2 Sheets—Sheet 1.

W. H. WARD.
Car Coupling.

No. 230,370. Patented July 20, 1880.

fig. 1.

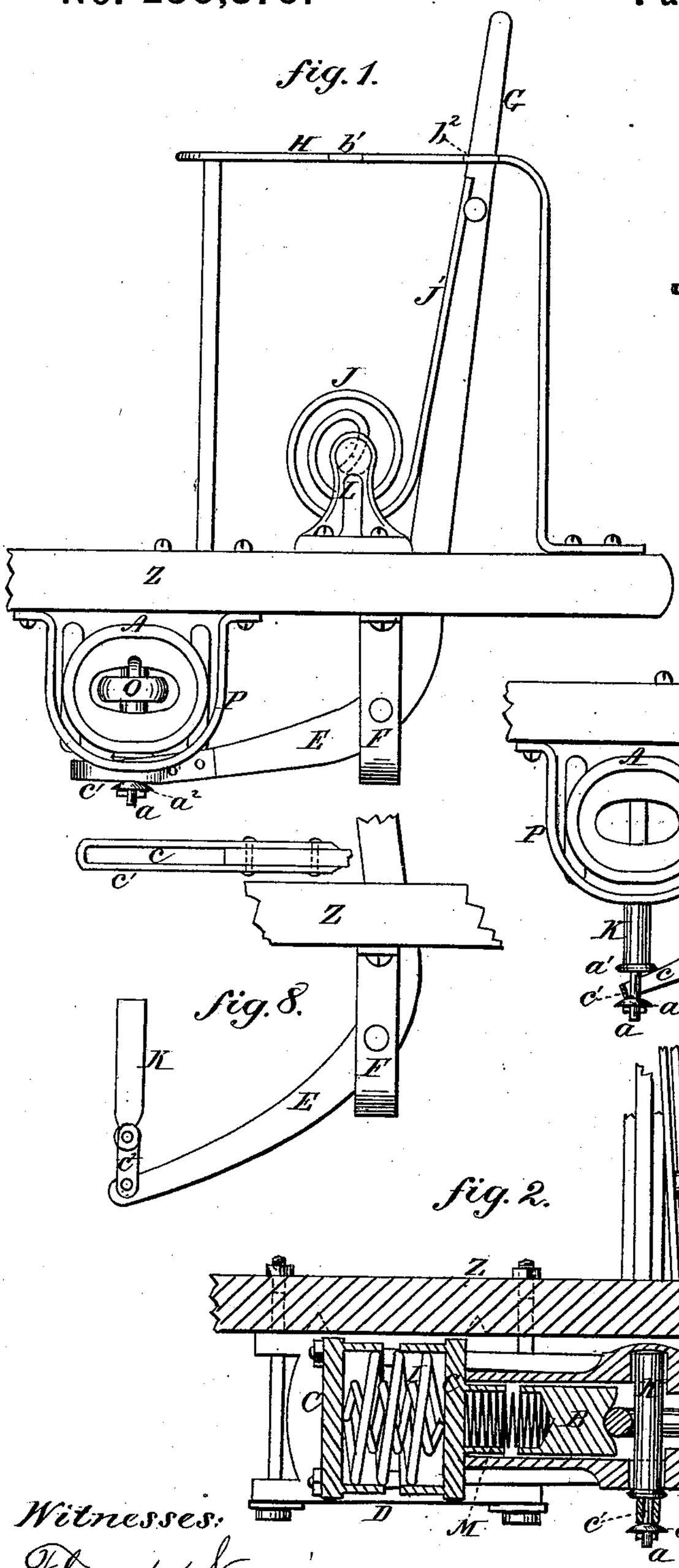

fig. 3.

