

(No Model.)

2 Sheets—Sheet 1.

J. H. SIMPSON & J. T. WILSON.

CAR COUPLING.

No. 275,720.

Patented Apr. 10, 1883.

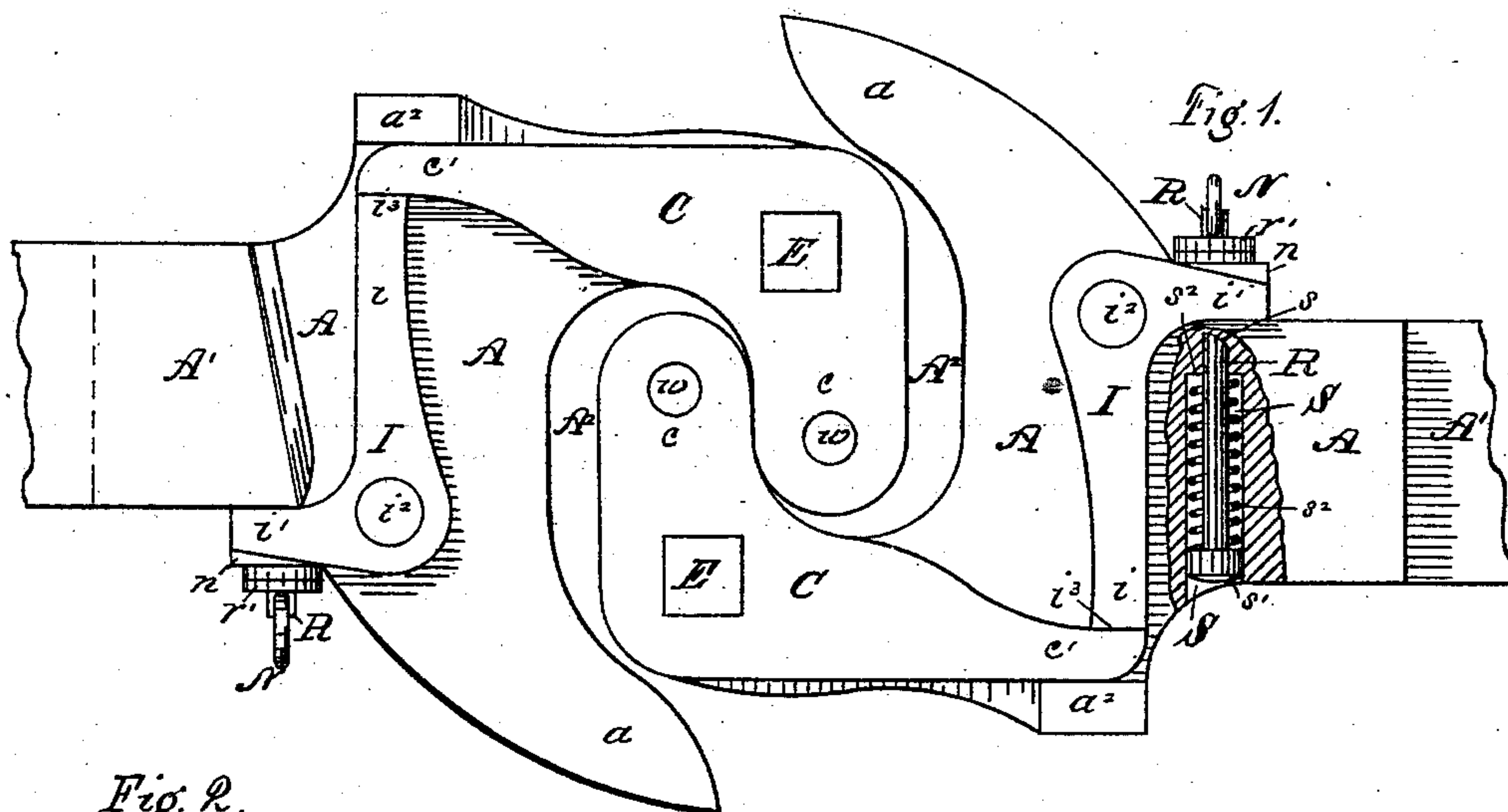


Fig. 2.

