

(No Model.)

2 Sheets—Sheet 1.

A. ROOT.  
CAR COUPLING.

No. 521,529.

Patented June 19, 1894.

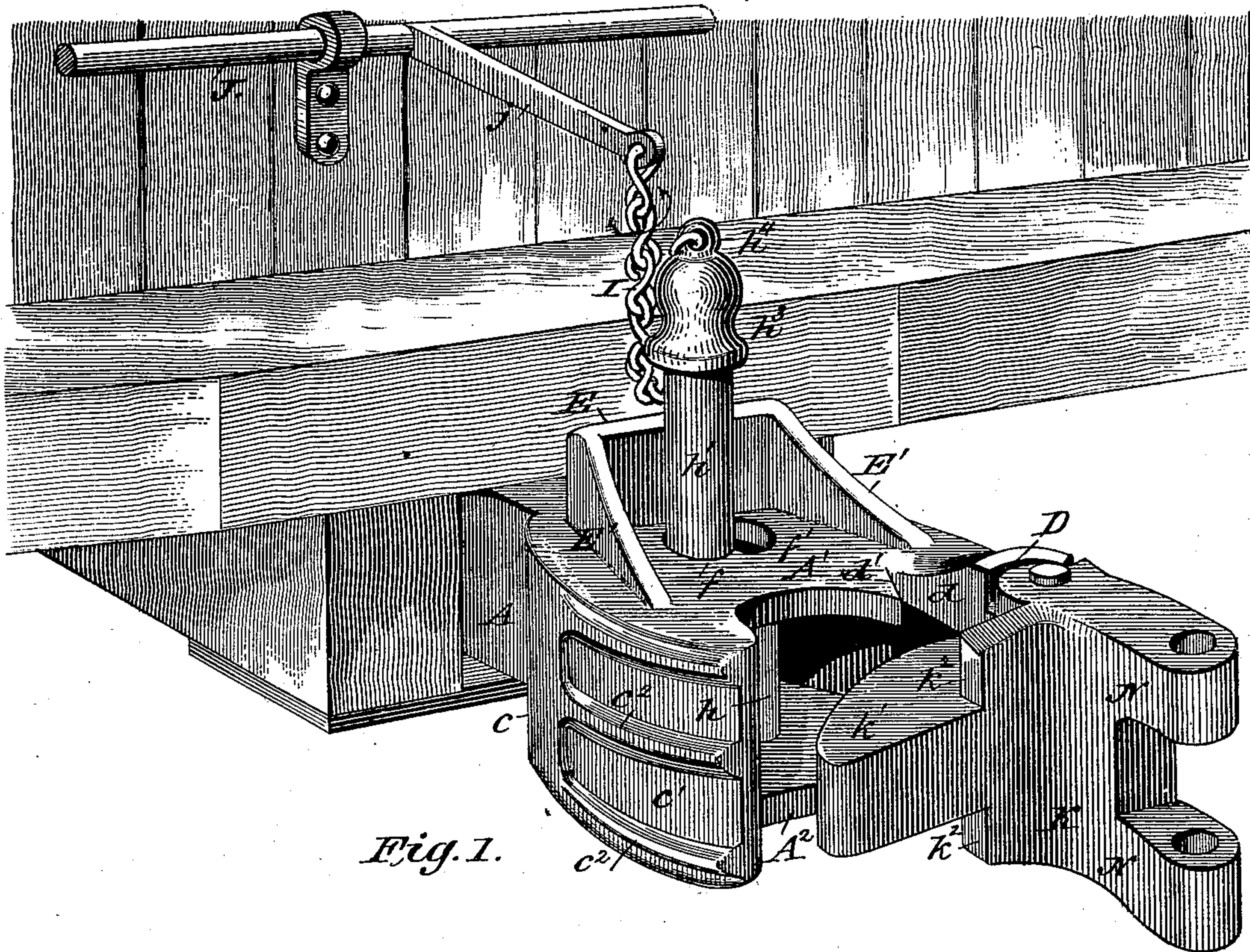


Fig. 1.

