

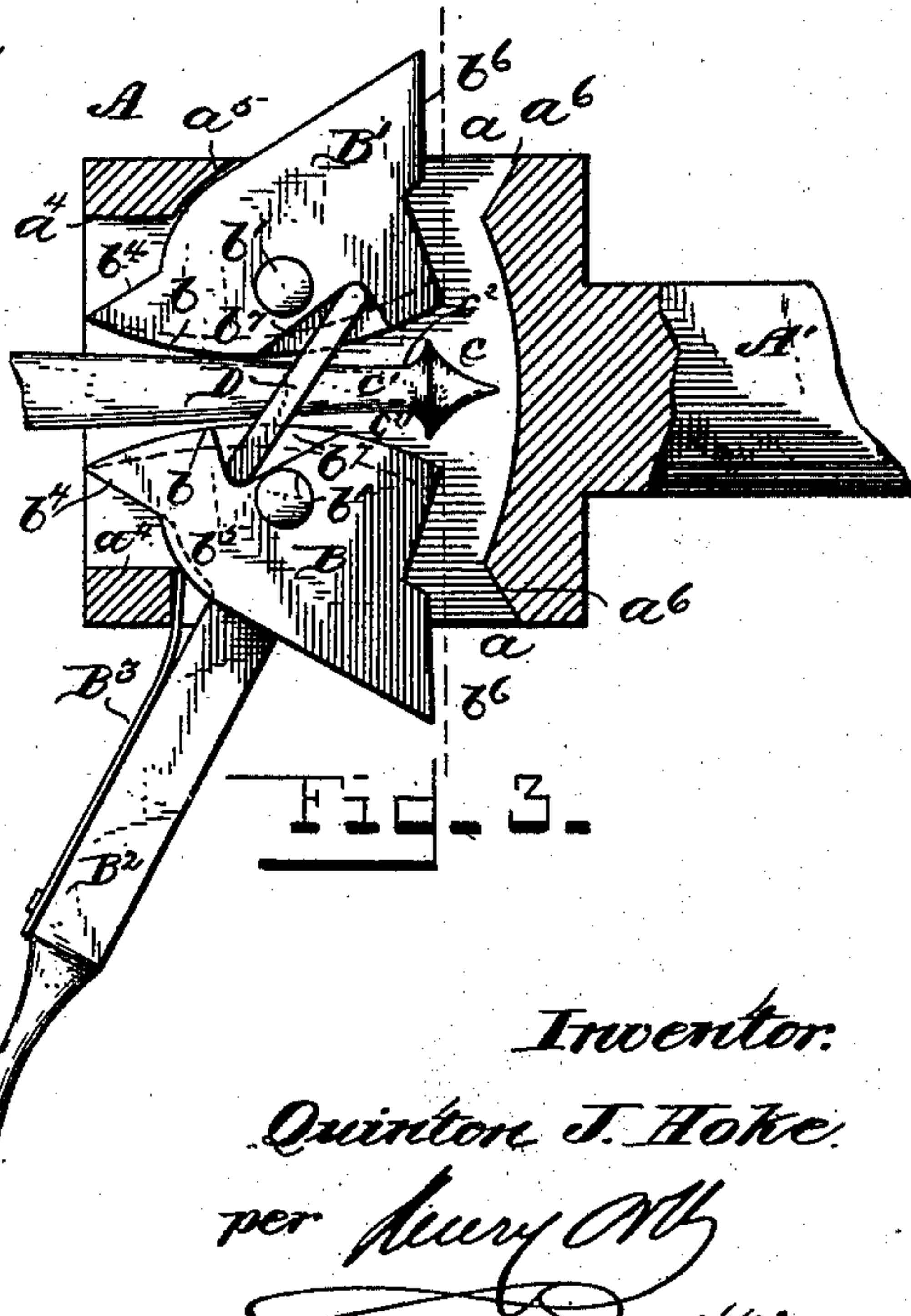
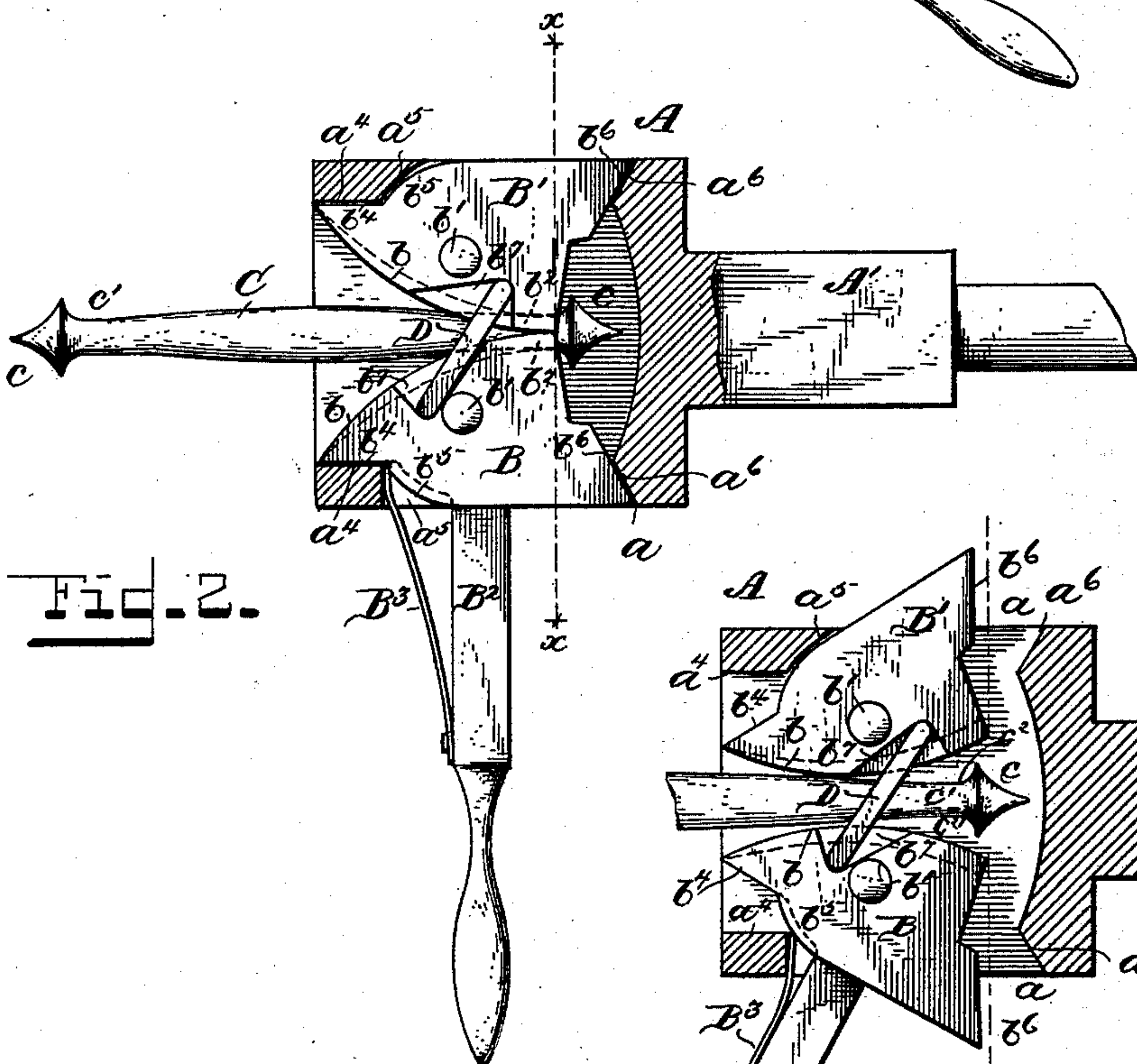
