No. 711,549. Patented Oct. 21, 1902.

W. T. VAN DORN.

RAILWAY COUPLING.

(Application filed Mar. 20, 1902.)

(No Model.)

Fig. 1.

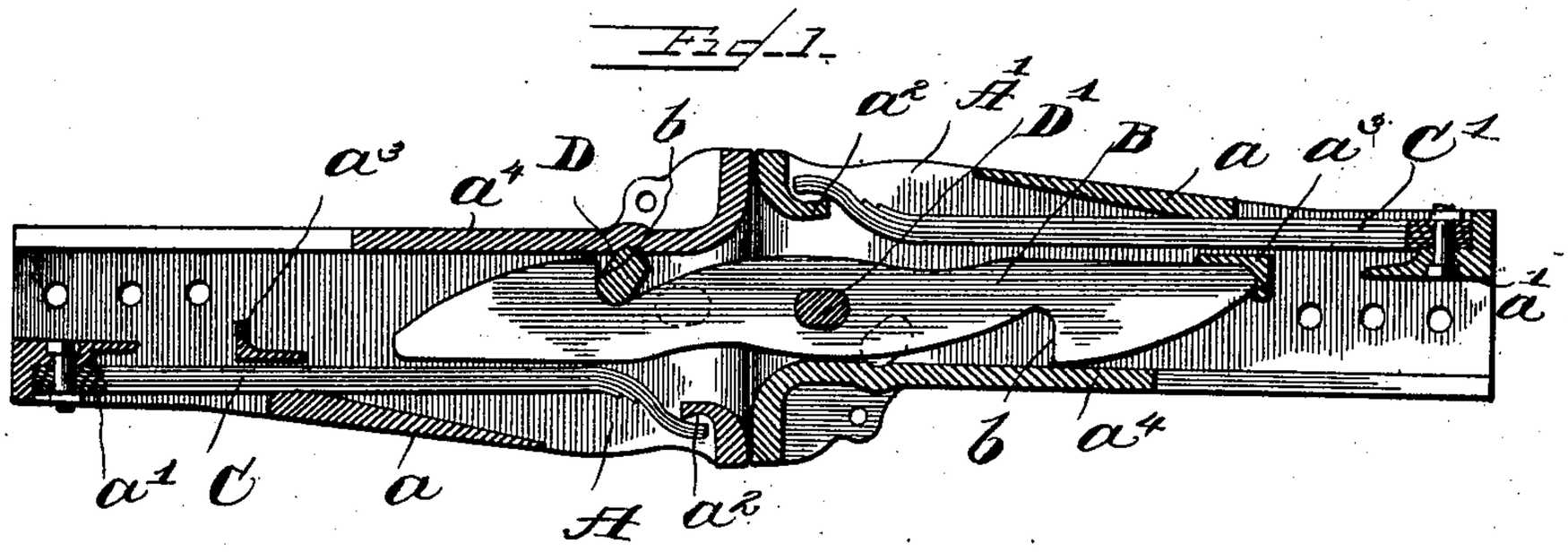


Fig. 2.