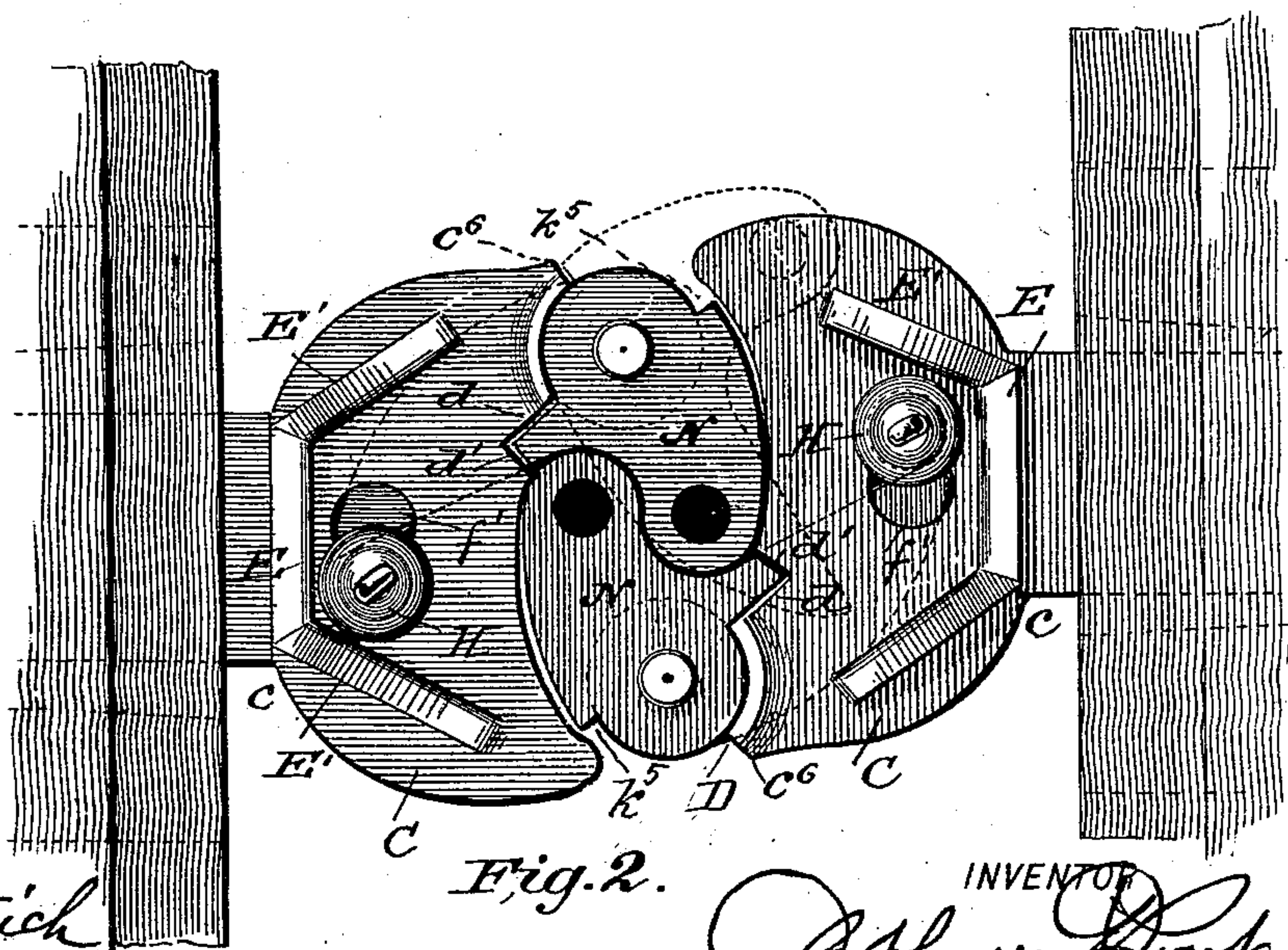


Fig. 2.

