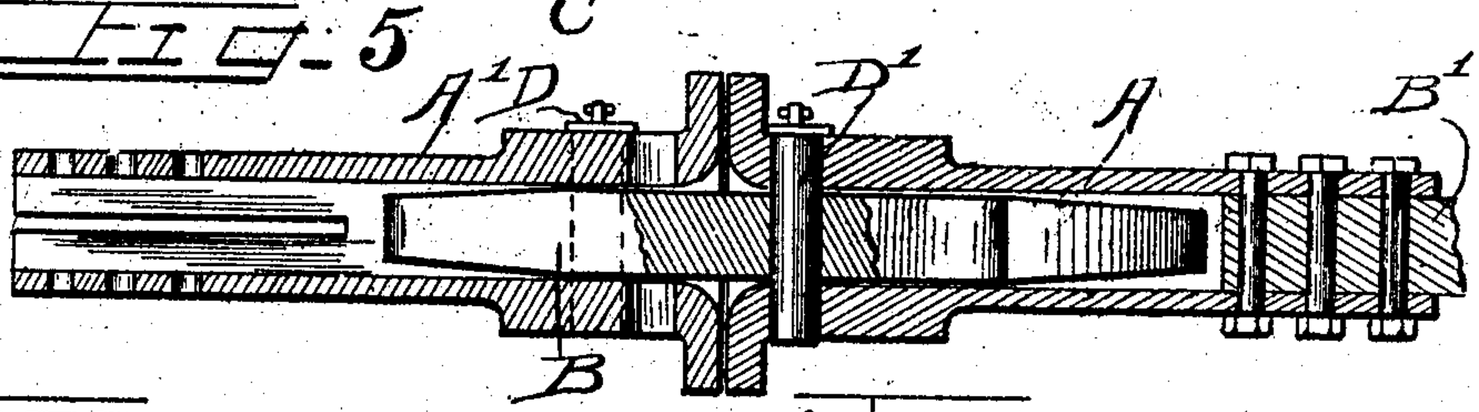


Fig. 5



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UNITED STATES PATENT OFFICE.

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RAILWAY-COUPLING.

No. 806,215. Specification of Letters Patent. Patented Dec. 5, 1905.

Application filed April 24, 1905. Serial No. 257,293.

To all whom it may concern:

Be it known that I, WILLIAM T. VAN DORN, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Couplers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to railway-couplers of the same class as my prior patent issued to me on the 21st day of October, 1902, No. 711,549. In the couplers therein shown the link or coupling-bar was provided at opposite ends on opposite sides with oppositely-directed shoulders adapted, as shown, to engage around a non-rotatable pin in the draw-head and was held in coupled relation on said pin by means of strong leaf-springs bearing against the side of the coupling bar or link. Said springs pressed the coupling-bar hard against said pin in coupling, and when coupled up the pins soon became worn and considerably weakened from the grinding action of the bar or link on the corner and side of the pin and from the hook always grinding on the high corner of the pin when coupled, in this way endangering the efficiency of the coupling. Furthermore, a non-rotative pin engaged through the center of the bar. The area of the pin receiving the pulling stress was comparatively small, thus concentrating the stress over such a small area as to cause rapid wear.

The object of the present invention is to afford a construction reducing the wear on the pin near its middle point to a minimum and obviating the wear on the coupling-bar in contact therewith and to enable a stronger spring to be used with less resistance in coupling by utilizing the pin as a roller to facilitate the inward passage of the head of the coupling-bar.

It is also an object of the invention to afford a construction whereby both at the shoulder and at the central aperture of the coupling-bar as large an area as possible is afforded on the pins.

The invention consists in the matters hereinafter described, and more fully pointed out and defined in the appended claims.

In the drawings, Figure 1 is a top plan view showing two coupled draw-heads embodying my invention. Fig. 2 is a horizontal section showing said draw-heads approaching coupled position. Fig. 3 is a similar view illustrating the position of the parts just prior to coupling. Fig. 4 is a similar view showing the coupling completed. Fig. 5 is a longitudinal vertical section of the same. Fig. 6 is an enlarged side elevation of the pin and chain.