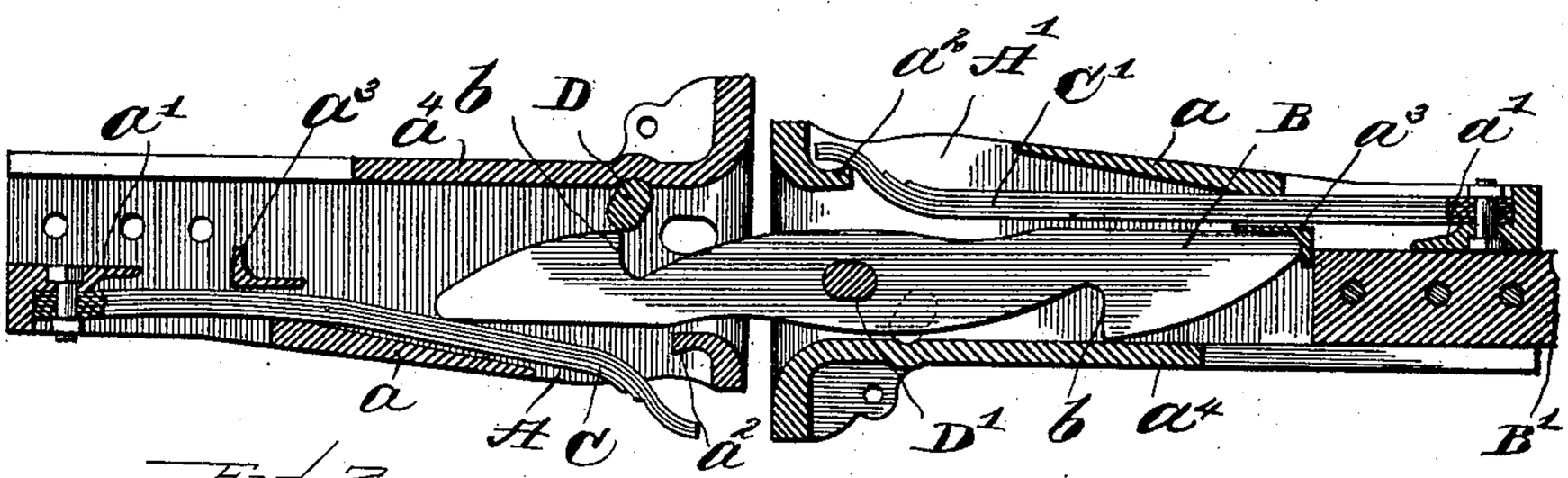


Fig. 3.