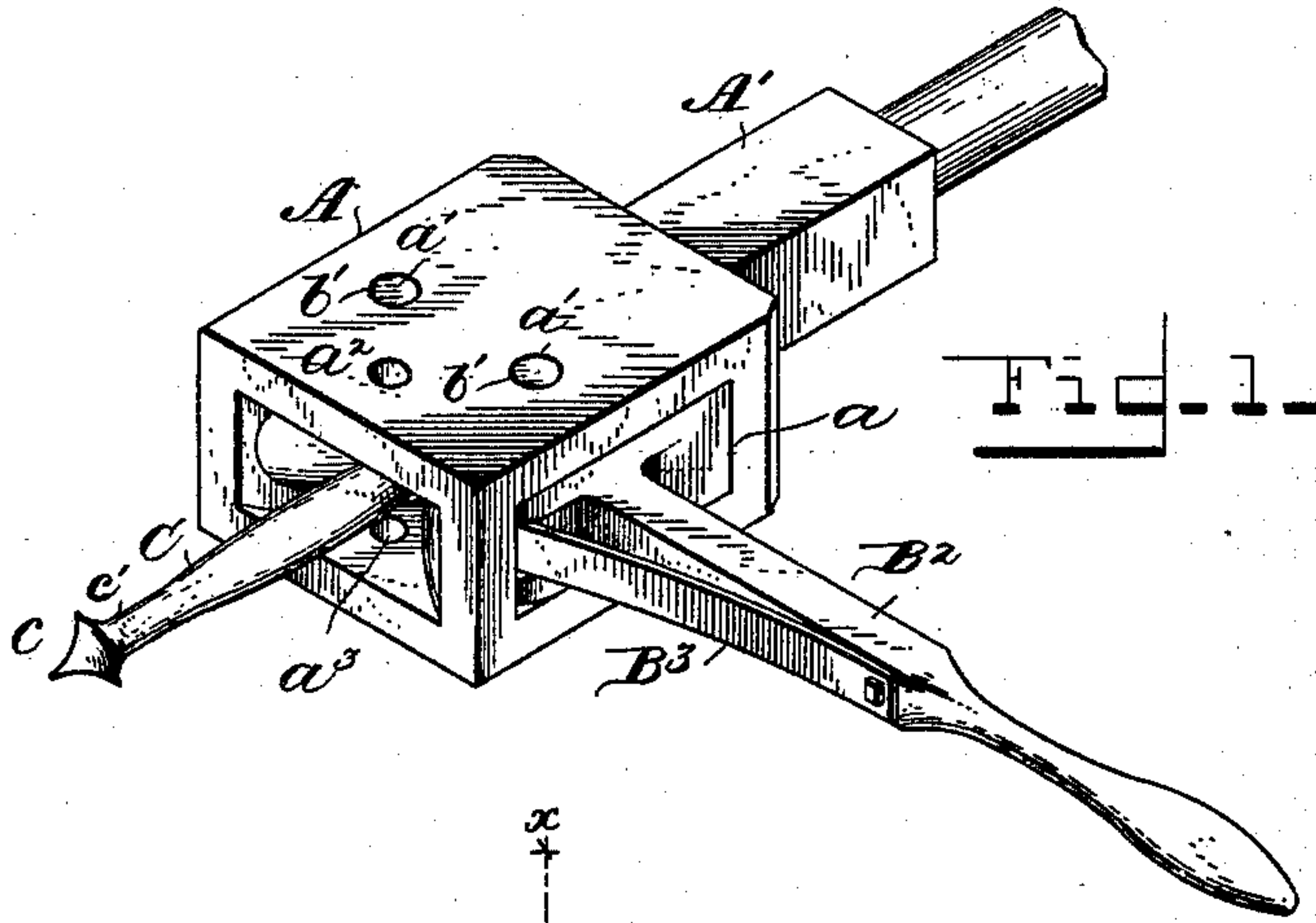
(No Model.)

