

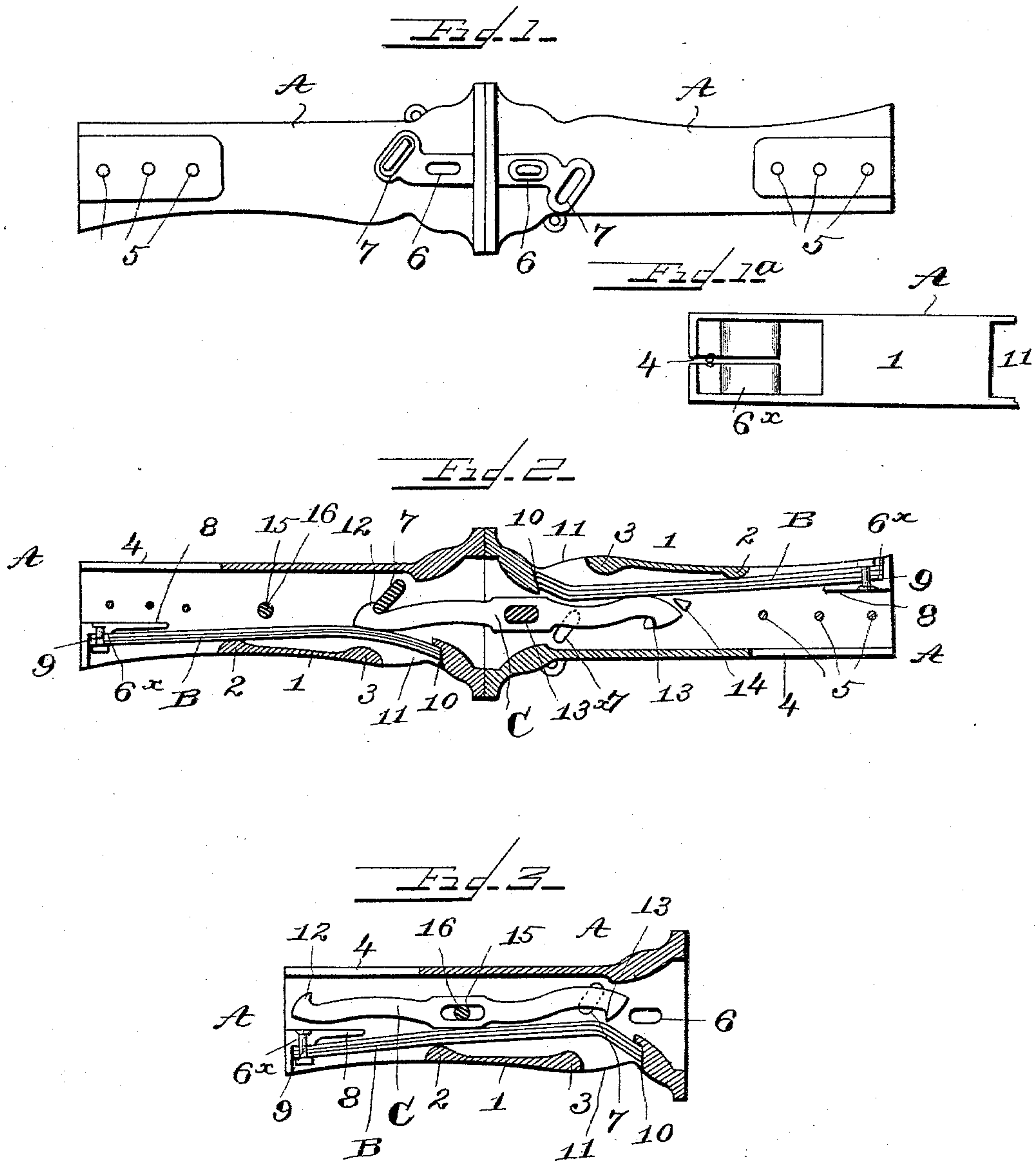
(No Model.)

2 Sheets—Sheet 1.

W. T. VAN DORN.  
CAR COUPLING.

No. 566,822.

Patented Sept. 1, 1896.