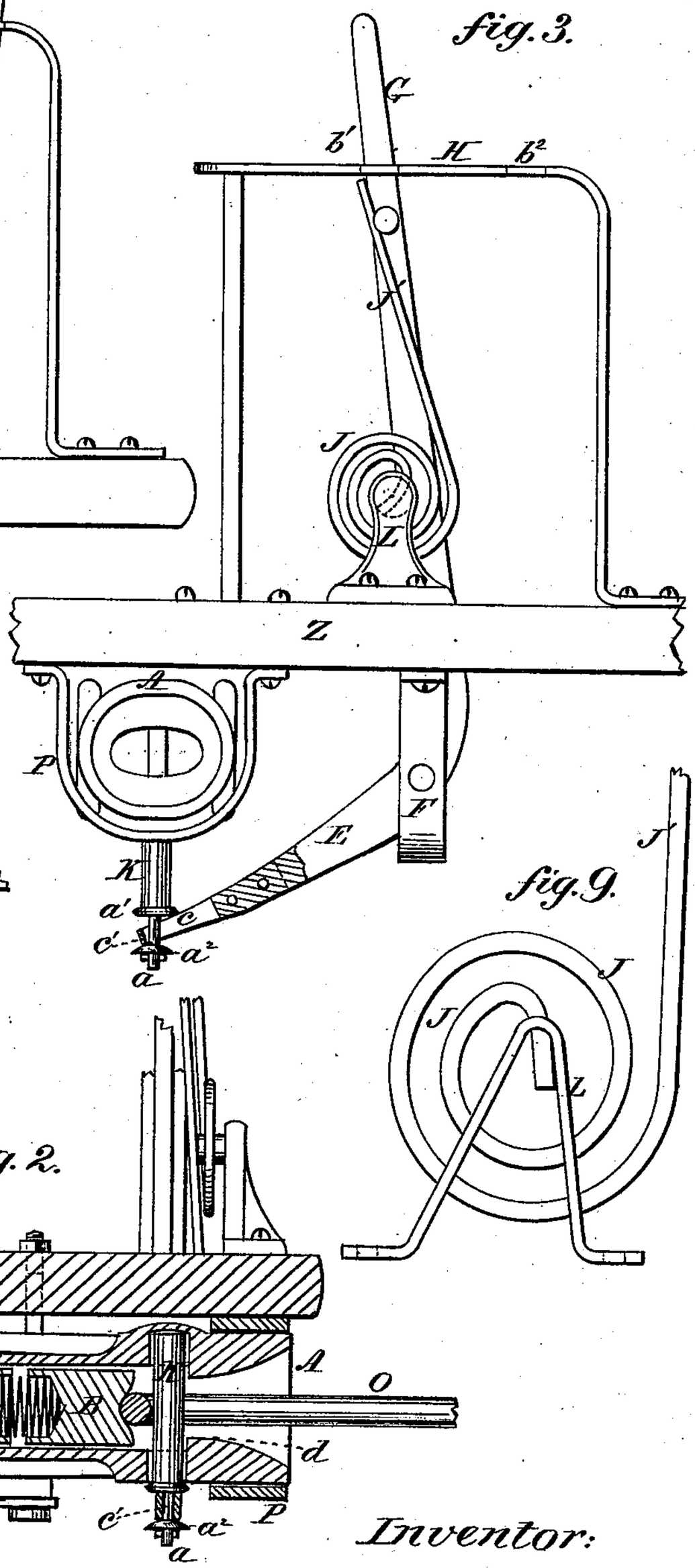

fig. 8.

fig. 9.

fig. 2.

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fig. 4.

