

(No Model.)

2 Sheets—Sheet 1.

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

CAR COUPLING.

No. 275,721.

Patented Apr. 10, 1883.

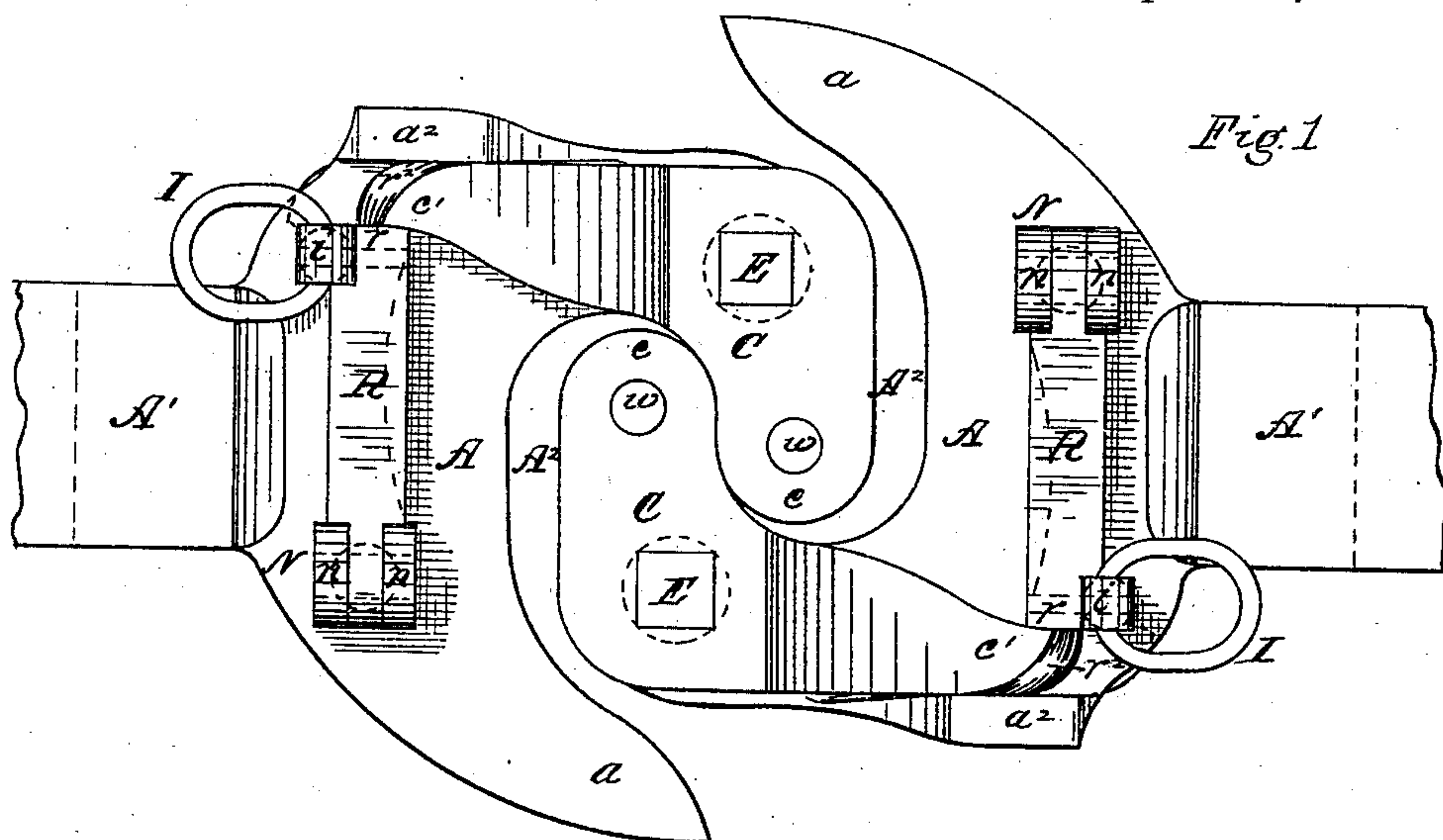


Fig. 1.