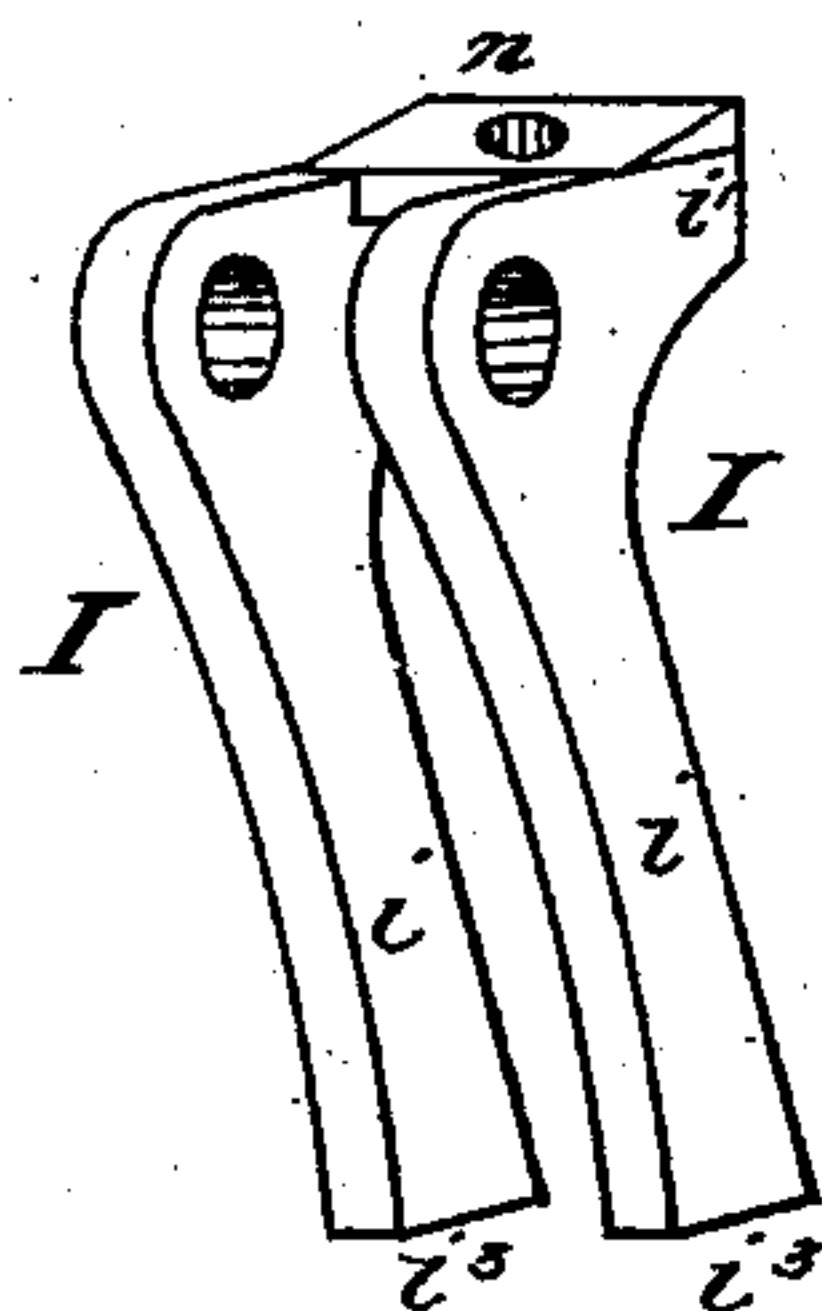


Fig. 3.