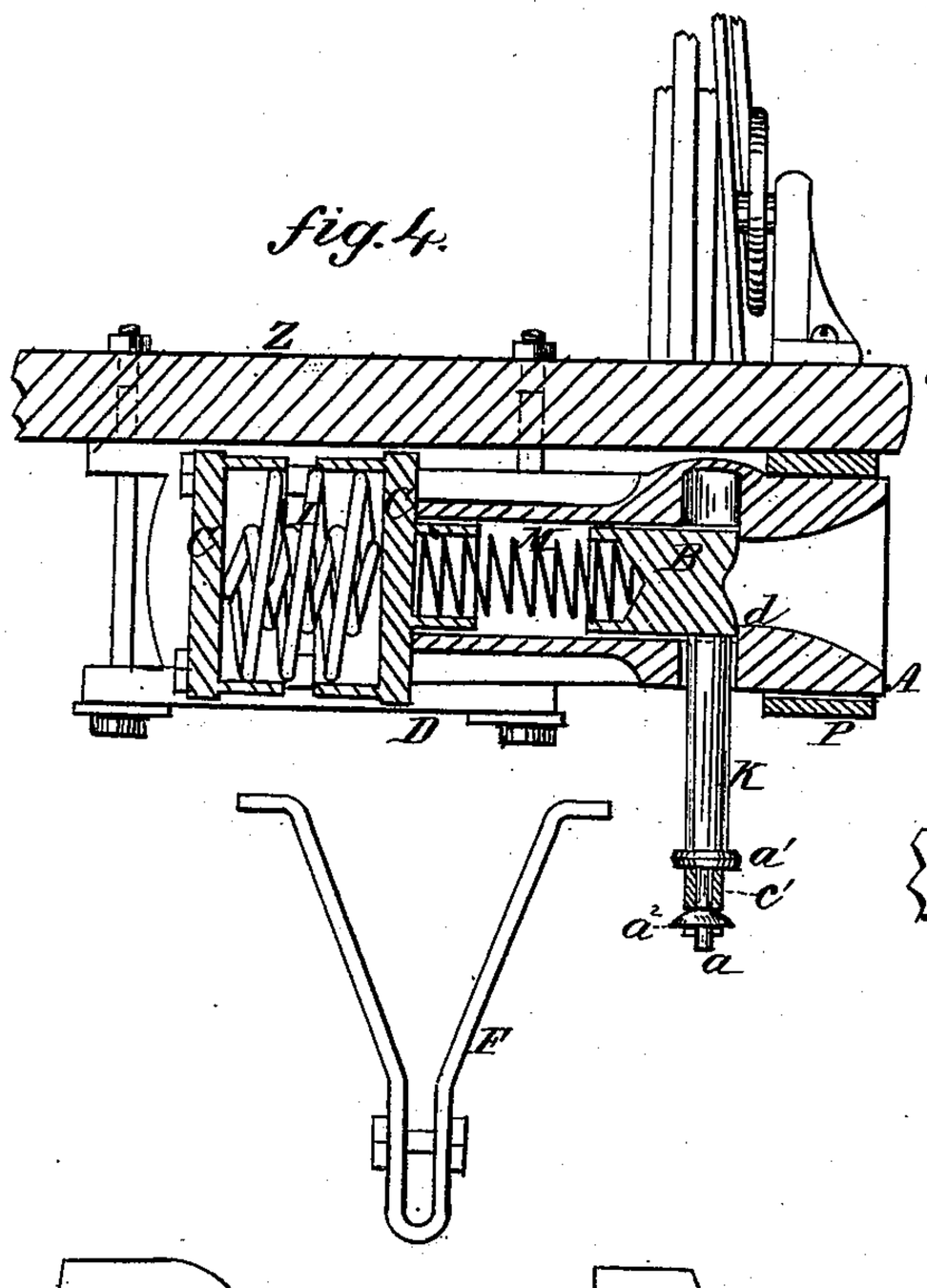


fig. 6.

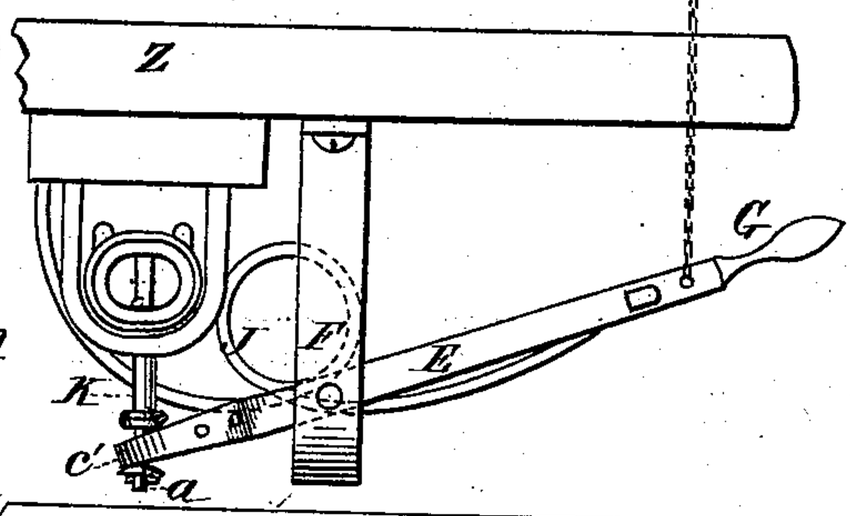


fig. 7.