3 Sheets—Sheet 1.

Q. J. HOKE.
CAR COUPLING.

No. 409,967.

Patented Aug. 27, 1889.



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Inventor:
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(No Model.)

3 Sheets—Sheet 2.

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Fig. 4.

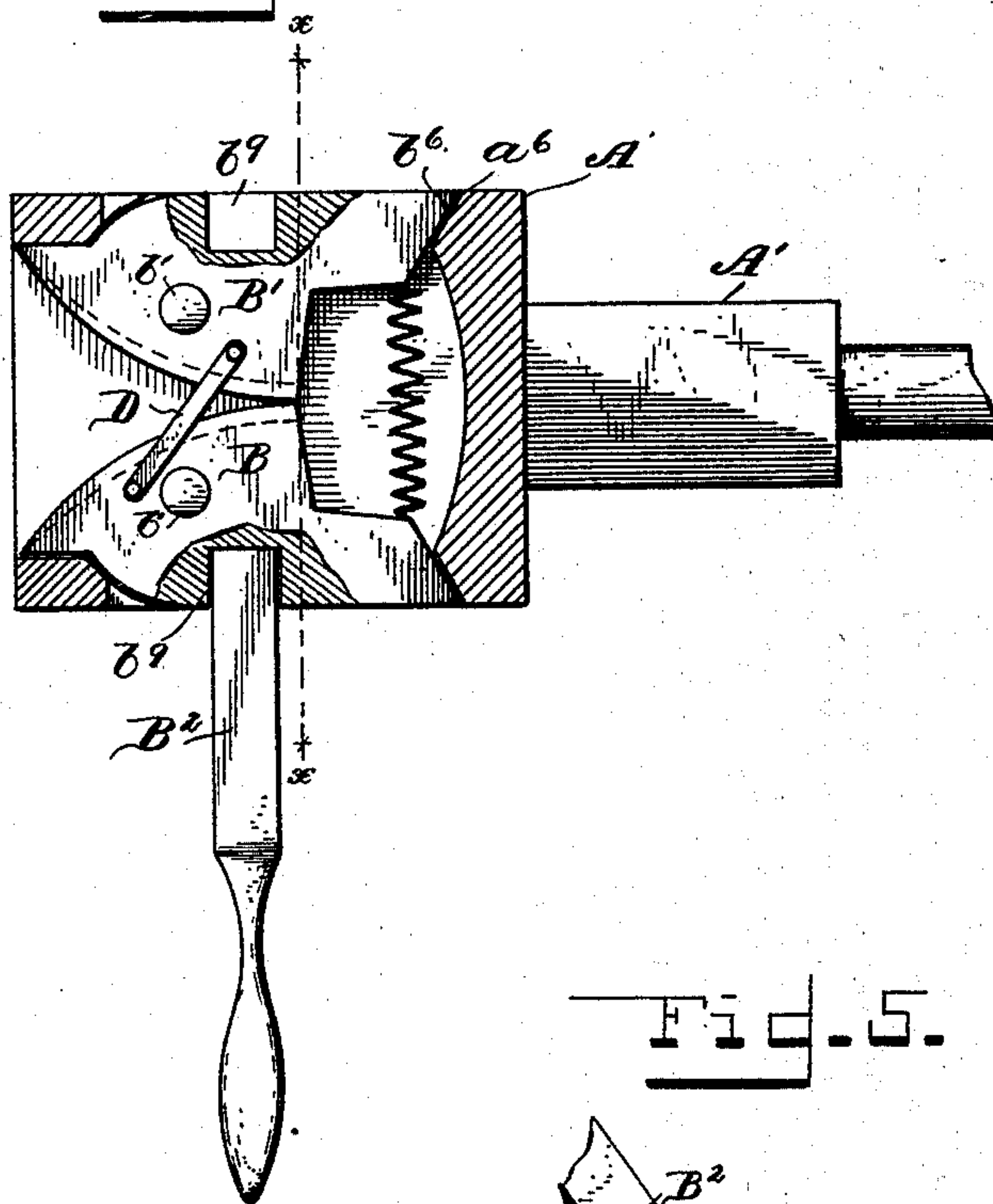


Fig. 6.