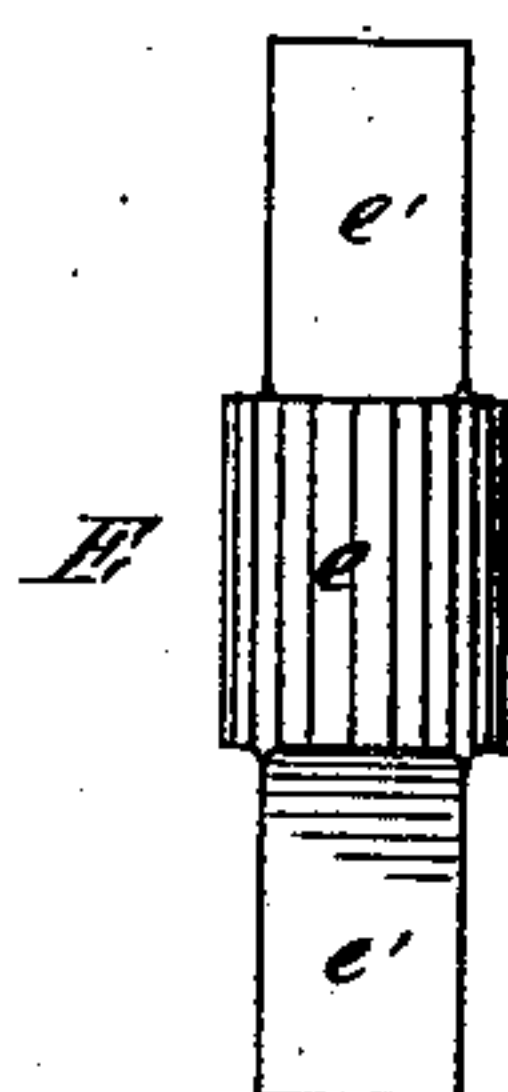


Fig. 2.