WITNESSES—

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INVENTOR—

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4

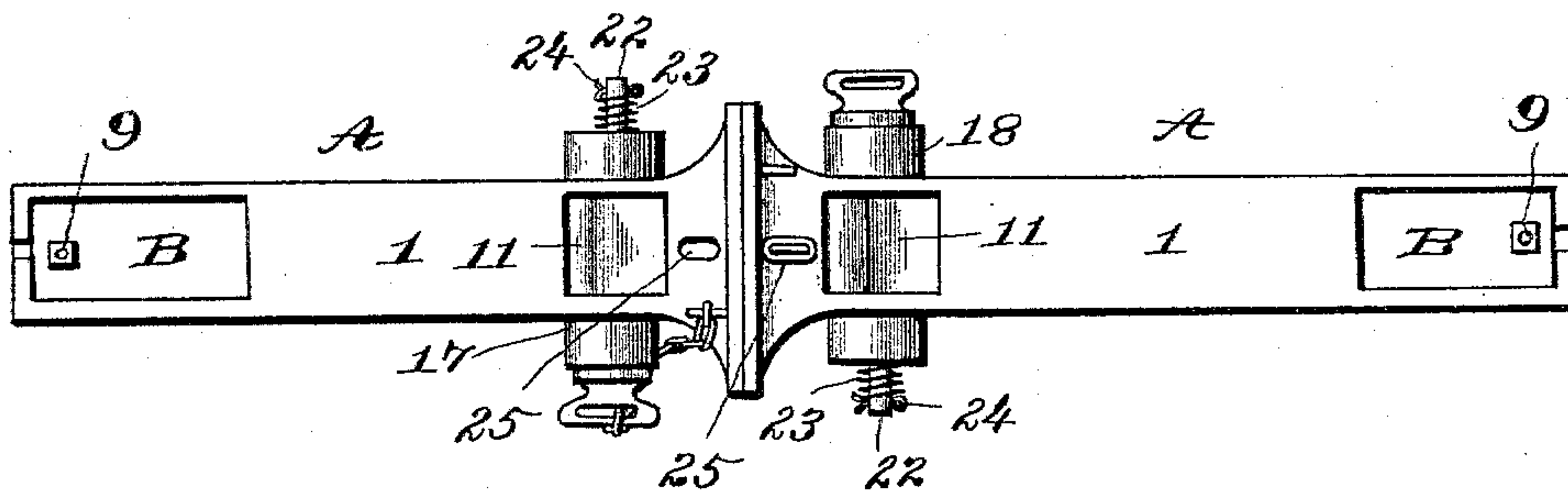


Fig. 5

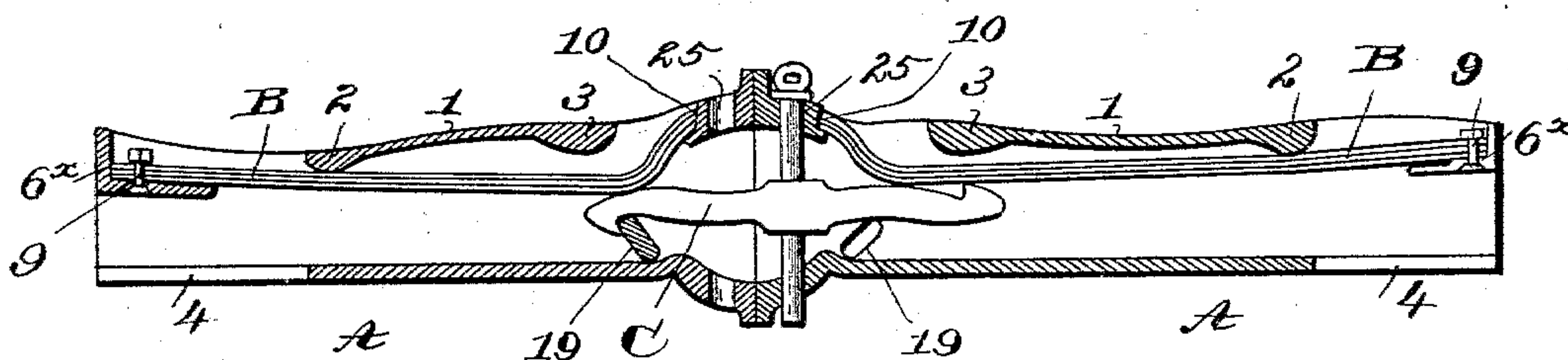