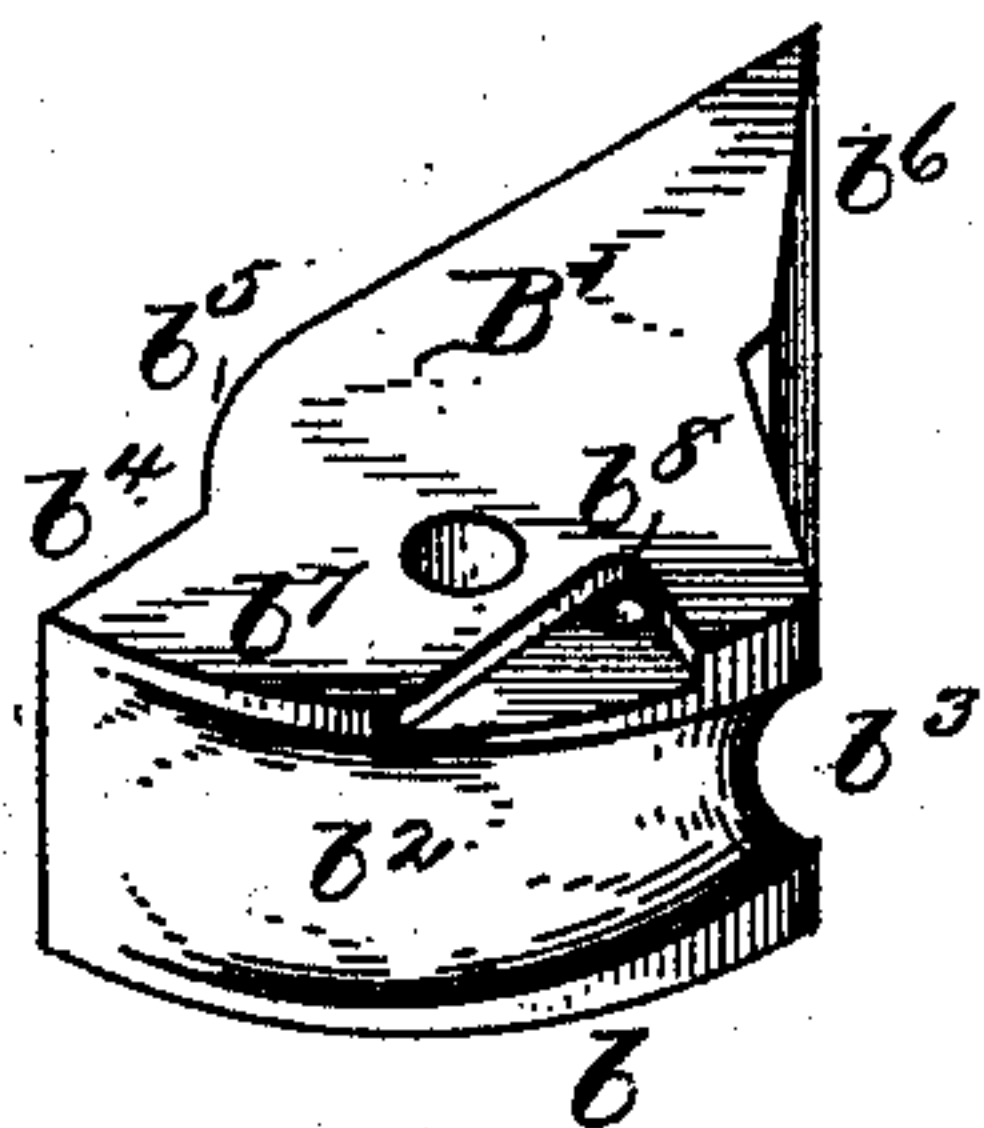