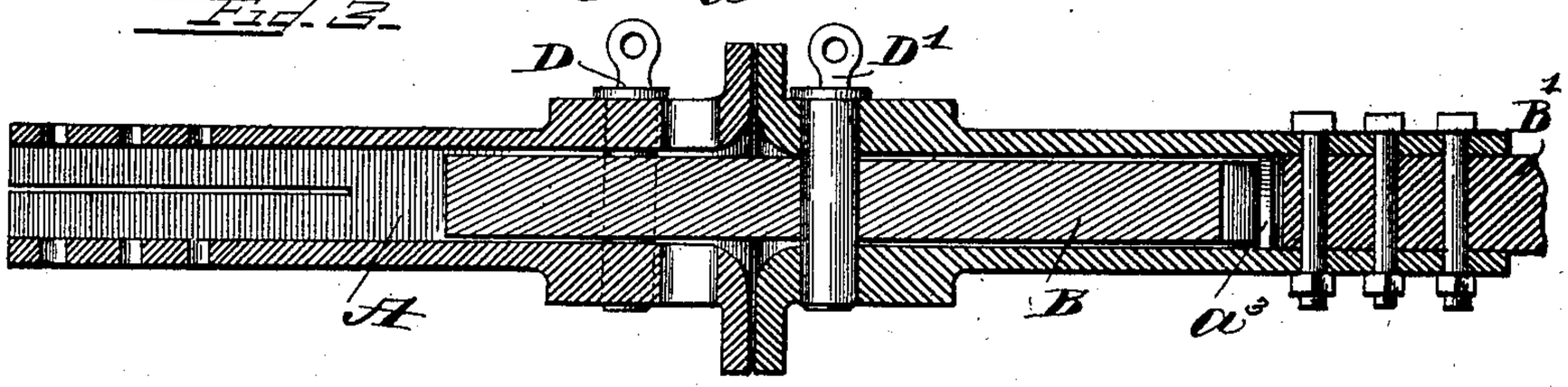
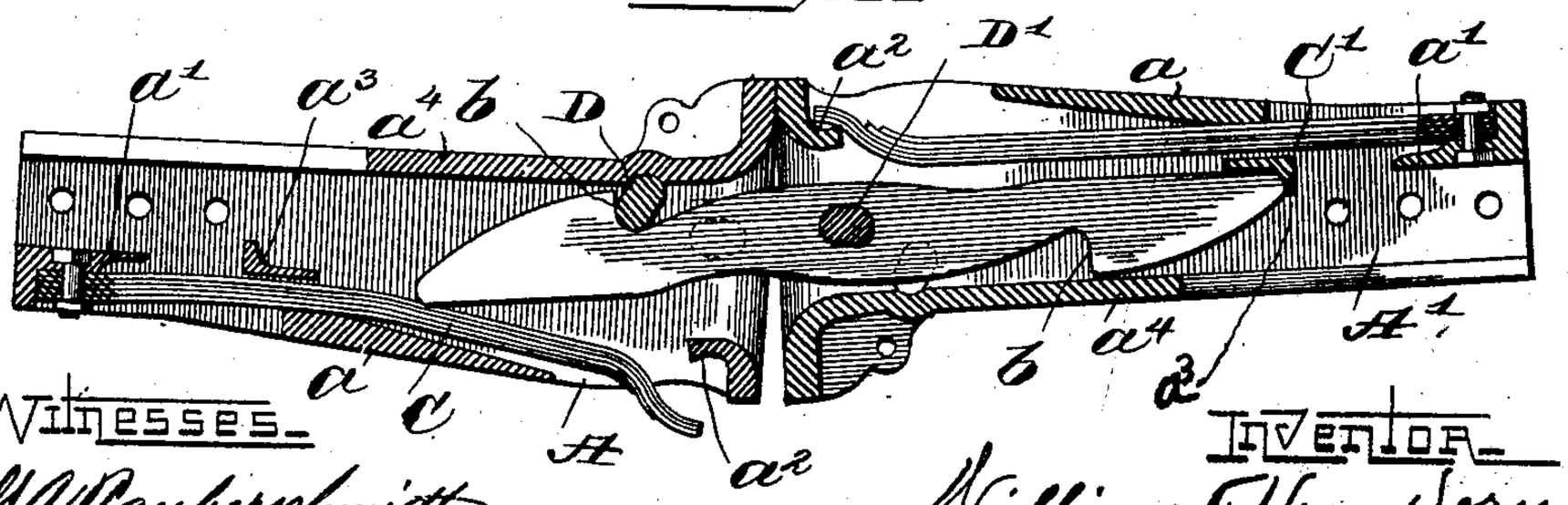