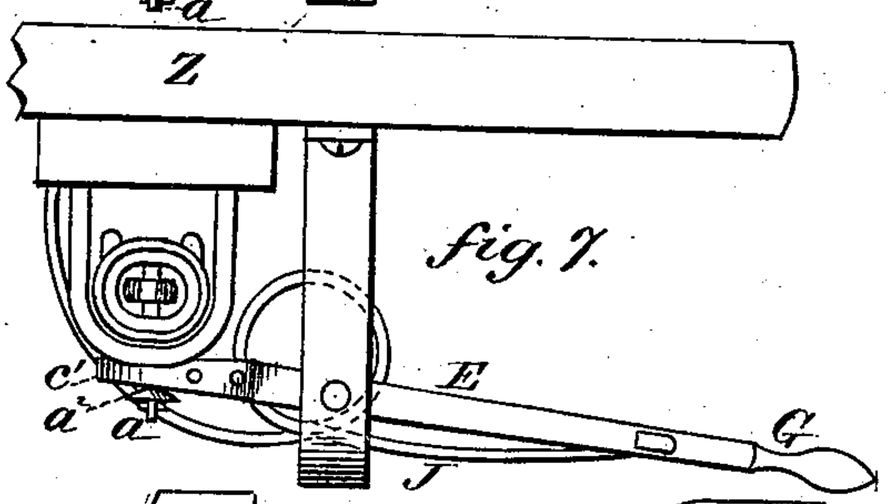
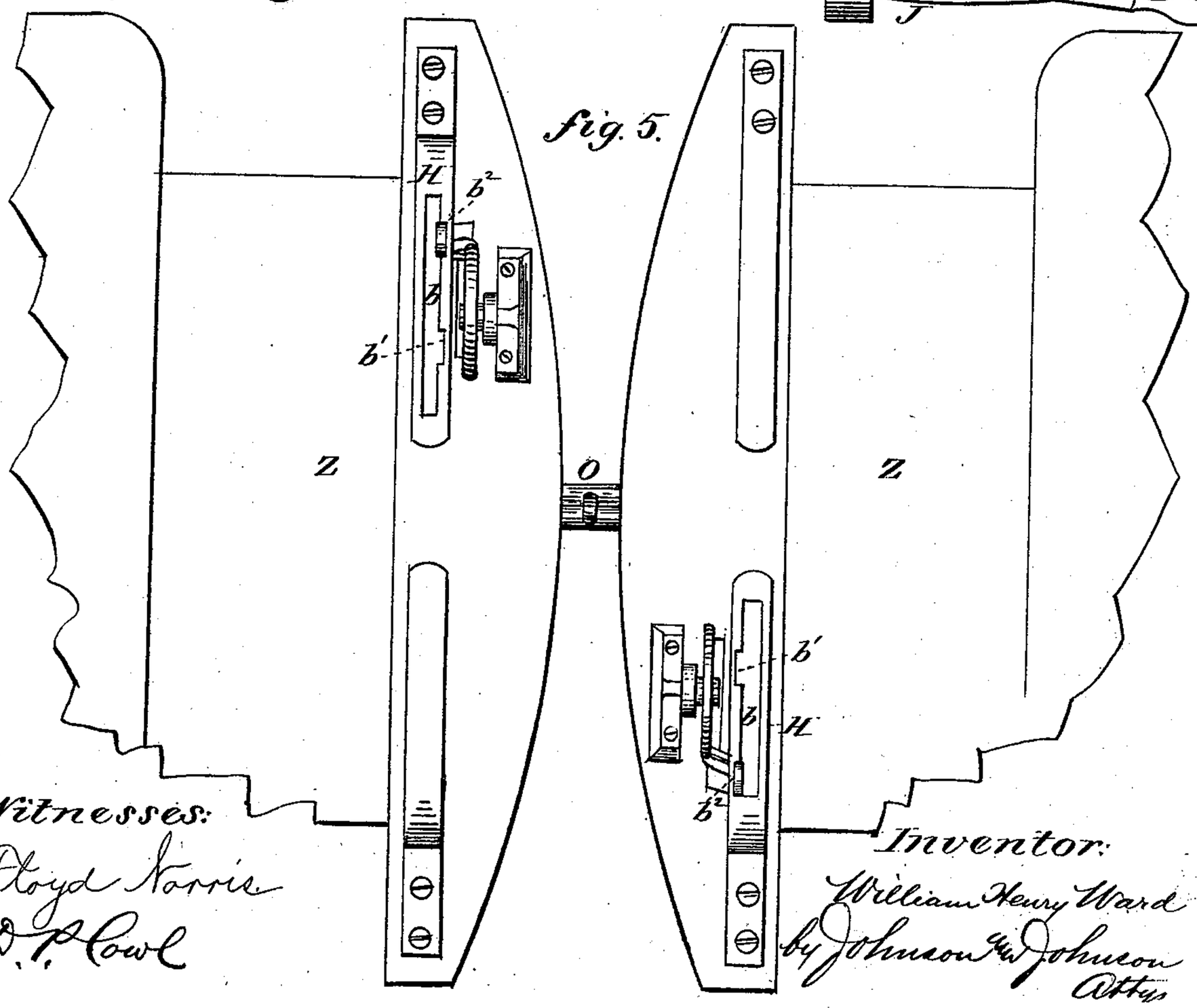


fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM H. WARD, OF PITTSBURG, PENNSYLVANIA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 230,370, dated July 20, 1880.