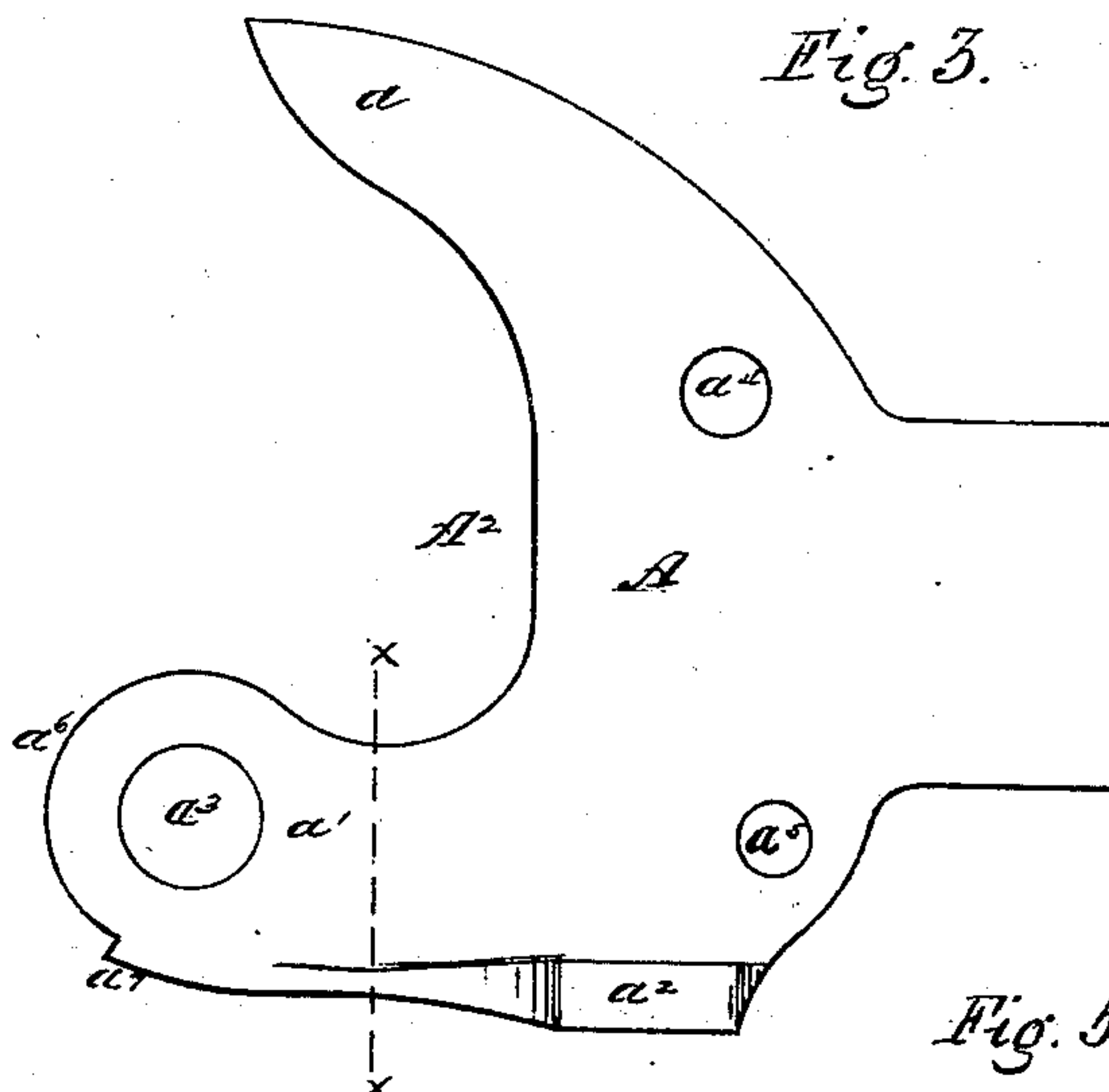


Fig. 3.