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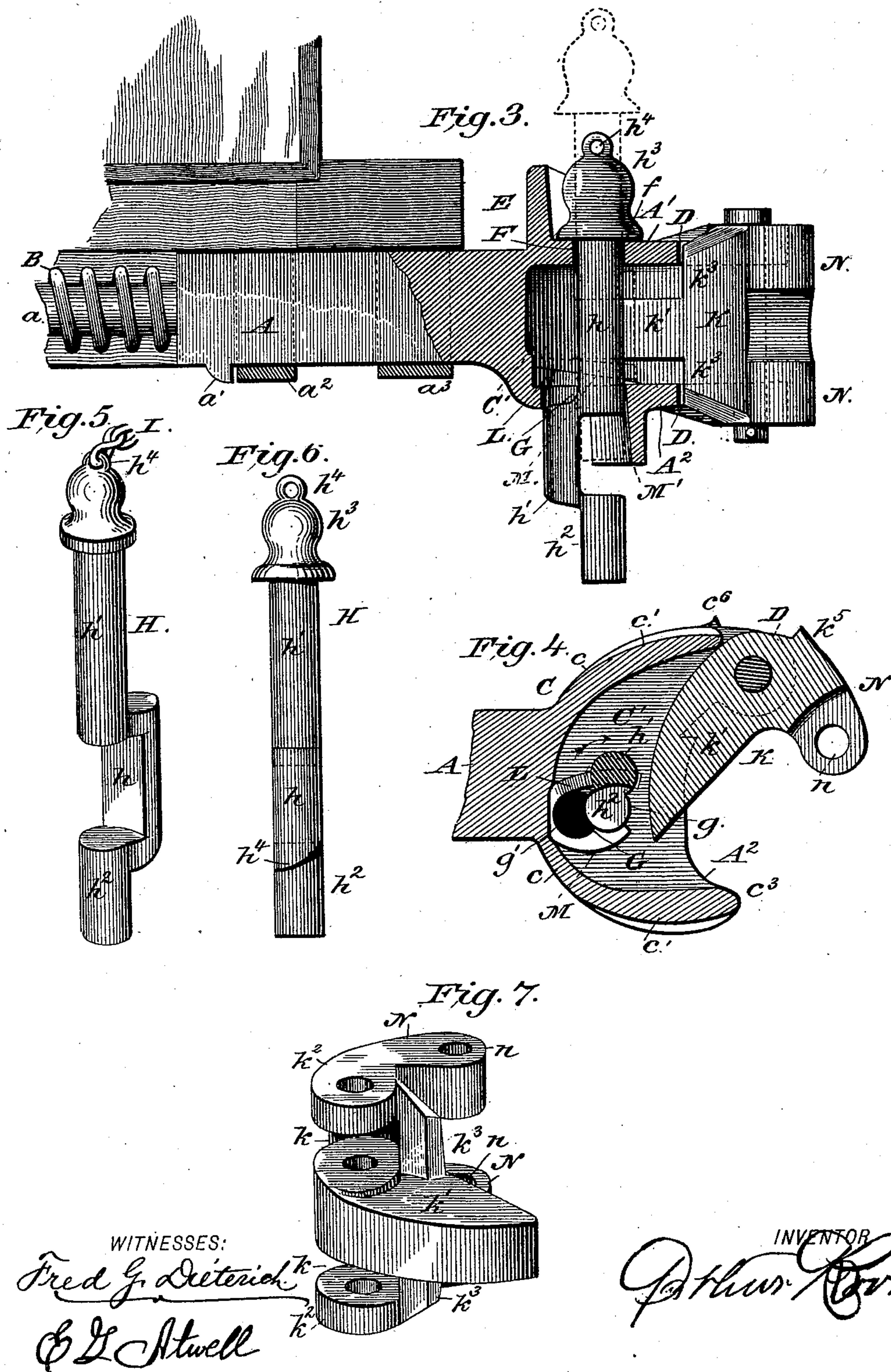
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WITNESSES:

Fred G. Dietrich

E. L. Atwell

INVENTOR

A. Root



# UNITED STATES PATENT OFFICE.

ARTHUR ROOT, OF ALEXANDRIA, VIRGINIA.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 521,529, dated June 19, 1894.

Application filed November 2, 1893. Serial No. 489,781. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR ROOT, a citizen of the United States, residing at Alexandria, in the county of Alexandria and State of Virginia, have invented certain new and useful Improvements in Car-Couplers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates more particularly to the Janney type of couplers, and it primarily has for its object to provide a coupler of this kind which will possess the elements of strength, simplicity in construction, and general efficiency.

It has also for its object to simplify the coupling-pin supporting and operating devices, whereby such pin can be quickly set to its uncoupled position, and whereby it will positively be automatically shifted by the swing of the knuckle member.