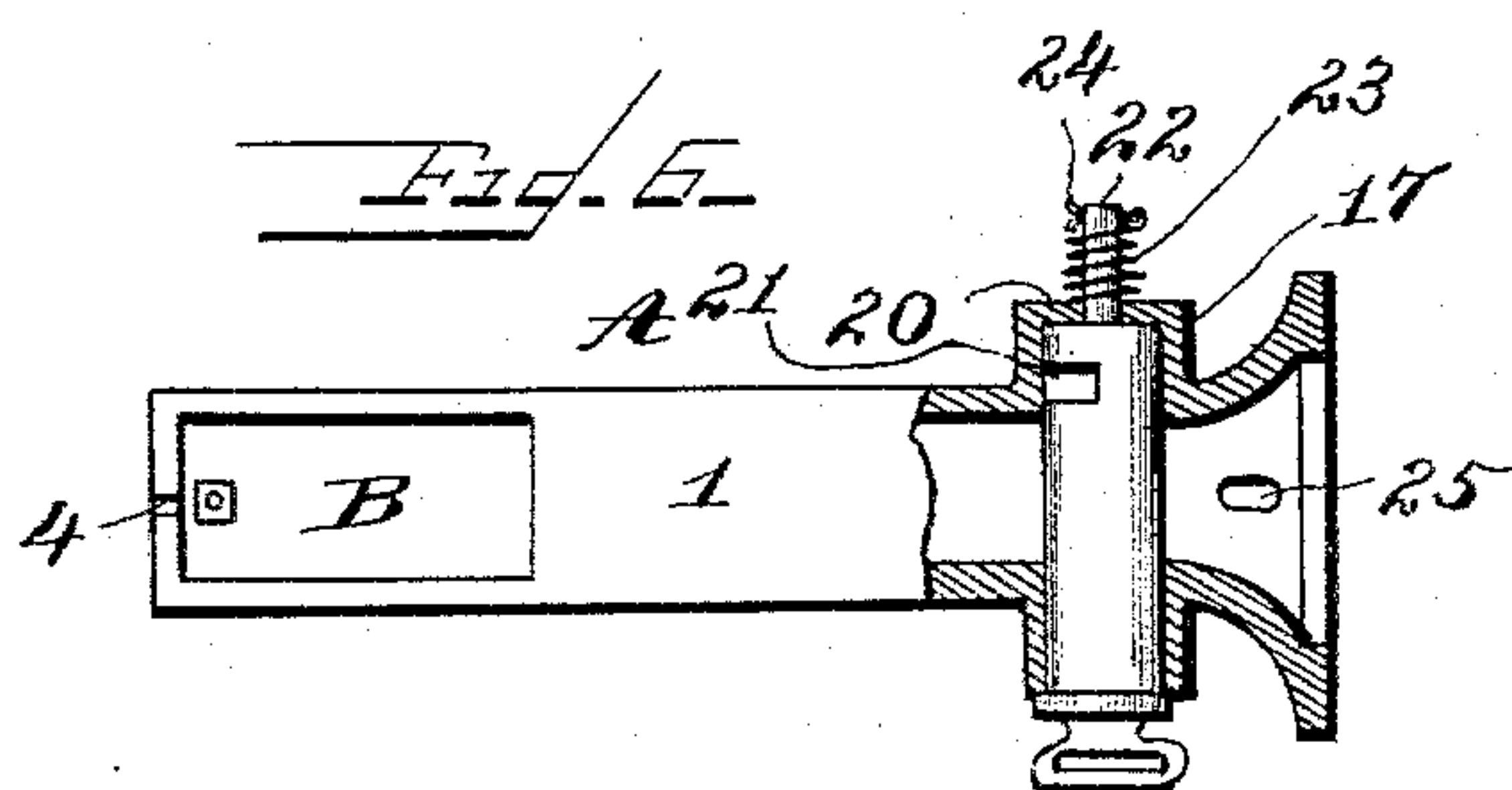


Fig. 6



Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIAM T. VAN DORN, OF CHICAGO, ILLINOIS.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 566,822, dated September 1, 1896.