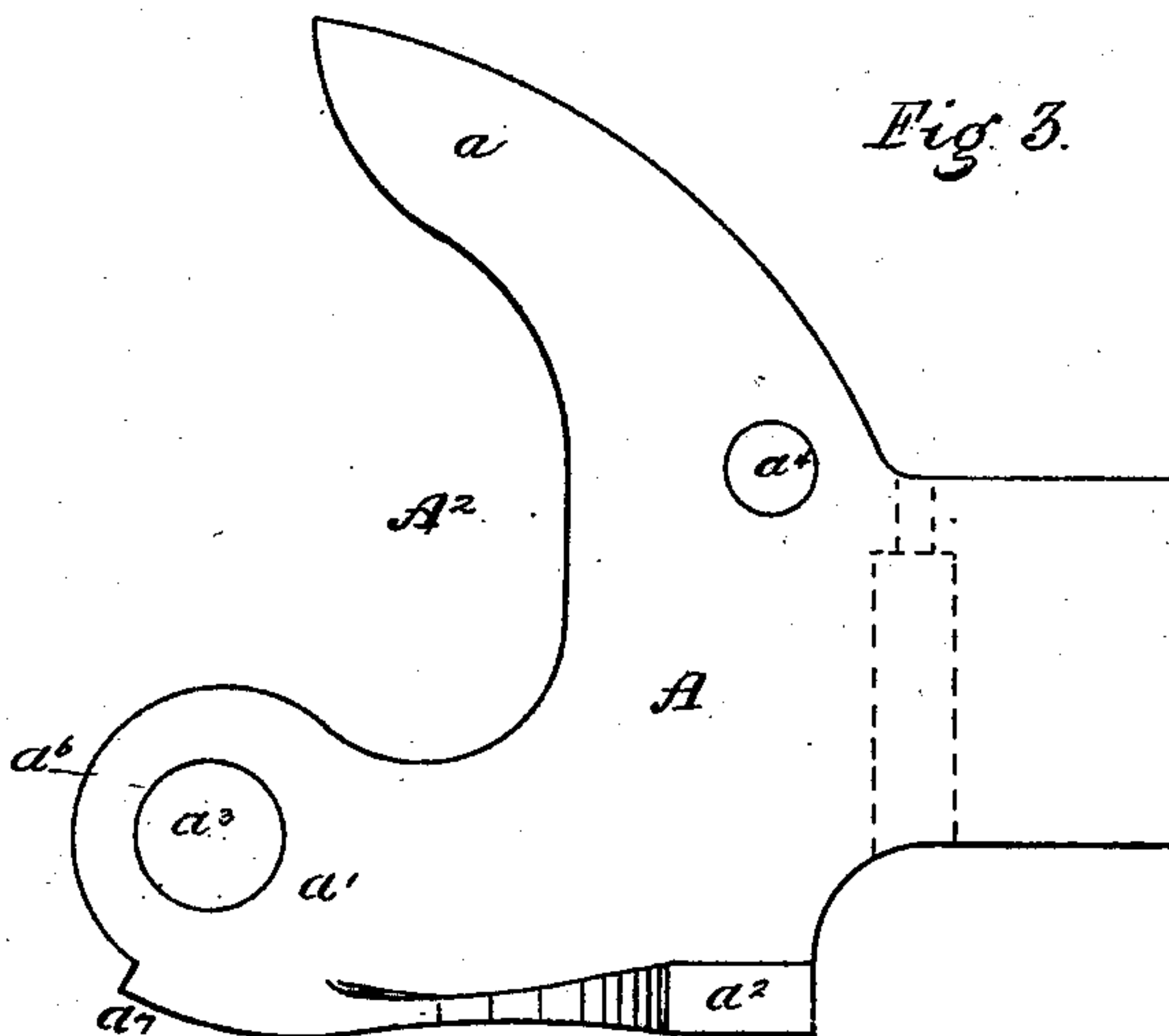


Fig. 4.