With other minor objects in view, all of which will hereinafter be particularly referred to, my invention consists in such novel arrangement and peculiar combination of parts as will hereinafter be first described in detail and then specifically pointed out in the claims, reference being had to the accompanying drawings in which like letters indicate corresponding parts in all the figures, and in which—

Figure 1 represents a perspective view of my improved coupler, the parts being in their uncoupled position, and the knuckle member adjusted for contact by an opposing coupler. Fig. 2 is a plan view of two coupling heads constructed in accordance with my invention coupled together, one of the coupling arms or knuckle members being swung out in dotted lines in position to couple with an ordinary pin coupler. Fig. 3 is a vertical longitudinal section of the drawhead, the parts being shown in their coupled position, the pin being shown elevated at an uncoupled position, in dotted lines. Fig. 4 is a horizontal section of the drawhead, the pin being in an uncoupled position, and the knuckle or coupling arm in position to be swung into engagement therewith. Fig. 5 is a perspective, and Fig. 6 a side view of the pin; and Fig. 7 is a perspective view of the knuckle or coupling member hereinafter more particularly referred to.

In the practical construction my improved coupler has a drawhead of substantially the contour shown in Figs. 1, 2 and 4, which head has a drawbar extension A, the rear end of which terminates in the usual buffer spring and pull rod *a*, about which is disposed the buffer spring B, in the usual manner; and to prevent such bar being pulled out in case the draft pin or keepers for the draw bar should break, such bar has a rib *a'* which is adapted to engage the guide member *a*<sup>2</sup>, as clearly shown in Fig. 3 of the drawings.

The front end of the bar A (which is held in guide *a*<sup>3</sup> and movable laterally therein) terminates with the head proper, C, which head curves out laterally as at *c c* to form the side walls *c' c'* of the mortise C', which walls, to give additional strength, are preferably reinforced by horizontal ribs *c*<sup>2</sup> *c*<sup>2</sup>, as most clearly shown in Fig. 1; and at one side one of the walls *c* terminates in a nose member *c*<sup>3</sup>, while the opposite wall has apertured ears D, the inner faces of which end at inwardly inclined portions *d d* formed on the top and bottom portions A' A<sup>2</sup> of the head, which in turn terminate at inclined shoulders *d' d'* formed in the front curved edges of the said top and bottom portions for a purpose presently explained.

The top of the drawhead has an abutment member E projected up back of the pin hole F, and is formed with diverging, outwardly extending portions E' which serve to add strength to such top member, as also to form guards for the top of the pin.

It will be noticed by reference to Figs. 2 and 4 that the pin apertures F and G in the top and bottom of the draw head consist each of a main and supplemental portion *f* and *f'* and *g* and *g'* respectively, the main portions *f* and *g* being in the same vertical alignment, while the supplemental portions *f'* and *g'* are projected in different directions, the upper one *f'* being extended transversely to one side, while the lower one *g'* is projected in a reverse direction and diagonally inward as shown most clearly in Fig. 4.

By aperturing the upper and lower walls of the drawhead in the manner shown, I am enabled to employ a very simple but effective coupling pin and means for adjusting the same to an uncoupled position without the danger of pulling the same readily from the drawhead. The pin H, the construction of



which is most clearly shown in Figs. 5 and 6, is formed with a wing or crank-like portion  $h$  which connects with the upper or main coupling member  $h'$  and the lower or guide portion  $h^2$ , the upper member  $h$  terminating in a head  $h^3$  having an eye  $h^4$  whereby it can be readily attached to an uncoupling chain or lever, such pin being capable of being operated from the side or top of the car in any well known manner, as for example, as shown in Fig. 1, in which the chain  $I$  is connected to an arm  $j$  projected from a rock shaft  $J$  which in practice extends to the sides of the car and has suitable hand-holds.

In fitting the pin in position in the drawhead, its guide member is first inserted in the main portion  $f$  of the upper aperture, and its wing turned to register with the part  $f'$  when the pin will enter the mortise, and the guide portion  $h^2$  the main portion  $g$  of the lower aperture  $G$ , and as it is thus entered, its wing will rest upon the upper face of the bottom of the drawhead and be turned to its uncoupled position, as shown in Fig. 4, which adjustment projects the wing  $h$  inward and slightly forward in the path of the pivoted member  $K$ , presently referred to.