Application filed January 11, 1896. Serial No. 575,187. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM T. VAN DORN, a citizen of the United States of America, residing in Chicago, in the county of Cook, in the State of Illinois, have invented certain new and useful Improvements in Car-Couplings, of which the following is a specification.

My invention relates to improvements in car-couplings specially adapted to and constructed for street-car service, and the object is to simplify and improve the existing improved art in this line by adapting those certain forms of car-couplings hereinafter described to the service intended by increasing the durability, rendering more certain the coupling, and augmenting the convenience of manipulation, as will be hereinafter fully specified.

I have fully and clearly illustrated my improvements in the accompanying drawings, wherein—

Figure 1 is a top plan view of two draw-bars coupled together. Fig. 1<sup>a</sup> is a side view of one of the draw-bars. Fig. 2 is a horizontal longitudinal section showing the mechanism in coupled engagement. Fig. 3 is a horizontal longitudinal section of one draw-bar, showing the means for holding and carrying a disengaged coupling-bar. Fig. 4 is a top plan view of the coupling adapted for use, wherein it is desired for convenience to manipulate the coupling-pin from the side of the draw head or bar. Fig. 5 is a longitudinal vertical section of Fig. 4. Fig. 6 is a plan view, partly in section, showing the coupling-pin in position and held by its retaining-spring.

The draw-bars of each of the cars are duplicated in construction, and therefore the description of a single draw-bar and its associated mechanism applies to either and both, and reference being had to the drawings, A designates the draw-bar, made of any suitable material, such as malleable iron or steel casting. The draw-bar consists of a casing of such dimensions as may be adapted to the car and uses to which it is to be put and subjected. The shell or casing of the draw-bar is rectangular in cross-section and has three sides substantially solid and continuous, as shown in the drawings, the other sides or wall, as 1, extending a suitable distance along the

side of the draw-bar and intermediate of the length to constitute at one end, as 2, a fulcrum or stay for the springs, the wall at this point being reinforced, substantially as shown, and from thence made thinner until approaching the other end of this wall, as at 3, where it is also thickened or reinforced, as shown. In my Letters Patent No. 503,017, dated August 8, 1893, that side of the draw-bar next adjacent to the spring is shown as open, except at the forward portion at the draw-head and the intermediate piece connecting the sides and against which the spring is sprung or stayed. This construction serves the purpose reasonably well in instances where the road is comparatively straight and the traffic light; but it has been found that leaving the side open, as stated, weakens the draw-bar, and also that in some instances where the transit is rapid and curves are encountered the coupling-bar is thrown at such an angle that the springs are pressed outward by the head of the hook of the coupling-bar to such a distance that the retractile force of the spring is weakened or destroyed and that the utility, certainty, and reliability of the coupling engagement is correspondingly jeopardized, and to obviate these defects and preserve and perfect the function of the springs and insure the coupling engagement at all times I extend this wall, as described and shown, in order that the draw-bar may be strengthened and an abutment afforded for the spring beyond which they cannot be pushed or moved either by ordinary usage or by the engagement of other forms of coupling-bars not specially made to couple with this coupler, and so that on removal or release of the disturbing force the springs will immediately resume their force and act to retain the coupling-bar in engagement with the coupling-pin.

The mouth or draw-head of the draw-bar is made flaring, as shown, for the purpose of affording ready access for the coupling-bar, as is well known. The rear end of the draw-bar is slotted, as at 4, longitudinally for a distance, the slots opening at the end of the bar in order that the car-bar, (not shown,) to which the draw-bar is bolted to the car, may be easily pushed into place and then clamped by means of the fastening bolts or rivets pro-



jected through the bolt-holes 5. The pin-holes 6 and 7 are arranged as shown, and are identical with those shown in my above-cited Letters Patent, the former being centrally located in the head of the draw-bar to take the pin projected through the central hole of the coupling-bar and the latter being located to the rear of the other and arranged at an incline or angle to the axis of the draw-bar, as shown, to permit the head or hook of the coupling-bar to enter into engagement therewith, as indicated in the drawings. In the rear end of the draw-bar is formed a seat 6, having abutting flanges 7 at the end thereof, on which the rear ends of the springs rest against the flanges of which the ends of the spring abut, substantially as shown in the drawings. From the seat 6 the metal is extended, as at 8, to constitute a guide wall or partition for the car-bar, (not shown,) the outer face of the partition being on a line or plane below the face of the seat 6, in order that the inward movement of the springs shall not be interfered with, as it would be if they rested against the surface of the partition.