As shown in said drawings, said draw-heads A and A′ are cored out to receive the coupling-bar or link B and the draft-iron B′. The draw-heads are each apertured in one side near the end to receive the end of a strong leaf-spring C. The side walls *a* between said apertures incline from near the rear end outwardly and forwardly on its inner side and near its rear end forms a fulcrum for the rear end of said spring C, which, as shown, consists of a plurality of leaves rigidly bolted at their rear end against an inner shoulder *a′* of the draw-head and normally extends forwardly approximately parallel with the axis of the draw-head, as shown in Fig. 2. The outer end of said spring, or that engaged in the outer end of the draw-head, is bent laterally and outwardly and engages normally on the inwardly and rearwardly directed projection a^2, integral with the draw-head and which acts to limit the inward movement of the spring. At the inner side of the spring and adjacent to the rear end of the side walls *a* is an abutment-block a^3, integral with the bottom and top of the draw-head. Said block is concave on its inner side and provides a rounded shoulder against which the inner and slightly-rounded end of the coupling link or bar B abuts in one of its coupled positions. Each of said draw-heads adjacent to its outer end is provided with two vertical cylindric apertures extending therethrough and adapted to receive the cylindric rotatable pins D and D′ of relatively large size. One of said apertures is located near the outer end of the draw-head and on opposite sides of the center from the spring. The other is located at the rear of said aperture and closely adjacent the side wall a^4 of the draw-head. Said pins are exact duplicates in size and shape and are each provided with a peripheral flange *d* on the upper end adapted to engage on the top of the draw-head and with a low diametrical rib *d′*, which is apertured centrally and in which engages the swiveled link d^2 at one end of the chain D^2, the other end of which is permanently secured to the side of the draw-head. The mouth of each draw-head, as shown, is relatively large and the side walls, bottom, and top thereof curve inwardly, pro-

ducing a rounded surface which acts to direct the end of the coupling bar or link B inwardly when the draw-heads are brought together. Said coupling-bars each comprise, as shown, a bar of steel-forging or other suitable material notched on opposite sides intermediate the center and ends to afford a hook or shoulder *b*, directed toward the middle of the bar and forming each approximately a right angle with the axis thereof and adapted to engage on and partly around the pins D when in coupled position. A cylindric central aperture complemental with the pins is provided in said bar, which is so located as to register with the outer aperture in one of the draw-heads to receive the pin D′ when the shoulder *b* is engaged on the pin D of the other, and the draw-heads are brought together in coupled position. The sides of the coupling-bars opposite each shoulder is approximately straight and, as shown, extends at a slight angle with the axis from near the extremity to a point, as shown, slightly beyond the shoulder on the opposite sides and from said point the sides curve inwardly and then outwardly, affording a compound curve to the shoulder at the opposite end of the bar, thus providing the greatest width and strength of the bar at its middle point. On the opposite side of the bar, from the shoulder to the adjacent extremity, the bar is rounded and tapers to a somewhat-blunt point and from the extremity to said shoulder affords a curved surface adapted when engaging in the mouth of the coupler to direct the point past the pin D. The length of the points of the bar from the shoulders to the extremities is such that when the bar is in its coupled position, as shown in Figs. 1 and 4, the extremity of the bar extends inwardly beyond the pin D nearly to the bearing of the spring C on the side wall *a*. The opposite extremity of the bar extends within the other draw-head and engages against the inner curved side of the abutment-block a^3 and fits somewhat loosely between the same and the wall a^4, thus affording a positive lock for the same with each draw-head.