Application filed January 22, 1880.

To all whom it may concern:

Be it known that I, WILLIAM HENRY WARD, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Car-Couplings, of which the following is a specification.

My invention relates to improvements in car-couplers in which the coupling is made automatic by the forcible joining of the cars, and which is adapted for use with passenger and freight cars; and the objects of my said improvements are to provide means by which the coupling-pin is supported in vertical position beneath the draw-head for being coupled and uncoupled, in connection with a plug or detent-slide within the draw-head and a lever-spring connected with a slotted lever, that supports and operates the pin by which to effect the automatic coupling, to hold the pin and its lever in secure positions for being coupled, to maintain such coupling with safety, and the pin and its detent-slide kept free from freezing tight within the draw-head.

Referring to the accompanying drawings, Figure 1 represents an end elevation of a coupling embracing my invention, the link being shown as coupled; Fig. 2, a longitudinal section of the same; Fig. 3, a similar view to Fig. 1, the pin being in uncoupled position; Fig. 4, a section of the same; Fig. 5, a top view, showing the platforms of two coupled cars. Figs. 6 and 7 are end views of the coupler as applied to freight-cars, and with the pin in uncoupled and coupled positions. Figs. 8 and 9 are modifications.

The same letters of reference indicate the same parts in the several figures.

The construction of the flaring-mouth draw-head A is the same as shown in my patent of March 12, 1878, No. 201,312, and which is adapted to receive a plug or slide-detent, B, by which the pin K is held in vertical position to effect the automatic coupling, not from above the platform Z, as in said patent, but from below the draw-head, which, as shown, is provided with followers C C to receive a strong spring, I, between them, and upon which the draw-head pulls or pushes the cars.

The draw-head is secured by yoke draft-rods connected with the followers, which are arranged, as shown, at the rear end of the draw-head, and which are fastened to the draft-head timbers of the platform by the side frames, D, as in my said patent, or in any suitable manner.

The coupling-pin K works from beneath the draw-head and in vertical openings therein, and when in uncoupled position is supported against the under side of the plug or slide-detent B, as shown in Fig. 4, said slide having been forced out over the upper end of the pin by a spring, M, adapted to bear against the inner end of said detent-slide, and thus said pin is held in position for being coupled with the link O when the cars are brought together and the link strikes and forces back the slide-detent, allowing the pin to shoot up through the link into the openings in the draw-head, as shown in Fig. 2, in which position the slide-detent constantly bears upon the end of the link.

The coupling-pin is formed with a stem, *a*, and a shoulder, *a'*, on its lower end, and is connected by said stem to the end of a lever, E, pivoted to a bracket, F, beneath the platform of the car, and extending up through a slot in the floor of the platform, and terminating in a handle, G, which passes through a slot, *b*, in the guard-rail H, and by which the lever is operated to uncouple. A coiled lever-spring, J, is connected to a bracket, L, bolted to the top of the platform, and by the straight or lever part J' said spring is connected to the handle G of the lever E, so as to exert its force to maintain the lever E and its pin K in coupled position, and the guard-rail slot *b* is provided with notches b' b^2, into which the lever catches when the pin is either coupled or uncoupled, as in Figs. 1, 3, and 5. The pin-connecting end of the lever is provided with a slot, *c*, formed by means of a strap, *c'*, riveted to the end of said lever, as shown in Figs. 2, 3, and 4, so as to obtain a positive connection of the lever and pin and accommodate the arc described by said lever in moving the pin. A link-connection, c^2, shown in Fig. 8, however, will give the same action; but I prefer the slotted connection, as it moves the pin with less tendency to bind in the guide-openings of the draw-head. In uncoupling the cars the pin is drawn down by the lever until its upper end passes below the lower side of

the slide-detent B, which is immediately forced out above the top of the pin and against a shoulder, *d*, in the draw-head, and in this position the pin is held, bearing upward with considerable force against the slide-detent, by the action of the lever-spring J, attached to the hand-lever E, while the slide-detent is pressed forward by the interior spring, M, so that these two forces co-operate to keep the pin in safe position for automatic coupling.