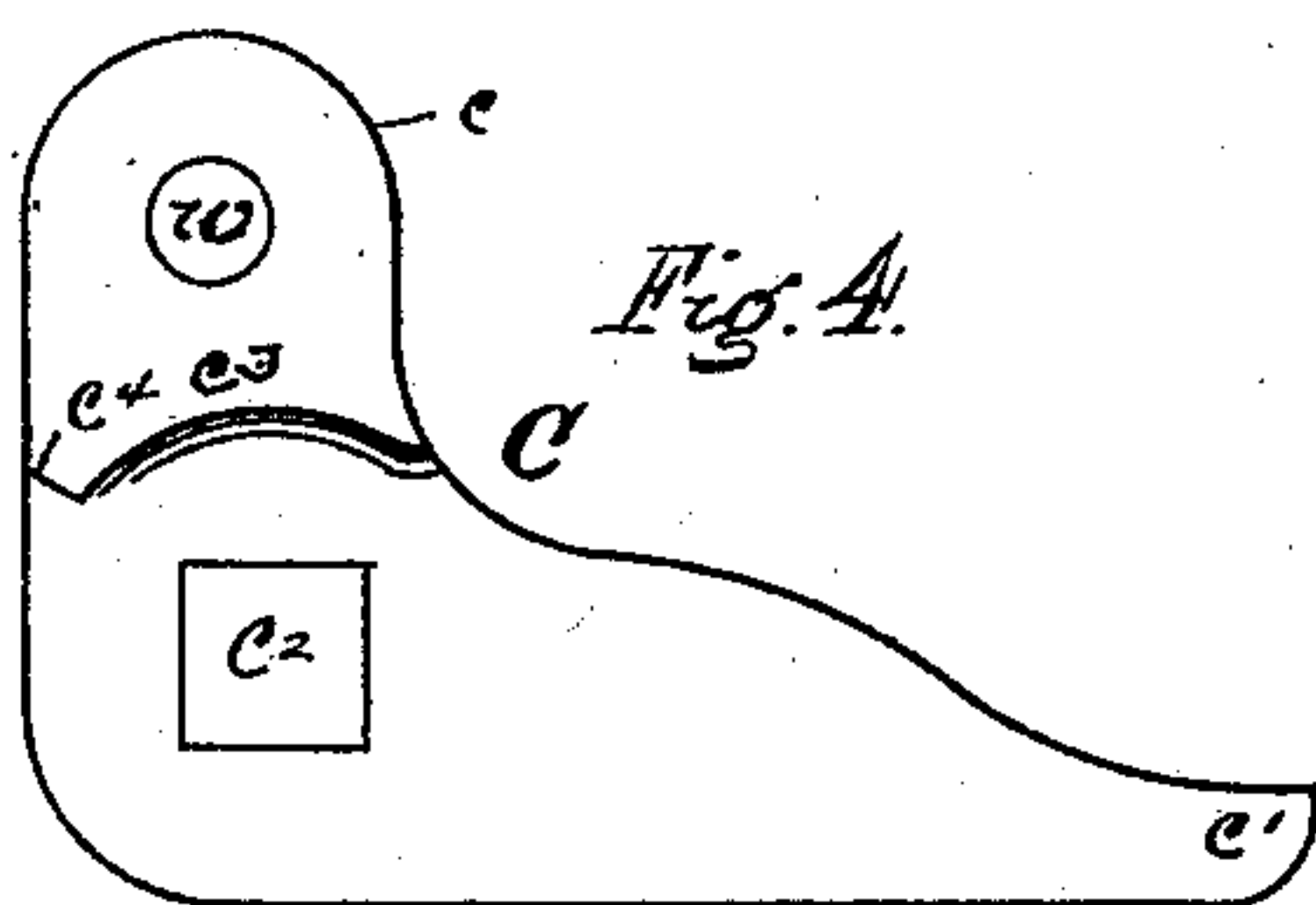


Fig. 5.



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By Attorney George A. Christy