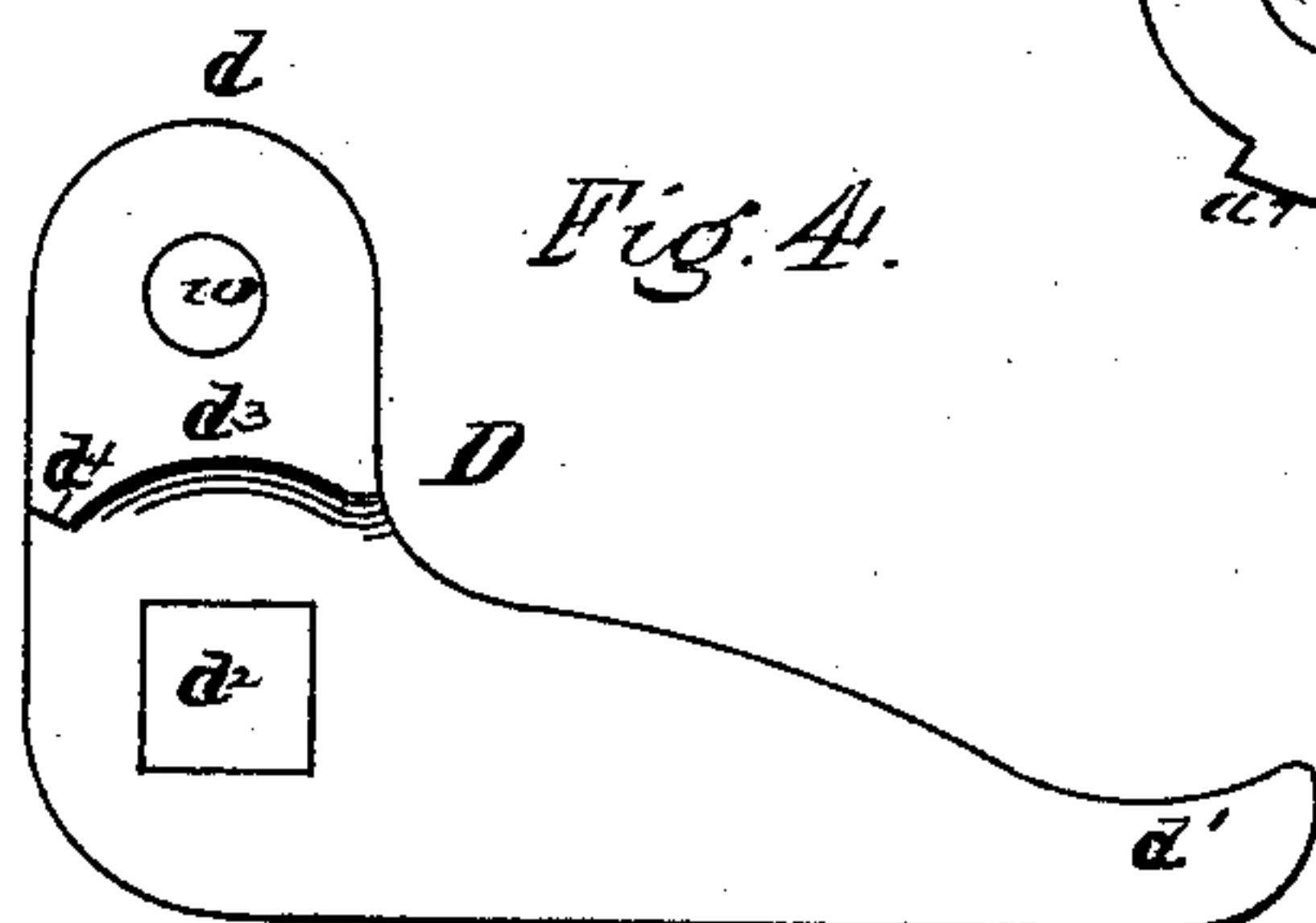


Fig. 4.

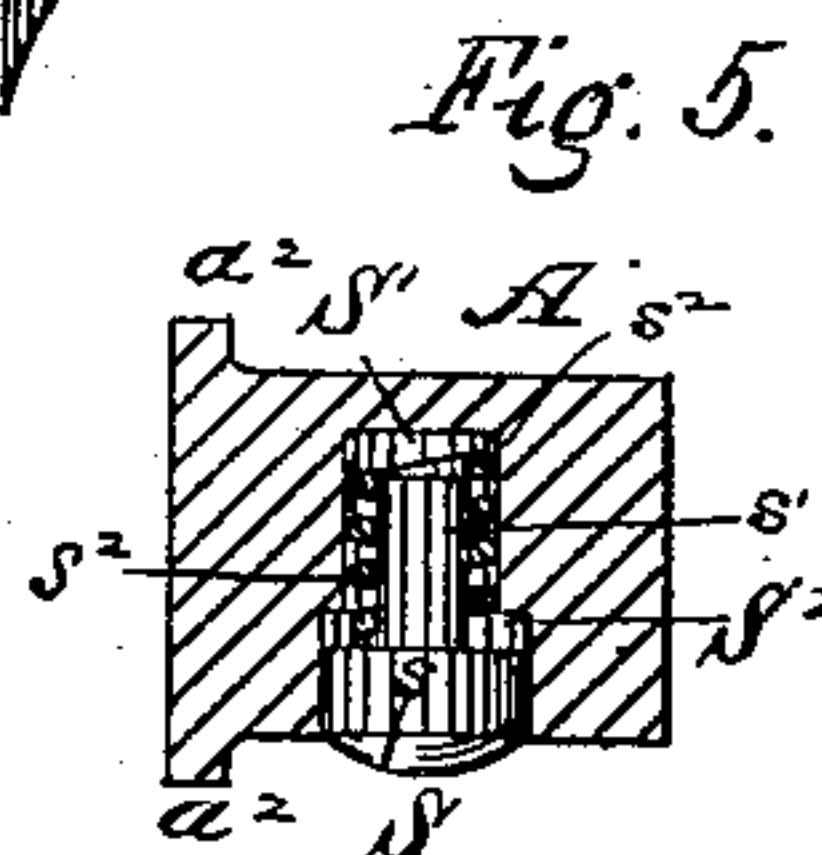


Fig. 5.

Witnesses:
C. L. Parker
R. H. Whittlesey

Inventors James H. Simpson
John T. Wilson.
By Attorney George H. Christy

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2 Sheets—Sheet 2.