I desire it understood that while the pin can easily and quickly be turned by hand to move its wing to the position shown in Fig. 4, this may be automatically accomplished by twisting the chain before the pin is inserted into the mortise, it being obvious that as the wing enters the mortise the chain in straightening itself would, if twisted in the direction indicated by the arrow in Fig. 1, turn the pin in the direction indicated by the arrow in Fig. 4, which is the uncoupled position, it being also manifest that as the pin is turned by the knuckle  $K$  contacting with the wing  $h$ , the chain will again be twisted, thereby rendering the turning of the pin automatic every time the lever or uncoupling arm is elevated. To further facilitate the rotation of the pin to its uncoupled position, an incline or cam portion  $L$  tapering upward from its outer to its inner end is formed at the wing side of the lever aperture (see Figs. 3 and 4) on which the lower edge  $h^4$  of the wing travels, such edge being also beveled as shown most clearly in Fig. 6. By this construction, should the pin be down to its coupled position, and it be desired to uncouple, the pin is lifted upward until the upper end of the wing engages the top wall of the mortise, when it is slightly turned by hand or automatically as before stated, and allowed to drop, and as it drops, its beveled lower edge engages the incline  $L$  and is caused to slide downward and at the same time be slightly turned by gravity, such operation being accomplished even without the twist in the chain or other means for turning the pin. To prevent a too great throw of the pin when it is swung inward during the coupling movement, and to positively guide it in line with the lower aperture  $G$ , a guard flange  $M$

is formed adjacent such opening  $G$  (see Fig. 4) and to guide the lower member of the pin when it is lifted, and also to add strength to the draft edge of the aperture  $G$ , a depending flange  $M'$  is formed on the lower front edge of the said aperture  $G$ , as most clearly shown in Fig. 3.

It will be noticed by reference to the drawings that the apertured ears  $D$  project slightly beyond the opposite nose portions of the head, and such ears are adapted to fit between the socket-like portions  $k$  formed between an apertured central or coupling arm  $k'$  and the apertured ears  $k^2$  formed integral with such arm; reinforce portions or wings  $k^3$  being also formed on the knuckle  $K$ , which serve as abutment members, and which, when the knuckle is swung inward, seat in and engage the shoulders  $d$  and  $d'$ , as most clearly shown in Fig. 2. By providing the abutment members  $k^3$ , the inner or coupling arm  $k'$  is held from being swung too far inward and engaging the side wall of the mortise, the impact or bumping force being on the front of the upper and lower walls of the drawhead.

Referring now to Fig. 7, it will be noticed that the upper and lower ear portions  $k^2$  are extended and curved inward and form the knuckle members or coupling fingers proper,  $N, N$ , which are apertured as at  $n$ , whereby they can be readily coupled with an opposing coupling head having the ordinary pin coupling, and to provide for an easy coupling to such kind of coupling head on sharp curves, the knuckle  $K$  is adapted to be swung outward to the position shown in dotted lines in Fig. 1, such outward movement being limited by a stop portion  $k^5$  on the knuckle which engages stop portion  $c^6$  on the draw-head.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the advantages of my improved coupler will be readily understood. It will be observed that in the construction described, a knuckle member is provided, which, while of a very simple nature, possesses the required strength and is capable of being swung outward to couple with an ordinary pin coupler on almost any curve. Furthermore by producing such knuckle with impact portions adapted to engage the front end of the drawhead such head is relieved of the lateral shocks usually incident in the ordinary Janney type of coupler; such shock being transmitted to the front of the head imparts a longitudinal movement thereto which is taken up by the buffer springs.

By providing a coupling pin of the construction shown, a more positive and simple means is provided which will automatically drop to the coupled position as the drawheads come together, and when to its coupled position it will present a coupling pin possessing the required strength and rigidity.

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



1. An improved car coupling, comprising a drawhead provided with apertured ears at one side of its front face, and abutment seats adjacent such ears in the top and bottom wall of such head, a coupling or knuckle member pivoted in such ears and having a centrally disposed projecting arm adapted to swing into the mortise, abutment shoulders at the inner end of such arm, and an automatically dropped pin, all arranged substantially as shown, whereby the said arm will engage the pin to move it to its coupled position, and the shoulders engage the abutment portions to limit the inward movement of such pin-operating arm, as and for the purpose set forth.