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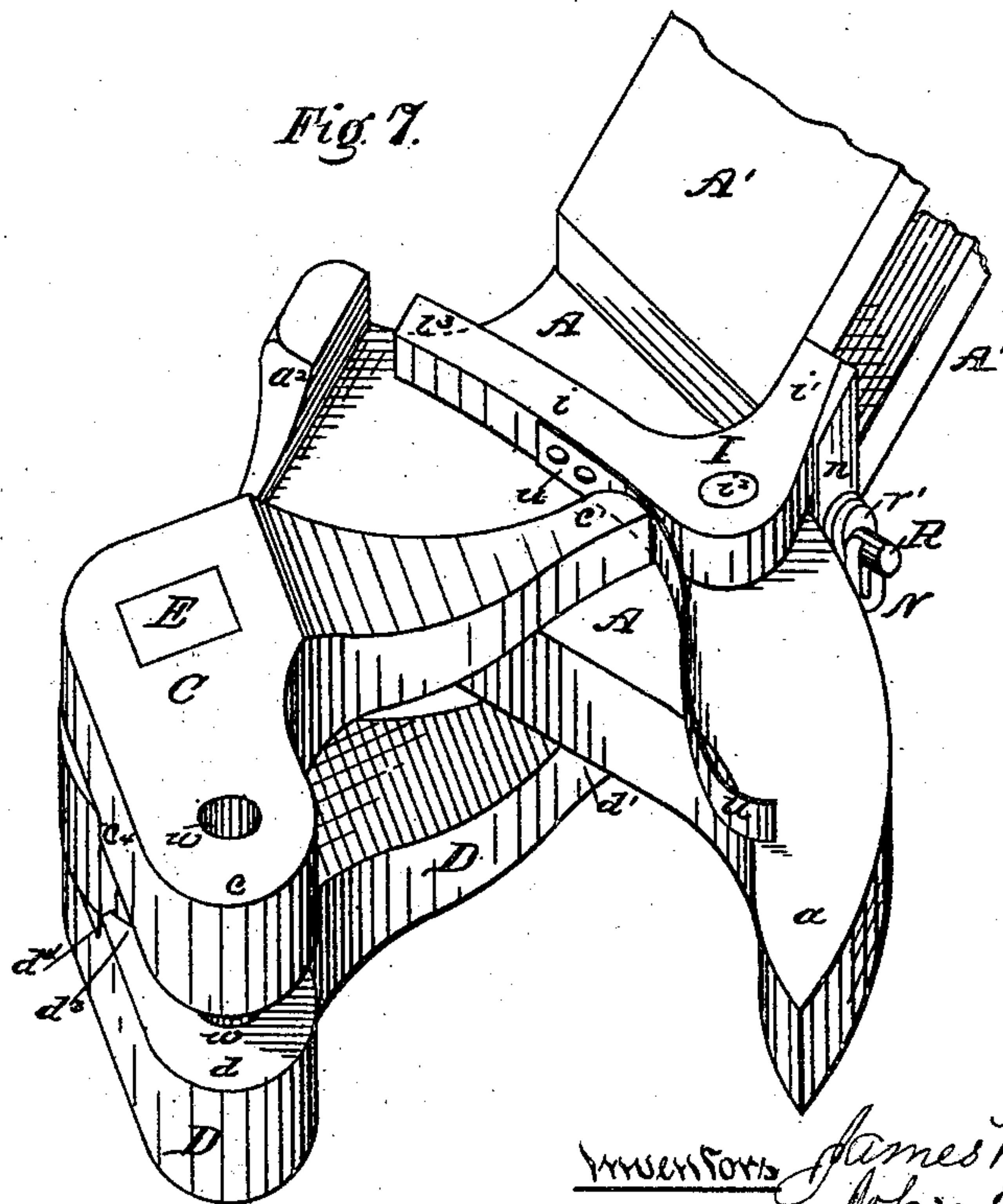
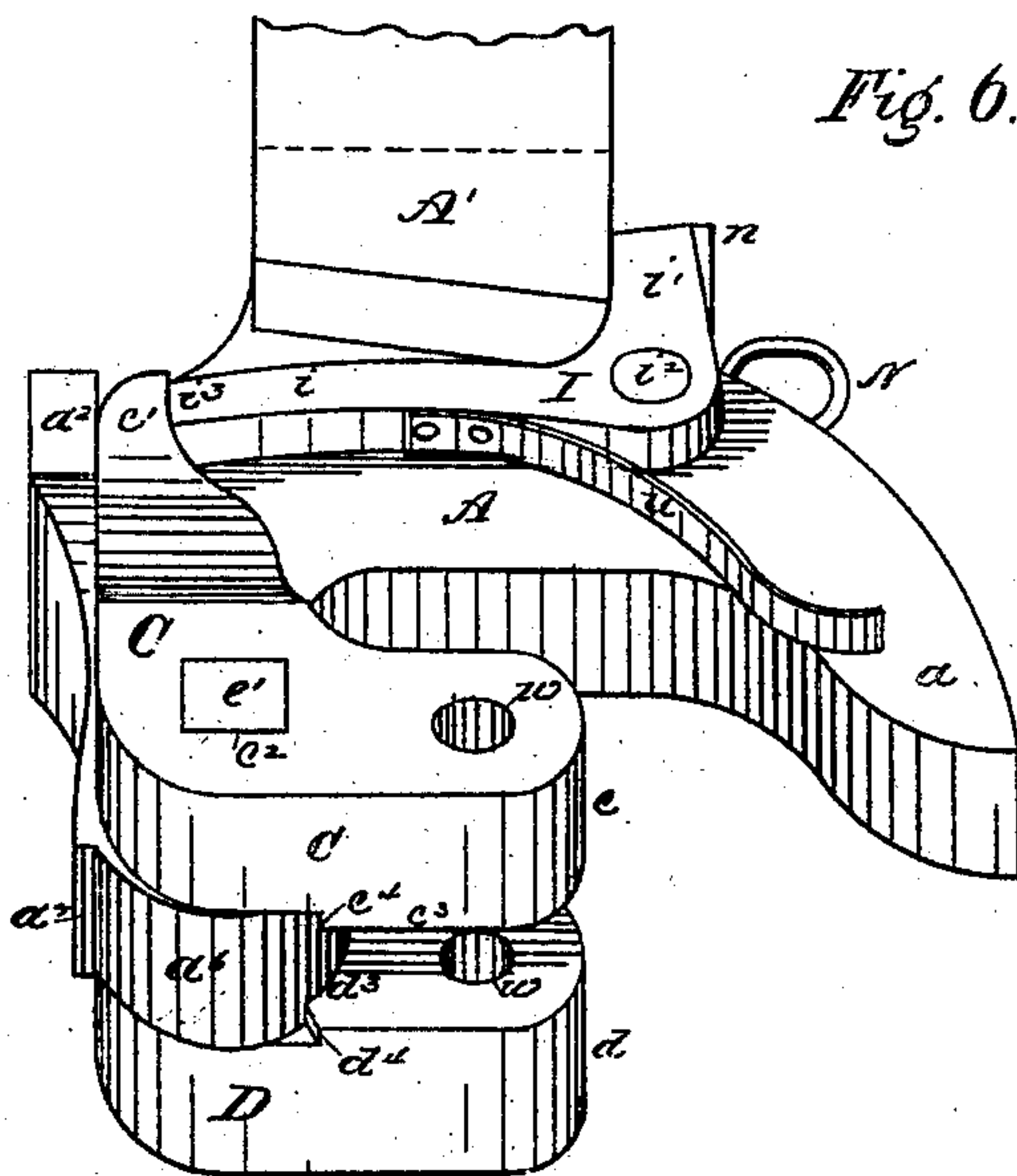
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