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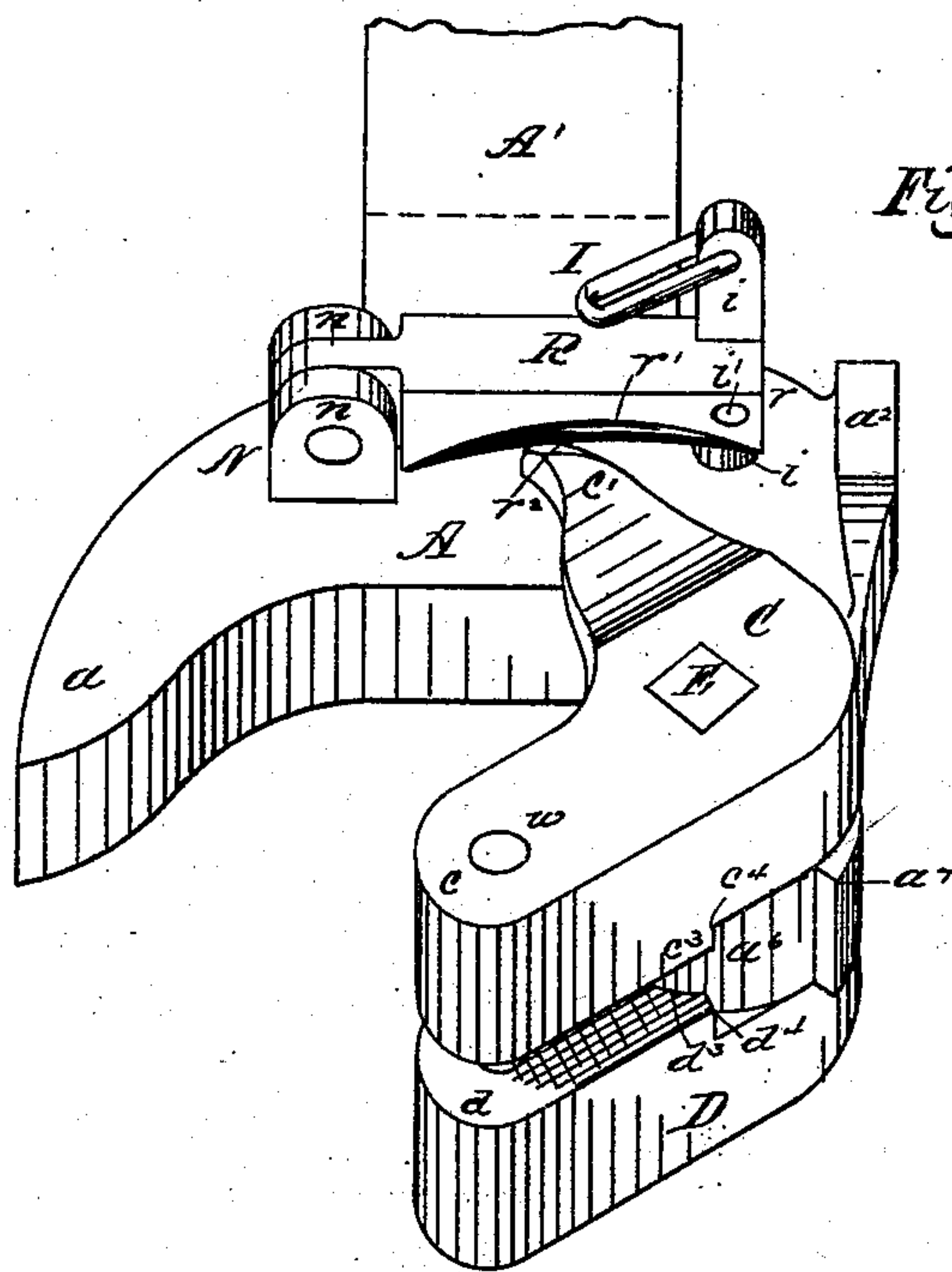


Fig. 6.