The operation is as follows: In coupling automatically the coupling-bar first is secured in the draw-head A by means of the cylindric pin D′, which passes through the central aperture in the link and the outer aperture of the draw-head. In this position the tapered and rounded head of the bar rests against the inner side of the abutment-block a^3, while the other surface from near the shoulder lies in close proximity with the wall a^4 of the draw-head. When the cars are brought together in coupling, with the pin D rotatably seated in the laterally-situated aperture, the curved inclined face of the bar engages the inwardly-curved side of the draw-head, as shown in Fig. 2, and the curvature of said end of the bar deflects the point of the bar past the pin D into engagement between the inner face of the spring C and the inner side of the pin D, as shown in Fig. 3, forcing the spring outwardly and rolling on the pin inwardly sufficiently to let the shoulder *b* pass said pin, when the spring throws the bar laterally, engaging behind the pin, as shown in Figs. 1 and 4. The flat face of the coupling-bar now lies in close relation and approximately parallel with the face of the spring C, and the point of the bar extends inwardly to a point near the bearing of the spring against the wall *a*. Should lateral stress be applied to the coupling-bar, (as in passing around a curve,) the point of the bar bears the spring against the side wall *a*, and as the length of the bar from the shoulder to the point is much greater than the distance from the inner side of the spring C when fully compressed to the pin D it follows that should the lateral stress compress the spring until it lies flat against the inner wall *a* the shoulder is held firmly engaged on the pin. The bar can thus never assume a position permitting the shoulder to pass the pin. Inasmuch as the pin D acts as a roller in coupling and is rotated by the pressure of the coupling-bar thereon, it not only eases the point of said coupling-bar past the pin, but also obviates the wear due to the sliding engagement heretofore between the pin and the bar, greatly increasing the efficiency of the coupler while decreasing the expense caused by breakages and repairs. Furthermore, after the coupling is made vibration caused by the movement of the train constantly varies the tension of the hook or shoulder on the pin, and instead of the hook being applied at all times at the same point on the pin the pin rolls, thus distributing the wear, if any, evenly thereon and permitting the bar to swing laterally to the fullest extent possible with slight friction.

Obviously the shape of the ends of the bars may be varied and the pins may vary in size, and many details of construction and arrangement may be varied without departing from the principles of my invention.

I claim as my invention—

1. A draw-head of the class described having cylindric apertures extending therethrough near the outer end, one being positioned adjacent a side wall, the other closely adjacent thereto and obliquely in advance thereof, an inwardly-acting leaf-spring on the opposite side of said draw-head and a rotatable pin in one of said apertures adapted to adjust itself to wear.

2. The combination with a draw-head provided with a cylindric aperture closely adjacent to one side thereof of a pin rotatively engaged in said aperture, a cylindric aperture forwardly and laterally of said pin, a draw-bar pivoted axially in the forward aperture of the complemental draw-head, a rounded face on the side of said bar adjacent said pin

adapted to engage the side of the head and deflect the bar against the pin in coupling, a shoulder on said bar, a spring on the head adapted to force said rounded face into position to rotate the pin in coupling and to force said shoulder behind the pin to coupled position.

3. In a draw-head of the class described having a central cylindric aperture near its outer end and a like aperture closely adjacent thereto, rearwardly and laterally thereof, a flanged cylindric rotatable abutment-pin and a low eye at the outer end of the pin and a chain engaged to the draw-head and swiveled in said eye.

4. The combination with a draw-head of a pin journaled closely adjacent to one side thereof, a leaf-spring rigidly engaged in the opposite side of said head and fulcrumed near its center to bend outwardly, a cylindric aperture through the head forwardly and laterally of said pin, a draw-bar pivoted in the forward aperture of a complemental draw-head, a rounded face thereon, on which said pin rolls in coupling, said face acting to deflect the bar laterally against the spring and force the spring outwardly and a shoulder on said bar acting when the bar has reached its inner limit to engage behind said pin.

5. In a device of the class described, a coupling-bar having a cylindric central aperture therein affording a self-adjusting bearing, centrally-directed shoulders between the middle and each end of the bar, the end of said bar beyond the shoulders curving and tapering from the shoulder obliquely to a blunt, rounded, elongated extremity.

6. The combination with a draw-head provided with a centrally-disposed cylindric aperture near its outer end and a cylindric aperture slightly to the rear thereof and adjacent the side wall, of a rotative pin in the last-named aperture, a draw-bar having a shoulder thereon, and a rounded end adapted to engage against the side wall and deflect the bar past said pin and a leaf-spring fulcrumed on the wall of the draw-head, opposite said pin, adapted to force the bar against the pin.

7. The combination with a draw-head provided at the outer end thereof with two cylindric apertures, one positioned centrally of the draw-head and the other rearwardly thereof and adjacent the side wall, a rotative pin adapted to engage in said rear aperture, a draw-bar having oppositely-directed rounded hooked ends thereon and provided with a central cylindric aperture, a coupling-pin adapted to rotatively engage therein and in the forward aperture of a complemental draw-head and a spring in said draw-head adapted to engage the end of the draw-bar and force it against said pin in coupling.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

WILLIAM T. VAN DORN.

Witnesses:
C. W. HILLS,
W. W. WITHENBURY.