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM T. VAN DORN, OF CHICAGO, ILLINOIS.

RAILWAY-COUPLING.

SPECIFICATION forming part of Letters Patent No. 711,549, dated October 21, 1902.

Application filed March 20, 1902. Serial No. 99,084. (No model.)

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 thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to railway-couplers of the same class as my prior patent issued on the 1st day of September, 1896, and numbered 566,822. In said couplers therein shown the link or coupling-bar was provided with a comparatively short rounded head or point beyond the shoulder of the coupling-bar, and it was possible after the shoulder of the bar became somewhat worn through use for the coupling to become uncoupled accidentally, particularly when the train was passing around a curve, the lateral stress causing the rounded head of the coupling-bar to compress the spring sufficient to allow the shoulder to snap from behind the coupling-pin.

The object of this invention is to provide a construction in which the coupling link or bar fits very closely in the draw-heads and is so shaped as to render accidental uncoupling impossible.

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 horizontal section showing two draw-heads with the coupling-bar in coupled position. Fig. 2 is a similar view showing the draw-heads and coupling-bar in the act of coupling. Fig. 3 is a longitudinal vertical section. Fig. 4 is a view similar to Fig. 1 and illustrates the position the parts assume under lateral stress, as when a train is passing around a curve.

As shown in said drawings, A and A′ indicate as a whole the draw-heads, which are cored out to receive the coupling bar or link B and the draw-bar B′. As shown, the draw-heads are each apertured in one side near each end to receive the ends of the spring C, and the side wall between said apertures on its inner side inclines from its rear end outwardly and forwardly and at its rear end forms a fulcrum for said spring. The springs in the construction shown consist each of a plurality of leaves rigidly bolted at their rear ends against and to an inner shoulder a' of the draw-head and normally extend forwardly approximately parallel with the axis of the draw-head, as shown in Fig. 1. The outer ends of said springs, or those adjacent to the outer end of the draw-head, are bent laterally and outwardly and engage normally on inwardly and rearwardly directed projections a^2, integral with the draw-head, and which act to limit the movement of the spring. At the inner side of the spring and adjacent to the rear end of the side wall a is an abutment-block a^3, integral with the top and bottom of the draw-head. Said block is inwardly curved from its rear end and forwardly on its inner side, providing a rounded shoulder, against which the inner and slightly-rounded end of the coupling link or bar B abuts in in one of its coupled positions. Each draw-head adjacent to its outer end is provided with two vertical apertures extending therethrough, adapted to receive rounded pins D D′, which have greater width than thickness. One of said apertures is located on the side of the center opposite and near the outer end from the spring of the draw-head and with its greatest diameter parallel with the axis of the draw-head. The other is located at the rear of said aperture and near the side wall a^4 and is so disposed that its greatest diameter is directed obliquely toward and rearwardly of the axis of the draw-head, as shown, so that when the pin D is in position the side of the pin remote from the spring lies in contact with the outer wall a^4 of the draw-head, which thus affords a positive support for the entire length of the pin, while the opposite side of the pin presents a rounded shoulder directed obliquely inward of the draw-head and adapted to be engaged by the inner end of the coupling-bar. The outer ends of the draw-heads are comparatively large, and the opening therein is also large, with the sides inclined inwardly, producing a rounded surface, which acts to direct the coupling-bar inwardly when the draw-heads are brought together.

The coupling-bar B comprises, as shown, a

bar of steel or other suitable material notched on opposite sides intermediate of the center and each end to provide a hook or shoulder *b 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 pin D when in coupled position. A central aperture is provided in said bar, which is so located as to register with the outer aperture in one draw-head 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 side of the coupling-bar opposite from each shoulder is approximately straight and extends approximately parallel with the axis of the bar from near the extremity to a point beyond the shoulder on the opposite side, from which point the sides curve inwardly and thence outwardly, forming a compound curve to the shoulder at the opposite end and on the same side of the bar, thus providing the greatest width and strength of the bar at the middle. The length of the point of the bar from the shoulder 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 to a point adjacent to the bearing of the spring against 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 against the inner side of the wall a^4, thus forming a positive lock for the same within the draw-head.

The operation is as follows: In coupling automatically the coupling-bar is first secured, as shown, in the draw-head A′ by means of the pin D′ passing through the central aperture in the draw-head, in which position the inner slightly-rounded end of the bar rests against the inner side of the abutment-block a^3, while the other surface of the shoulder lies in close proximity with the outer wall a^4 of the draw-head. When the cars are brought together in coupling position, with the pin D seated in the lateral aperture, the curved or inclined face of the bar acts to direct the point of the bar past said pin into engagement with the inner face of the spring C, forcing the same outwardly, as shown in Fig. 2, sufficiently to let the shoulder *d* pass the pin D, when the spring acts to force the bar laterally into locking position behind the pin, as shown in Fig. 1. In this position the hook or shoulder of the bar is firmly locked on said pin, while the flat face of the coupling-bar opposite the shoulder lies in close relation and approximately parallel with the face of the spring, with the point of the coupling-bar extending rearwardly to near the bearing of said spring against the side wall *a*. Should now the lateral stress be applied to the coupling, as shown in Fig. 4, the point of said bar extending inwardly is caused to bear against the spring near its bearing on the side wall *a*, thus securing the highest efficiency of the spring, which acts to force the shoulder into more positive engagement with the pin D. The length of the bar, however, from the shoulder to the point is much greater than the distance from the inner side of the pin D to the front end of the wall *a*. It follows that should the lateral stress be sufficient to compress the spring until it lies flat against the inner side of said wall *a* the shoulder is held firmly engaged on the pin and the bar can never assume a position due to such strain, which will permit the shoulder to slip past the pin. The shape of the bar end, as shown, affords a long bearing thereon for the spring, thereby also securing the highest efficiency of the spring. As a further improvement I have slitted the draw-head longitudinally from the rear end, as shown in Fig. 3, so that when the draft-bar B′ is inserted therein the end may be closed down thereon by rivets or bolts, insuring a perfect fit and clamping the draft-iron firmly in the tail of the draw-head.

Obviously details of construction may be modified without departing from the principles of my invention.

I claim as my invention—

1. As an article of manufacture, a coupling-bar provided with a central vertical aperture and provided intermediate of its extremities and the center on opposite sides thereof with laterally and oppositely directed hooks forming shoulders at approximately a right angle with the axis of the bar, the ends of said bar beyond the shoulders or hooks being elongated and approximately flat opposite the hooks, said flat side extending beyond the hook approximately parallel with the plane of the axis of the bar to the extremity, the other side being curved and tapered to meet the extremity of said plane portion.