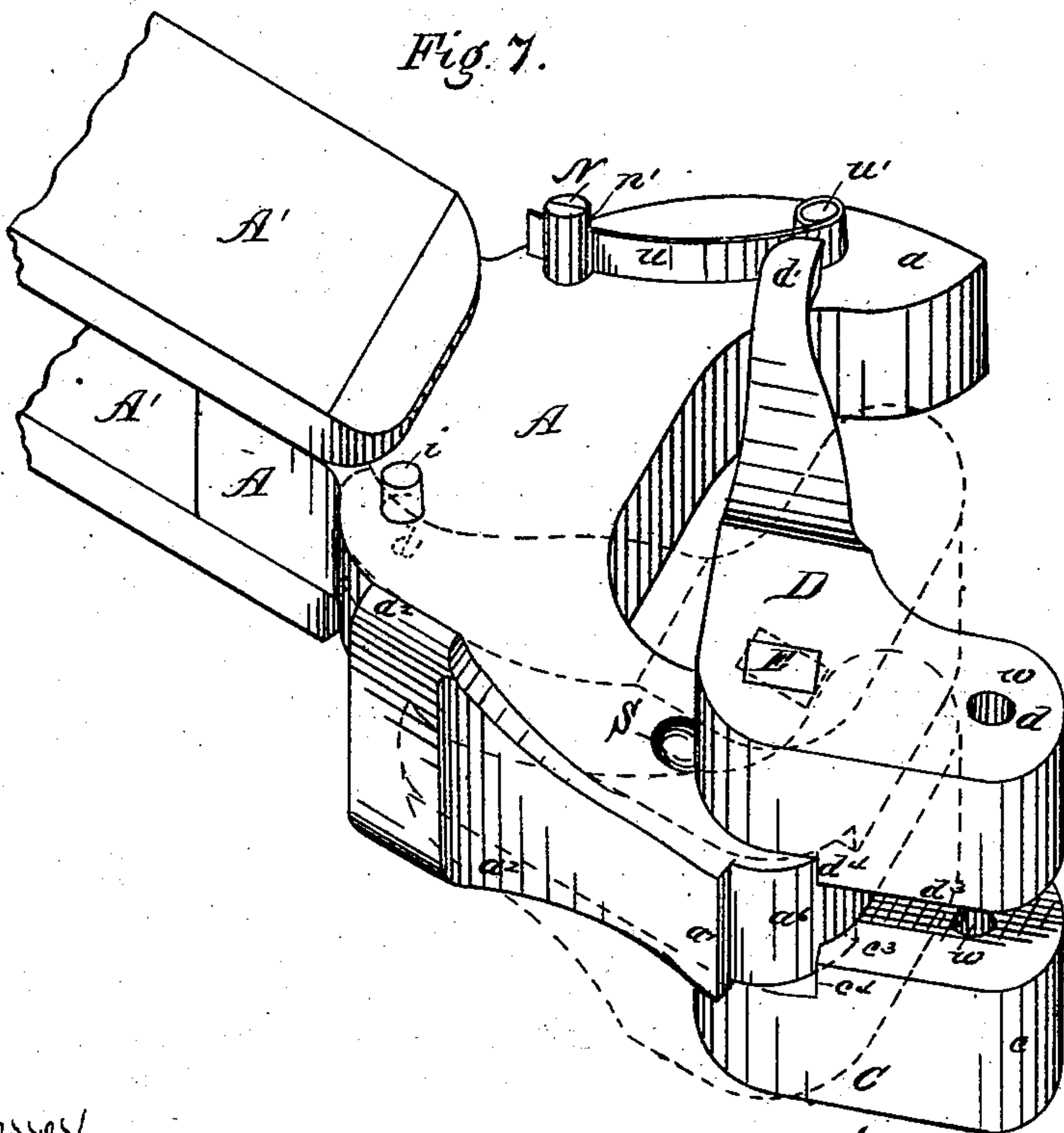


Fig. 7.

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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. 275,721, 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 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 of this specification, in which—like letters indicating like parts—

Figure 1, Sheet 1, is a plan view of our improved automatic coupling. Figs. 2, 3, and 4 are detail views of parts of the coupling. Fig. 5 is a sectional view across one horn of the draw-head, the plane of section being indicated by the line *x x*. Fig. 6, Sheet 2, is a perspective view from the top and front, showing the hooks partially closed; and Fig. 7 is a perspective view of the bottom and back edge.

Our invention relates to that class of automatic couplers in which coupling connection is made by interengagement of swinging hooks pivoted to a fixed head; and it consists, in general terms, of certain combinations of pivoted hooks with a fixed head or draw-bar, new and improved means for locking such hooks in closed position, and also for holding them by a yielding device in open position as against accidental closing, but with provision for closing under the force of the car in the ordinary operation of coupling.