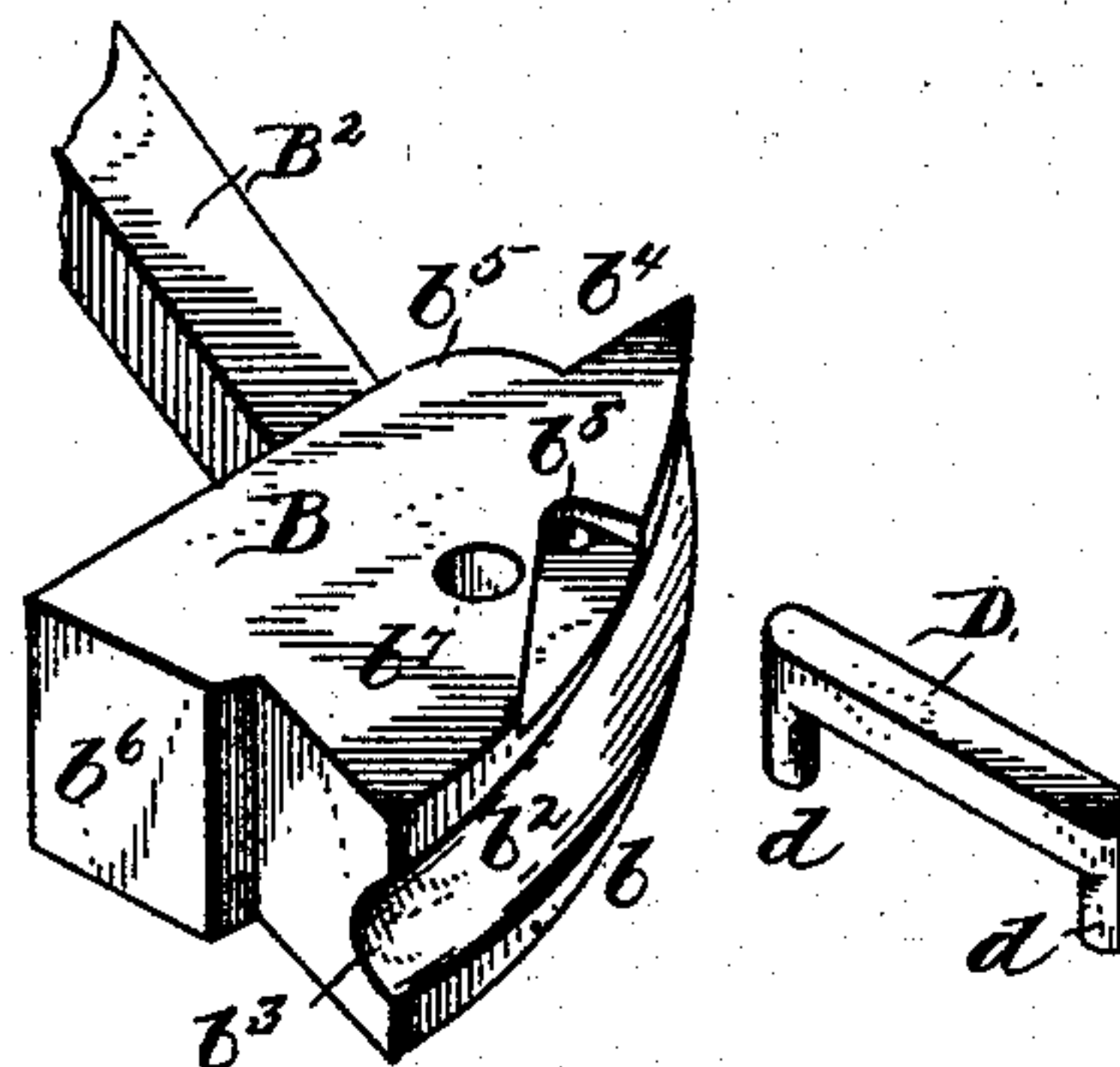