The guard-rail notch b' serves to limit the descent of the pin and prevent coupling when not required, while the notch b^2 serves, in connection with the spring J, to hold the pin secure when coupled. This arrangement of coupling-pin avoids the necessity of having an opening in the platform, and both the pin and the detent are covered and are prevented from freezing tight within the draw-head, as water cannot drip through the platform into these parts, as the upper opening in the draw-head is covered.

The slotted strap end c' of the lever is secured to the coupling-pin stem *a*, between the shoulder a' and a loose button, a^2, held on the stem by a pin, so that the slot *c* allows a free movement to the coupling-pin and to the lever.

The spring J has volute coils at its connection with the bracket L, and terminates in a lever-arm or straight part, J′, by the side of the hand-lever E, thus giving a stronger and more durable spring, and connecting it directly at a point of the hand-lever to give the best effect in holding the lever in coupled position.

Instead of the hub-bracket L for the lever-spring, shown in Figs. 1, 3, and 5, the open bracket-connection shown in Fig. 9 may be used, in which the volute end of the spring is locked through a hole and against the inner side of said open bracket.

The flaring mouth of the draw-head terminates in a close seat or socket for the coupling-link, so as to form, when coupled, a stiff connection—that is, allowing the link horizontal or side play—but prevent the link from being driven entirely into the draw-head.

The draw-head is secured in a manner not to allow it to have any play, being firm in its housings. I prefer to use a link with its sides closed and strapped together in the middle, and for difference in platform heights it is bent as shown in my said patent. The draw-head does not extend beyond the end of the platform, but is set back, and a strap, P, secured to the platform, embraces and supports the front end of the draw-head. The link has sufficient play in the draw-heads to allow the platforms of the cars being coupled to come together upon curved points of contact, as shown in Fig. 5, whether the cars are moving in line or upon a bend in the track, as the draw-heads do not come in contact, but the force of the contact is borne first by the yielding followers C through the link acting in its seat within the draw-head and back of the pin against the followers.

For freight-cars the hand-lever and its spring are arranged beneath the platform, as shown in Figs. 6 and 7, in which case the spring is secured to the under side of the platform, and the hand-lever is straight and extends out to one side, so as to be easily reached without requiring the person to go between the cars to uncouple them; and by a suitable connection from the end of said lever to the top of the car the trainman can uncouple any car at pleasure from the top and secure it so without coming down, as heretofore, while the lever for passenger-cars is curved in the form of an L, and has a fixed pivot at the bend and at a point a little above the lower side of the draw-head, so that its shortest slotted end will extend beneath the same and have a free action over the stem of the coupling-pin, while the handle end of said lever will stand up through the slotted guard-rail, and thereby give a direct leverage action to the coupling-pin. In this particular the form of the hand-lever is important, both in connection with said pin and in its connection with a volute lever-spring located above the platform.

I am aware that prior to my invention car-couplings have been made with a coupling-pin adapted to be coupled and uncoupled from beneath the draw-head by means of a lever passing up through the platform and a spring to hold such lever and its connected pin in coupled position. I therefore do not claim, broadly, such an arrangement of coupling-pin, nor its combination with an operating lever and spring. Nor do I claim, broadly, a slide-detent in the draw-head for holding the coupling-pin in position for being coupled, but only in the described combination with a coupling-pin adapted for being coupled and uncoupled beneath the draw-head.

I claim—

1. In a car-coupling, the combination, with the curved hand-lever E, having a fixed pivoted connection beneath the platform, a direct connection by its shortest end with the lower end of the coupling-pin K, and its longest end extending up through the guard-rail H, substantially as described, of the slide-detent B of the draw-head and the volute lever-spring J J′, arranged above the platform and connected to the handle end of said pivoted lever, as shown, and for the purpose set forth.

2. The combination, in a car-coupling, of the coupling-pin K, arranged for being coupled and uncoupled from beneath the draw-head, and the curved hand-lever E, having a fixed pivot beneath the platform, and provided with the slotted end *c*, connected to the stem *a* on the lower end of the coupling-pin, for free action both of the lever and the pin, as shown and described.

In testimony whereof I have hereunto set my hand.

W. H. WARD.

Witnesses:
A. E. H. JOHNSON,
J. W. HAMILTON JOHNSON.