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 degree of strength and security, both 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 preference to or approximately to the desired shape by stamping or cutting with 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, on the edge of the plate, back of the horn *a'*, is left in stamping a surplus of metal, which is subsequently worked or drawn by forging into the raised backs or flanges *a*², which are employed as stops to assist in supporting the 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 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 *c*² *d*², formed in the curve between ends. The hook ends *c d* are thickened by bosses *c*³ *d*³ on their adjacent inner faces, which are curved at their inner edges, fitting the curved end *a*⁶ of the horn *a'*, thus forming the shoulder-abutments to strengthen the pivot-connection to the head, and also affording stops *c*⁴ *d*⁴ at the outer angle of such curved shoulders, which engage a raised shoulder, *a*⁷, on the outer edge of horn *a'* and prevent outward swinging of the hook beyond a given position—say with the hook ends *c d* approximately in the longitudinal line of the coupling. The thickened faces or bosses *c*³ *d*³ 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 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 *c*³ *d*³ for insertion of the ordinary coupling-link when desired, which link may be secured by a pin through 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 *a*³ in horn *a'*, and oval or angular—preferably

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-surfaces 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 in unison upon their common pivot in coupling and uncoupling. In these improvements the inner faces of the hooks form the shoulders $e^3 d^3$, 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 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 $e d$ by the raised back stops or flanges, a^2 , formed on the edge of the head-plate, as before described. By extending these back supports forward toward the pivot-center they relieve both the arms $e' d'$ and pin E from pushing strain, which, coming as heavy blows, might otherwise bend or break them.

In order to lock or hold the hooks in closed position, a pin, i , is passed vertically through a hole, a^5 , in the head A, with its lower end protruding below, (see bottom view, Fig. 6,) in front of the arm d' , which is there indicated in its closed position by dotted lines. The upper arm, e' , which is made shorter than the lower, so as to pass the pin i , (see top view, Fig. 5,) is held, when closed, by the abutting end r of a bar, R, which is secured at its stop end to the pin i by welding or by a pivot-pin, i' , or in other convenient way, and at its other end is pivoted between the ears n of the pin N, which is passed through the hole a^4 in the head A.

In order to raise the bar R and pin i automatically and permit the arms $e' d'$ to close or pass them, the under corner of bar R is beveled out or cut away, forming an incline, r' , against which the beveled end r^2 of arm e' presses, as illustrated in Fig. 5, thereby raising both the bar and pin together. When the arm e' passes the end of bar R, both the bar and pin will fall by gravity, the end of the bar dropping in front of arm e' and the lower end of pin i passing in front of the arm d' , thereby locking both arms in closed position by one movement and operation.

If it is desired to supplement the action of gravity in moving the pin and arm downward, a spring may be secured to the coupling in any convenient way to press downward upon either the bar or pin; or, as an equivalent, either or both these parts may be weighted. We prefer to make both the bar and pin heavy and strong, and the weight thus secured will ordinarily be sufficient to cause their prompt downward movement; also, the weight of the chain or rod I, passing from the pin i to the desired position for uncoupling, will give additional effective weight for moving the bar and pin downward. By pivoting the end of bar R substantially in the line of thrust or strain from

the arm e' , the upper end of pin i is to a great measure relieved from strain; also, by this pivot-connection, the pin i and stop r are prevented from rotating, or, in other words, are held in position to lock the arm or hook. This may be accomplished, however, by means of an angular pin and pin-hole, having on the upper end of such pin a side enlargement corresponding to the stop-shoulder r , with an inclined under face corresponding to the incline r' , for raising such pin by the pressure of the arm e' thereon in closing. We prefer, however, to pivot the bar R in the line of thrust in order to accomplish such results, on account of the increased strength secured thereby.

In order to hold the hooks open in position for coupling, a chamber, S' , is bored in the under face of the horn a' , (see section view, Fig. 5,) in which is placed a pin, S, having a rounded or button head, s , occupying the counterbore S^2 , and a stem, s' , extending therefrom into the chamber. A spiral spring, s^2 , is seated within the chamber around the stem s' , and by its action raises the rounded surface of the button above the face of the draw-head. The pin is located so as to bring its head partially under the hook D when opened (see Fig. 7) and wholly under it when the hook is closed, so that the pin will be forced down and the spring compressed by closing the hooks, thus opposing such closing by the pressure or force of the spring. Instead, however, of seating the spring in a closed chamber to be compressed by a device between it and the hook, a spring, u , may be secured at one end by pin u' on the surface of the draw-head, by preference to the under face of horn a , (see bottom view, Fig. 7,) in position to be pressed by the end of the arm d' . The opposite or free end of the spring is passed loosely through a slot, n' , in the lower end of the pin N, the slot being closed at the end of the pin by heading, if desired, in order to hold the spring therein with freedom of longitudinal movement of the spring. The force of either spring s^2 or u is sufficient to prevent the hook from closing except under greater force applied than is liable to be given by accident; but under the force usually developed in the ordinary operation of coupling cars such springs will be compressed and the hooks be closed.