JAMES H. SIMPSON AND JOHN T. WILSON, OF PITTSBURG, PENNSYLVANIA,
ASSIGNORS TO WILSON, WALKER & CO., (LIMITED,) OF SAME PLACE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 275,720, dated April 10, 1883.

Application filed January 16, 1883. (No model.)

To all whom it may concern:

Be it known that we, JAMES H. SIMPSON and JOHN T. WILSON, of Pittsburg, county of Allegheny, State of Pennsylvania, have invented
5 or discovered a new and useful Improvement in Car-Couplings; and we do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part
10 of this specification, in which—like letters indicating like parts—

Figure 1, Sheet 1, is a plan view, partly in section or broken away, illustrative of our improved car-coupling. Figs. 2, 3, 4, and 5 are
15 detail views of separate parts of the coupling; and Figs. 6 and 7, Sheet 2, are perspective views illustrating the coupling in different positions.

Our invention relates to certain improvements in that class of automatic car-couplings in which the coupling connection is effected by the interengagement of hooks pivoted to draw-heads; and, in general terms, it consists
20 in certain combinations of a draw-bar head with two hooks pivoted on opposite sides of the head, and with mechanism for supporting the hooks and securing them as against both pulling and pushing strain when closed for
25 coupling, and for holding them open in position to effect a coupling as against accidental closing.

It also embraces certain features of construction in the parts of the coupling, as hereinafter more fully described and claimed.

35 The object or purpose of our invention is to provide a wrought metal, iron, or steel car-coupling, of such construction in its parts and combinations that it can be made at comparatively small cost of manufacture, with a high
40 degree of strength and security as against accidental uncoupling and accidental or premature closing when set to effect a coupling or connection with another car.

In the drawings, A represents a wrought-metal (iron or steel) draw-bar head, formed by
45 preference to or approximately to the desired shape by stamping or cutting by suitable dies from a rolled plate or bar. To the rear end of this head are welded, or otherwise rigidly secured the straps A', (shown only in part,) which

with the head form the draw-bar proper. In forming the head-plate A a recess, A², is cut in its front, leaving two horns or projections, a a', on either side, which co-operate with the coupling-hooks, as presently described. Also,
55 on the edge of the plate, back of the horn a', a surplus of metal is left in stamping, which is subsequently worked or drawn by forging into the raised backs or flanges a², which are employed as stops to assist in supporting the
60 coupling-hooks. This work of fitting or finishing the head-plate after stamping, and also of forming the pin or pivot holes therein, may be done by common blacksmiths in the customary way of doing such work.

On the two side faces of the projecting horn a' of the head are pivoted by a common pin, E, bent hooks C D, made of iron or steel, by forging with suitably-shaped dies. These hooks are similar in form, consisting of thickened
70 hook ends c d and reduced or tapering shank ends or arms c' d', such parts or ends being at or nearly at right angles and radial to the angular pin-holes c² d², formed in the curve between ends. The hook ends c d are thickened
75 by bosses c³ d³ on their adjacent inner faces, which are curved at their inner edges, fitting the curved end a⁶ of the horn a', thus forming shoulder-abutments to strengthen the pivot-connection to the head, and also affording stops
80 c⁴ d⁴ at the outer angle of such curved shoulders, which engage a raised shoulder, a⁷, on the outer edge of horn a', and prevent outward swinging of the hooks beyond a given position—say with the hook ends c d approximately in
85 the longitudinal line of the coupling. The thickened faces or bosses c³ d³ also perform an important function in reducing the space between them below the thickness of the hook ends, thereby preventing the entry of the hook
90 ends into such space when the two parts of a coupling may be held at different heights. Sufficient space is left, however, between the faces c³ d³ for insertion of the ordinary coupling-link, when desired, which link may be secured
95 by a pin through the hole w.