Fig. 5.



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(No Model.)

3 Sheets—Sheet 3.

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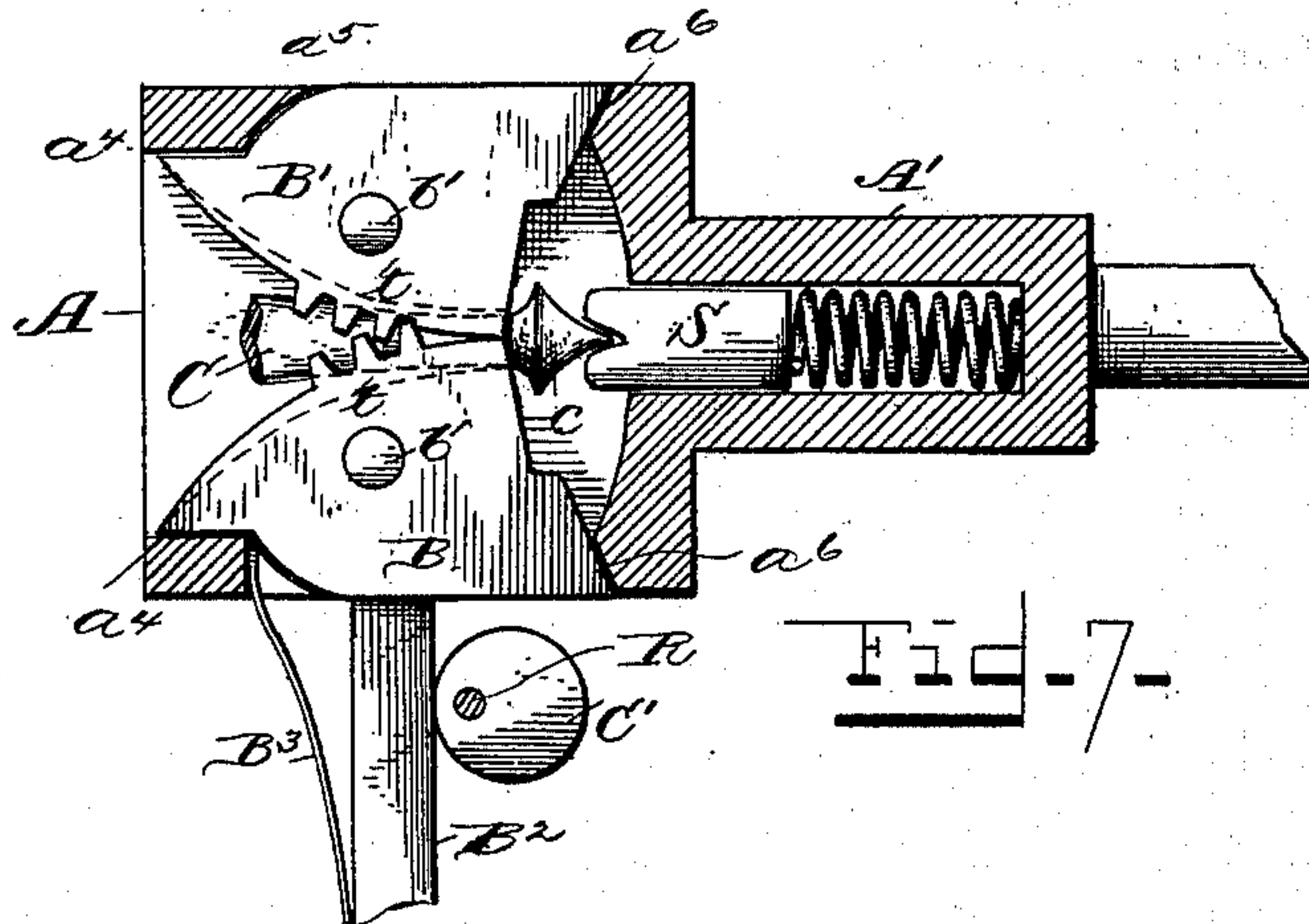
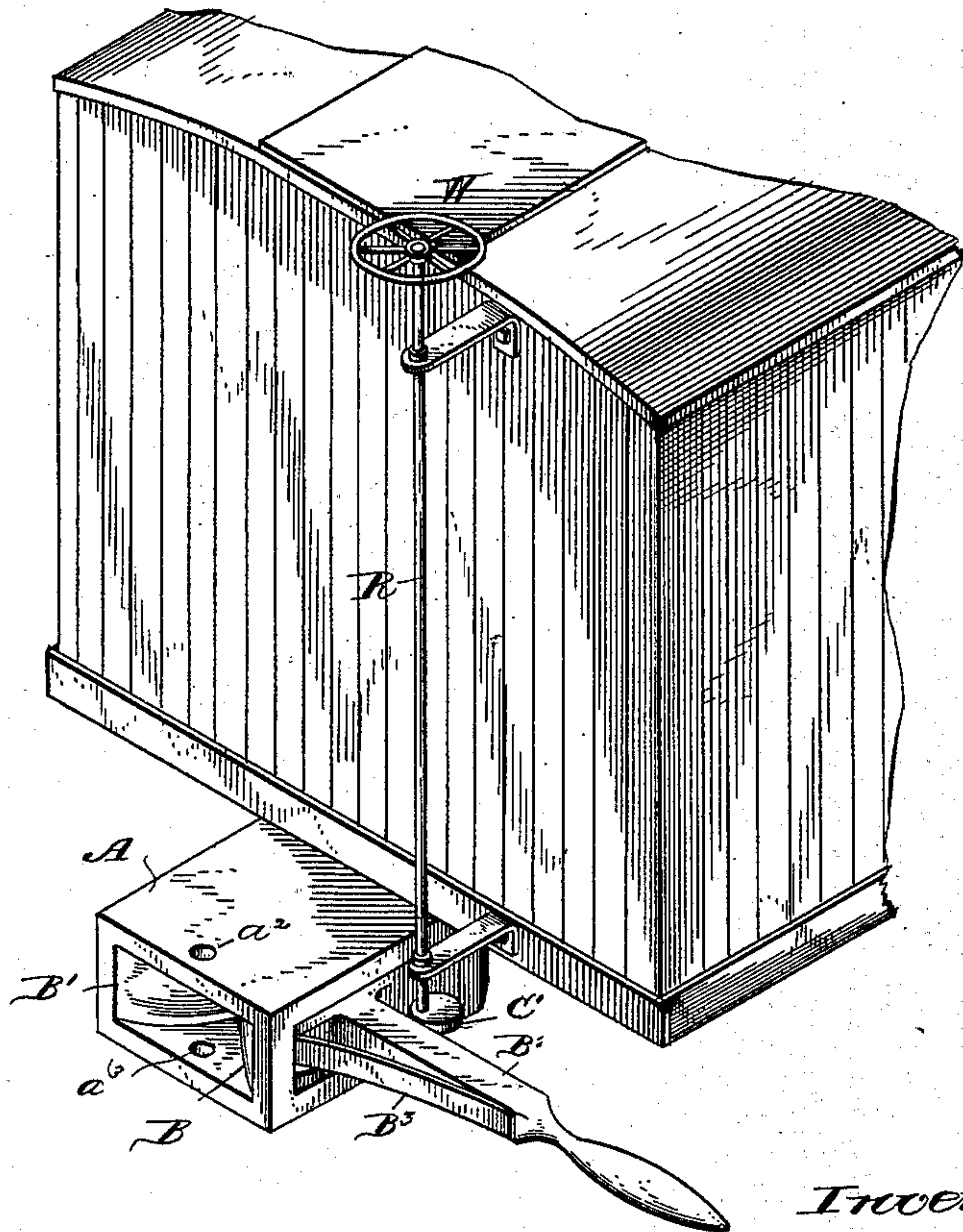