B designates the springs which hold the coupling-bar in engagement with the coupling-pin. The rear ends of the springs are secured on the seat 6 by means of a threaded bolt 9, projected through the seat and held by a nut on the outer end, as shown, the head of the bolt being countersunk in the partition. The springs are arranged in the draw-bar substantially as shown, and have their forward ends bent upward or outward and lodged in a seat 10, formed in the wall of the draw-head in the opening 11 in the side thereof. Two or more springs may be used according to the work to be done or required of them.

C designates the coupling-bars, having end hooks 12 13, arranged as shown in the drawings and adapted to engage with the coupling-pins from either direction, this bar also being provided with a central hole 13<sup>x</sup>. In use the coupling-bar is coupled in one draw-head by means of the pin being projected through the central holes of the draw-head and the coupling-bar, the other portion of the coupling-bar remaining extended from the draw-head ready for insertion in the other draw-head to engage with the inclined coupling-pin in that element. To prevent the end of the coupling-bar at that end in the draw-head to which it is connected by the pin through the middle of the coupling-bar from turning or swinging against the springs of the draw-bar, a stay-piece 14 is cast integral with or rigidly secured in each draw-bar against which the end of the coupling-bar lodges, as shown in Fig. 2 of the drawings.

In order that a coupling-bar when not in use may be conveniently carried in the draw-bar, I make the draw-bar long enough to take in the coupling-bar with the outer end resting to the rear of and past the inclined coupling-pin far enough to permit the engagement of

a coupling-bar connected to another bar, as shown in Fig. 3 of the drawings. To hold the extra or loose coupling-bar in this disengaged disposition in the draw-bar, I make a pin-hole 15 through the draw-bar and therein pass a pin 16, projecting it through the middle hole of the coupling-bar concealed in the interior of the draw-bar, as indicated in Fig. 3 of the drawings. The pin 15 is located at a point in the draw-bar where it may be utilized as an adjunct to stay and support the pull on the coupling-bar by engagement with the inner hook, when the coupling-bar is secured in the draw-bar by the forward or central pin, as shown in Fig. 2 of the drawings.

To adapt the construction of my invention to convenient uses on cars, especially on elevated roads where vertically-operated coupling-pins cannot be used, I provide means for manipulating the inclined coupling-pin from the side, and associate therewith automatic means for returning the pin to normal position and for retaining it therein. The construction of the draw-bar and arrangement and disposition of the springs and coupling-pin are substantially identical with those of the appliance when used for coupling on surface roads, except that I reverse the direction of the body of the draw-bar in cross-section by simply turning it on the side, as indicated and shown in Figs. 4 and 5 of the drawings, and secure it to the car in this position by any suitable means. Two sleeves 17 18 are formed on the opposite sides of the draw-bar at a proper distance behind the draw-head to serve as bearing surfaces or means for the coupling-pin, the pin-hole 19 being inclined backward, as shown in Fig. 5 of the drawings, to afford an inclined riding-surface for the nose of the coupling-bar in the act of coupling and a reliable engagement or catch for the hook after engagement. The sleeve 18 may be contracted, as at 20, to constitute a seat for the retaining-spring which holds the coupling-pin in the draw-bar. When the coupling-pin is inserted from the side of the draw-bar, it is formed with a notch 21, located toward its inner end, so that when it is desired to uncouple the cars the pin may be drawn back until the notch registers with the coupling-bar, when the bar can be withdrawn from the draw-head and the cars thus uncoupled. The inner end of the coupling-pin is extended in the form of a pin or bar, as 22, which projects through the opening or aperture in the sleeve or collar 18 and has arranged thereon a spiral spring 23, one end of which is seated on the face of the sleeve 18, the other end being lodged or anchored at the outer end of the pin by means of a pin or collar 24, so that when the coupling-pin is drawn outward the spring is compressed, and then on release of the pin from the force which was exerted to withdraw it it is returned to its place in the draw-bar by the resiliency of the spring. In the shell of the draw-bar of the coupler is made a pin-hole 25, located at a convenient



point back of the face thereof, in which is inserted a coupling-pin, as shown in Fig. 5 of the drawings, in which the coupling-pin is shown as passed through the central or middle hole of the coupling-bar, whereby that element is held in proper position for entering the mouth of an adjacent coupler and to automatically engage with the inclined coupling-pin therein.