The pivot-connection between the hooks C D and head A is made by a strong pin, E, having a round center, e, occupying the pin-hole a³ in horn a', and oval or angular, preferably
100

square, shank ends $e' e'$, which are fitted tightly in corresponding holes or mortises $c^2 d^2$ in the hooks. If desired, the shanks e' may be extended somewhat out of the hook-sur-
 5 faces, and be headed or upset upon the hooks, binding them firmly upon the shoulders between the angular and round portions of the pin, whereby the parts will be securely bound together with freedom of motion of the hooks
 10 in unison upon their common pivot in coupling and uncoupling. In these movements the inner faces of the hooks from the shoulders $c^3 d^3$ bear upon the flat upper and lower faces of the head A, and when closed for coupling such bearing is continuous through the whole length of
 15 the arms $e' d'$. Also, in such closed position the ends or arms $e' d'$ are supported, as against a pushing force upon the hook ends $c d$, by the raised back stops or flanges, a^2 , formed on the
 20 edge of the head-plate, as before described. By extending the back supports forward toward the pivot center they relieve both the arms $e' d'$ and the pin E from pushing strain, which, coming as heavy blows, might other-
 25 wise bend or break them.

In order to lock or hold the hooks in closed position, we make use of bell-crank levers I I, which are pivoted at or near their angle to opposite sides of the draw-head by a common pin,
 30 i^2 . These levers may be secured upon the ends of the pin by heading or upsetting such ends, leaving the levers free, however, to move on their common pivot. The pivot i^2 is by preference in a line at right angles to the rear-
 35 ward-extending arms $e' d'$ of the hooks, when the hooks are closed, as represented in Fig. 1, and the length of the transverse arms i of the levers is such as to hold the ends of the arms
 40 $e' d'$ closely between their stop ends i^3 and the back stops, a^2 . These stop ends i^3 conform by preference to the adjacent face or edge of the
 45 arms $e' d'$, in order to secure a full and firm bearing. By making the arms $i i$ and $e' d'$ at or approximately at right angles to each other, the strain imposed upon the arms i in pulling
 50 upon the coupling-hooks will be a thrust in the direction of their length, which will be taken and sustained by the pivot-pin i^2 , and with this in view the pin should be made
 strong and of considerable size.

In uncoupling, the stop ends i^3 of the arms i are drawn backward, free from or out of engagement with the arms $e' d'$, by a lateral pull upon the arms i ; and in order that both locking-levers I I may be moved simultaneously by
 55 one pull-rod a cross tie or bar, n , is connected to both arms by welding, as illustrated in Fig. 2, or by bolting, riveting, or other convenient way of making a strong rigid connection, and
 60 from the center of this cross-bar a pull rod or chain, N, is passed to a convenient point on the car-body for uncoupling—say to the side. Such pull-rod N has by preference a flexible connection with the end of a stem, R, which passes
 65 through the center of the cross-bar, being connected therewith by collars r' , or equivalent

nuts or pins on opposite sides of the bar, and from the cross-bar the stem passes through a hole, s , into a chamber, S, formed transversely in the rear end of head A.

A collar, s' , is secured on the inner end of the stem, and a spring, s^2 , is seated within the chamber between its inner end, s^3 , and the collar s' . This spring, acting through the stem R, moves the lower arms i into locking position when its action is not overbalanced by a
 75 pulling force on rod N, or by the pressure of the ends of the arms $e' d'$ in opening and closing.

In Fig. 7 we have illustrated the hook-arms 80 in a partially-closed position, with their ends bearing upon the lever-arms i . In moving from this position to that shown in Fig. 6 the lever-arms will be pressed back, so as to permit the hook-arms to pass; but on passing or
 85 on reaching the positions shown in Fig. 6 the spring s^2 will throw the arms i in front of the hook-arms, and thereby lock them securely as against pulling strain upon the hooks. This locking movement may be imparted to the le-
 90 vers by a spring or springs arranged and secured in other ways than that shown without departing from our invention—for example, by an elliptic or by a strap spring secured to the draw-bar, and arranged to bear against
 95 the outer face of bar n or arms i' , or by a coiled or plate spring seated between the end of strap A' and the rear edge of arm i on one or both sides. We prefer, however, the arrangement and construction shown, as the spring is covered and protected from injury. When coupled
 100 the hooks of the two engaging parts are held in place by the horns a of the draw-heads, (see Fig. 1,) the usual provision being made in shaping the recess A^2 and the hook ends $c d$
 105 for play or freedom of adjustment of the interlocking hooks within the recesses with reference to the varying movements of the connected cars on the track.