2. As an article of manufacture, a coupling-bar provided with a central vertical aperture and provided intermediate of its extremities and the center on opposite sides thereof with lateral hooks forming shoulders at approximately a right angle with the axis of the bar, the ends of said bar beyond the shoulders or hooks being elongated and approximately flat opposite the hooks, said flat side lying approximately parallel with the plane of the axis of the bar and extending to the extremity thereof, the other side being curved and tapered to meet the extremity of said plane portion, said bar between the hooks having a broad center portion tapering uniformly to the hooks and having curved sides to adapt the same to serving into the draw-head.

3. The combination with a draw-head, of a forwardly-directed and inwardly and laterally operating spring, a forwardly and outwardly inclined surface on one of the side walls forming a backing for said spring, and against the inner end of which said spring normally presses, a flattened pin removably secured in the side of the draw-head opposite

the spring and directed inwardly and rearwardly, a coupling-bar provided with a right-angled shoulder adapted to engage on said pin and an elongated laterally-flattened end extending beyond the shoulder or hook and of a length sufficient to bear normally against said spring adjacent to its point of engagement against the side wall.

4. In a device of the class described, the combination with a draw-head, of a leaf-spring attached by its rear end therein and extending forwardly approximately parallel with the axis of the draw-head, an outwardly and forwardly inclined wall against which said spring rests for a part of its length and the hooked bar adapted to positively engage within the draw-head and provided with an inwardly-directed lateral flattened end adapted to normally engage said spring adjacent to its point of engagement against the side wall.

5. In a device of the class described, a draw-head, an internal abutment-block therein, a spring passing at its inner end between the abutment-block and one of the side walls of the draw-head and adapted to bear positively against said side wall near its rear end and extending forwardly in the draw-head to near the mouth thereof, a flattened pin adapted to be seated in an aperture in said draw-head which extends vertically therethrough adjacent to the side wall opposite the spring, and to form a rearwardly and inwardly directed shoulder, and a hooked bar which in one coupled position engages positively between the abutment-block and a side wall and in the other engages over the pin and extends inwardly into positive bearing against the spring.

6. The combination with a draw-head having a laterally-disposed inwardly-operating spring, of an abutment-block integral with the draw-head and located at the inner side of the spring and shaped on its inner side to engage the inner end of a coupling-bar positively against one side of the draw-bar when in coupled position.

7. The combination with like draw-heads of a laterally-disposed inwardly-operating spring secured in each, an outwardly-inclined wall in each draw-head against which said springs abut near their rear ends, a pin extending through one of said heads in contact with the side wall opposite the spring, a coupling-bar having a hook on one side adapted to engage around said pin and having an elongated point adapted to extend beyond the pin to near the bearing of the spring against said side wall, said coupling-bar being apertured centrally and adapted to be engaged in the other draw-head by means of a pin, the end of said coupling-bar extending within said draw-head into positive engagement between the side of the draw-head and a rigid part whereby lateral stress serves to rigidly jam the coupling-bar into more positive engagement in each draw-head.

8. The combination with a draw-head of an inwardly-operating spring, a flattened pin opposite the spring and oblique with the axis of the draw-bar, a coupling-bar adapted to extend into the draw-head, a plane shoulder on the side thereof adapted to engage around the pin and an elongated point beyond the shoulder of a length sufficient to interlock between the pin and inner side of the spring when the spring is under maximum compression.

9. In a coupling device, a coupling-bar comprising a relatively broad central part having a vertical aperture extending therethrough, and tapering toward the extremities, a shoulder near each end of said bar and on opposite sides thereof forming approximately right angles with the axis of the bar, the sides of the bar opposite the hooks being plane and extended to the adjacent extremities approximately parallel with the axis of the bar, the sides having the hooks being extended from the point of the hook to meet the extremity of said plane flat portions, said bar being compoundly curved laterally, intermediate of the broad middle section and each hook.

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

WILLIAM T. VAN DORN.

Witnesses:

CHARLES W. HILLS,

ANNA B. HILLS.