If desired, the button S and spring s^2 on the spring u may be secured on the upper side of the draw-head; but we prefer to place the one employed on the under side, as it is out of the way in such position and better protected from injury. If desired, other known and suitable forms of springs may be employed, and may be secured to either face of head A in any convenient way in proper position to be compressed by one or the other of the arms e' or d' in the act of closing, whereby the hooks will be prevented from accidental closing. We have shown one method of applying such a spring in a separate application filed even date herewith, serial number 82,069, and claim is there made for the construction and combination described, which

claim is not made in this case. We prefer, however, the button and concealed spring, as it is better protected from injury, and, being placed on the under side, water and snow will be excluded, and therefore it will not be rendered inoperative by freezing.

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

We do not claim herein the combination, broadly considered, of two hooks pivoted one on either side of a head of plate form, such head having raised back stops formed thereon, the same being claimed in the separate application above referred to, our present invention having reference more particularly to the means employed for holding the hooks against a pulling force, and combinations of such means with the hooks, draw-head, and stops; nor do we claim the construction and methods of making such parts, as these features, in so far as they contain patentable invention, will be included in the subject-matter of other applications for patents.

Coupling connection being made between two cars, as illustrated in Fig. 1, the engaging-hooks will be held as against lateral disengagement by the horns a of the draw-head, provision being made in shaping such horns and the recess A^2 for some freedom of movement to permit adjustment of the engaging parts of the coupling for varying positions of the connected cars.

We claim herein as our invention—

1. In a car-coupling, two hooks pivoted to opposite faces of a draw-head, such hooks having rearward extending arms of unequal length, in combination with such head, and with a vertically-movable pin adapted to engage the longer arm with one end, and having at its opposite end a side projecting stop for engag-

ing the shorter arm, substantially as and for the purposes set forth.

2. In combination with a draw-head, two swinging hooks pivoted thereto on opposite sides, having rearward-extending arms of unequal length, a vertically-movable pin adapted to engage the longer arm by one end, and having on its opposite end a side projection adapted to engage the shorter arm, and mechanism, substantially as described, for preventing such pin from turning axially under pressure upon its side projection.

3. In combination with draw-head A, two hooks, C D, pivoted to opposite sides of the head, pin i , and bar R, secured at one end to the pin, and pivoted at its opposite end to the head in the direction of strain thereon from the hooks, substantially as set forth.

4. The combination of draw-head a , a swinging hook, C, pivoted to the face of the head and carrying a rearward-projecting arm, c' , a pivot-pin, N, secured to the head, and bar R, pivoted at one end to the pin, and free to be lifted at its opposite end by pressure on its under face by the end c' of the hook, substantially as set forth.

5. The draw-head A, having raised stops or flanges a^2 , formed on its back edge, in combination with pivoted hooks C D, having rearward-extending arms $c' d'$, of unequal length, pin i , and bar R, secured at one end to the pin, and pivoted at its opposite end to the head, substantially as set forth.

6. The combination of draw-head A, having a chamber, S' , in its under face, two hooks, C D, rigidly connected and pivoted by a common pin on the upper and under faces of the draw-head, button or pin S, and spring s^2 , seated in the chamber, substantially as described, whereby both hooks are prevented from accidental closing and water is excluded from the chamber.

7. The combination of draw-head A; two hooks, C D, rigidly connected, and pivoted by a common pin to opposite faces of the head, such hooks having extended arms $c' d'$ and a spring located on the under face of the head in position to be compressed by the lower arm as the hooks are closed, substantially as set forth.

In testimony whereof we have hereunto set our hands.

JAMES H. SIMPSON.
JOHN T. WILSON.

Witnesses:

R. H. WHITTLESEY,
C. L. PARKER.