In order to hold the coupling-hooks open in 110 coupling position, a curved spring, u , is secured by rivets or in other convenient way to the front edge of one or both of the lever-arms i and passed forward along the arm a of the head in position to be pressed by the ends of
 115 the hook-arms at or near the beginning of their closing movement, whereby such movement will be resisted by a yielding pressure of sufficient force to prevent accidental closing of the hooks, but by yielding to a superior force
 120 such as is usually employed in coupling cars will permit the hooks to pass and close, as before described. We do not, however, claim herein, broadly, the combination of the two
 125 hooks pivoted to the draw-head with a spring or springs for holding the hooks open, as the same is included in the subject-matter of a separate application for patent filed even date herewith, Serial No. 82,070.

By the features of improvement in the class 130 of couplings herein described we are enabled to produce an automatic coupling, of wrought

metal, durable and well adapted for use in either freight or passenger equipment.

Owing to the plain forms of the several parts and the facility with which they may be produced and put together, our improved couplings can be built at much less expense than those of the same class now in common use, made principally of malleable cast metal.

The elements of strength and economy secured by the use of wrought metal, as above described, are of special importance in couplings designed for use on freight-cars, where cheapness of construction is essential and great strength is of prime importance, in order to meet the requirements of the rough usage to which such cars are subjected.

The plain head A, combined with the two hooks pivoted to opposite side faces of the head by a common pin, affords both cheapness of construction and increased strength, as each hook forms practically a coupling with another of like kind on the other car, each being held as against both pulling and pushing forces by independent or separate stop devices. Also, by making the hooks of wrought metal with continuous fiber running through the length, a higher degree of strength is secured for a given weight of metal than with cast metal; Also, the full face bearing of the hooks combined with the extended back stops, a^2 , and shoulders $c^3 d^3$, the two hooks being rigidly connected, so as to move in unison, affords great strength of support for each hook separately and for both combined as against both the longitudinal and transverse strains imposed upon couplings in practical use.

We claim herein as our invention—

1. The draw-head A, having back stops, a^2 , extending therefrom above the planes of its opposite side faces, in combination with two hooks, C D, pivoted to the opposite side faces of the head, such hooks having rearward-extending arms $c' d'$, and levers I, pivoted to the opposite side faces of the head, and movable on their pivots into and out of the path of the arms $c' d'$ in front of their closed position, substantially as set forth.

2. The draw-head A, having raised stops a^2 and projection a' , with rounded end a^6 , in combination with bent hooks C D, having thickened hook ends with curved shoulders $c^3 d^3$ and

rearward-extending ends $c' d'$, pivot-pin E, rigidly connecting both hooks on opposite sides of the head, and pivoted levers I, substantially as set forth.

3. The combination of draw-head A, pivot-pin E, having round center e and angular ends e' , and hooks C D, having angular holes $c^2 d^2$, fitted and secured to the ends of the pin on opposite sides of the head, substantially as set forth.

4. The combination of draw-head A, two hooks, C D, pivoted to the opposite side faces of the head, and having rearward-extending arms $c' d'$ thereon, two levers, I, pivoted to the opposite side faces of the head in front of the arms $c' d'$, and means, substantially as described, for moving the ends of both levers simultaneously into and out of the path of arms $c' d'$ in coupling and uncoupling.

5. The combination of draw-head A, two coupling-hooks, C D, pivoted to either side of the head, having arms $c' d'$ thereon, two bell-crank levers, I, rigidly connected and pivoted on either side of the head, and a spring for moving the ends of the levers into locking position in front of the arms $c' d'$, substantially as set forth.

6. The draw-head A, having transverse chamber S therein, in combination with two pivoted hooks, C D, having extended arms $c' d'$, such hooks being pivoted on opposite sides of the head, two bell-crank levers, I, pivoted on opposite sides of the head in front of the arms $c' d'$ in the closed position of the hooks, stem R, connected to the levers I and passing into chamber S, and spring s^2 , substantially as set forth.

7. The combination of draw-head A, pivoted coupling-hooks C D, having extended arms $c' d'$, pivoted stop-levers I, and a spring, u , secured to one of the levers, and extended into the path of one of the hook-arms in its coupling or closing movement, substantially as and for the purposes set forth.

In testimony whereof we have hereunto set our hands.

JAMES H. SIMPSON.
JOHN T. WILSON.

Witnesses:

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