The operation of coupling is automatically effected. The coupling-bar being secured in one of the draw-bars by a pin passed through the middle hole, as shown in Figs. 2 and 5 of the drawings, is in position to have its projecting portion moved into an adjacent draw-bar, the progression of the coupling-bar bringing the inclined or rounded nose of the coupling-bar against the inclined face of the coupling-pin, causing it to slide up and over the inclined surface thereof until the catch or notch of the hook is pushed over behind the rear face of the coupling-pin, when the force of the springs pushes the coupling-bar hook into engagement with the coupling-pin and holds it there until the pin is withdrawn or otherwise released or uncoupled. If it is desired to uncouple the cars, all that is necessary is to withdraw the coupling-pin in one instance until its lower end is free from the coupling-bar, and in the other instance to withdraw it far enough to bring the notch of the pin to register with the coupling-bar, when the uncoupling is effected by simply withdrawing the coupling-bar.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a car-coupler, a hollow draw-bar rectangular in cross-section having three sides thereof substantially solid and the fourth or remaining side connected at the ends by the standing metal which extends lengthwise for a distance and an intermediate side connecting-wall formed with reinforcements on its inner face at the respective ends thereof, substantially as and for the purpose specified.

2. In a car-coupler, a hollow draw-bar rectangular in cross-section having three sides thereof substantially solid and the fourth or remaining side closed at the ends by the standing metal, an intermediate side wall having thickened ends to form fulcrum and abutment points, and open-end slots at the rear end of the draw-bar substantially as and for the purpose specified.

3. In a car-coupler, a draw-bar and coupling mechanism, comprising a draw-bar rectangular in cross-section having one side thereof closed at the ends and by an intermediate wall 1, provided with thickened portions at the ends, as 2, 3, leaving openings on that side of the draw-bar between the end walls and the intermediate wall, a guide-wall and spring-seat at the rear of the draw-bar, coupling-springs having one end secured in said seat to fulcrum on the part 2 of the side wall and their forward ends lodged on the end of front piece of wall at the draw-head, an inclined coupling-pin hole adjacent to the draw-head, a coupling-pin in said hole, and a hooked coupling-bar to engage the pin and to be held in such engagement by the force of the springs, substantially as described.

4. In a car-coupler, the combination of a hollow draw-bar provided with a pin-hole intermediate of its length, a coupling-pin hole in the draw-head, a coupling-bar held in the draw-head by the coupling-pin and formed with a rearwardly-extending hooked arm, and a pin in the pin-hole engaged by the hook on the rear arm of the coupling-bar, substantially as shown and described.

5. In a car-coupler, a draw-bar having sleeves formed on opposite sides thereof adjacent to the draw-head, the apertures of the sleeves being inclined from bottom to top inward, a coupling-pin formed with a notch to permit the passage of the coupling-bar and having its inner end projected through the end of one of the sleeves, and a spring on the end of the coupling-pin to hold it in its seat in the sleeves.

6. In a car-coupler, a draw-bar formed with sleeves on opposite sides thereof adjacent to the head of the draw-bar, the apertures in said sleeves being disposed at an incline and the inner sleeve being provided in its end with a smaller aperture than the size of the sleeve, a coupling-pin in the sleeve formed with a notch to permit the entrance of a coupling-bar, and a projection on the end to pass through the end of the inner sleeve, and a spring on the projection of the coupling-pin, substantially as described.

In witness whereof I have hereto set my hand in the presence of two attesting witnesses.

WILLIAM T. VAN DORN.

Attest:

A. G. HEYLMUN,  
S. F. MARSHALL.