2. As an improvement in car couplers, the combination with the draw-head having its lower pin aperture formed with an extension, and a swinging coupling knuckle having a rearwardly extending arm, of a coupling pin having a crank or wing portion, adapted to fit in the lower aperture extension when the pin is in its lower or coupled position, and to be swung forward in the path of the knuckle arm when raised to its uncoupled position, all arranged substantially as shown and for the purpose described.

3. In a car coupling, the combination with the draw-head C having its upper and lower pin apertures formed with extensions  $f'$  and  $g'$  respectively, and a coupling knuckle pivoted at its front end, said knuckle having an inwardly extending arm, of a coupling pin having a laterally projecting crank member or wing adapted to be passed through the extensions  $f'$  and  $g'$  and to seat in the lower extension  $g'$  when the pin is at its coupled position, and a cam portion L formed on the bottom of the draw-head mortise, adapted to form a slide guide for the lower end of the pin wing, when such pin is elevated to its uncoupled position, whereby to give it a partial rotation forward in the path of the extending arm of the knuckle member, all arranged substantially as shown and described.

4. In a car coupling having a knuckle coupling member, having a projecting arm adapted to swing rearward into the mortise as the heads come together, of a coupling pin held for vertical movement in the drawhead, and provided with a wing portion arranged to engage the draw-head and hold the pin from turning in its apertures, and means for turning such pin automatically with its wing portion into the path of the arm on the knuckle when such pin is raised to an uncoupled position, all substantially as shown and for the purposes described.

5. The combination with the draw-head C having its pin apertures F and G formed with extensions  $f'$  and  $g'$  projected in reverse directions, and a coupling pin having a main coupling member  $h'$ , a wing portion  $h$  and a guide  $h^2$ , said wing adapted to be passed through the extension  $f'$  and to seat in the extension

$g'$  when the pin is at its coupled position, the cam L, and the guard M, arranged substantially as shown, of the knuckle member K pivotally connected to the front of the draw-head and provided with an arm  $k^2$ , said wing adapted to engage the top of the draw-head and limit the upward movement of the pin as it is elevated and to swing inward toward the mouth of the draw-head by gravity as it seats on the cam L to move in the path of the knuckle K, all arranged substantially as and for the purposes shown and described.

6. The combination with the draw-head C having its top and bottom curved outward at one side to form a nose  $c$ , and its opposite side to form ears D, the inner ends of which terminate in abutment shoulders  $d d'$ , and a vertically movable coupling pin held in such draw-head, of the knuckle K having sockets to receive the ears D, projecting knuckle fingers N, a rearwardly projecting arm  $k'$  extended from a point between the fingers  $k^2$  and bumper or abutment portions  $k^3$  adapted to engage the shoulders  $d d'$  when the knuckle is swung inward and thereby prevent the arm  $k'$  being swung against the side walls of the mortise, all arranged substantially as shown and for the purpose described.

7. In a car coupler, the combination with the draw-head having its lower pin aperture formed with an extension  $g'$ , and a cam member L inclined upward from its outer end inward, and the swinging knuckle K, all arranged substantially as shown, of the pin H having a main coupling portion  $h'$ , a wing portion  $h$  having its lower edge beveled, said wing adapted to fit in the extension  $g'$  when the pin is in its coupled position, said wing adapted to limit the upward lift of the pin by contact with the top of the draw-head, and means for turning the pin with its wing onto the cam L, whereby the said pin will be turned in its pin apertures by gravity, as the beveled under portion of the wing engages such cam, all as hereinbefore set forth.

8. The combination with the draw-head C having curved sides  $c$ , its members  $A' A^2$  having their pin apertures formed with reversely extending portions  $f' g'$ , the cam L at one side of the lower aperture and the guard M at the other side, the reinforce guide portion  $M'$  at the draft end of the lower aperture, the pin H having a wing portion  $h$  arranged as shown, said draw-head having abutment portions on its front face, of the knuckle K having coupling fingers N N, a pin-operating arm  $k^2$ , and contact or abutting portions  $k^3$ , all arranged substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR ROOT.

Witnesses:

R. W. ARNOLD,  
E. G. ATWELL.