Fig. 8.



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UNITED STATES PATENT OFFICE.

QUINTON J. HOKE, OF YORKVILLE, SOUTH CAROLINA, ASSIGNOR TO HIMSELF
AND JOHN ROBERT LINDSAY, OF SAME PLACE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 409,967, dated August 27, 1889.

Application filed April 4, 1889. Serial No. 305,916. (No model.)

To all whom it may concern:

Be it known that I, QUINTON JEROME HOKE, a citizen of the United States, residing at Yorkville, in the county of York and State of South Carolina, have invented certain new and useful Improvements in Car-Couplers; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Referring to the drawings, Figure 1 is an isometric view of a coupler constructed according to my invention. Fig. 2 is a plan view thereof, the top of the draw-head being removed and the draw-bar broken away in part, showing the coupling-bar in its coupled position. Fig. 3 is a like view showing the coupling-jaws in the position they assume in uncoupling. Fig. 4 is a like view showing a modification in the connection of the coupling-jaws and in the application of the spring for holding the jaws in their normal position. Figs. 5 and 6 are isometric views of the coupling-jaws and their connecting-link detached, the hand-lever connected with one of the jaws being partly broken away. Fig. 7 is a view similar to that shown in Fig. 2, illustrating another modification in the means employed for connecting the coupling-jaws; and Fig. 8 is an isometric view showing the coupler in combination with mechanism for operating the same from the top of a car.

The invention relates to railway-car couplers, and more particularly to that class known as "arrow-head" couplers; and it consists in the combination of two synchronously-movable coupling-jaws and their combination with the draw-head and uncoupling-lever, and in the construction of the jaws and draw-head, and in means for uncoupling from the top of a car, substantially as hereinafter more fully described, and as set forth in the claims.

The invention has for its object to simplify the construction of car-couplers of the class referred to and increase their efficiency, and

to provide a simple means for uncoupling the cars from the side or from the top thereof.

In the drawings, A' indicates the draw-bar, and A the draw-head, which latter is of rectangular form and hollow and provided with openings *a* in the opposite sides thereof; also with pivot-bearings *a'* *a'* for the pivot-pins *b'* of the coupling-jaws, and with holes *a*² *a*³ in its roof and floor, respectively, for the reception of the pin where the coupler is to be used as a link-and-pin coupler.

B and B' are the coupling-jaws, so constructed and fitted within the draw-head that they will completely close the lateral openings *a* in said draw-head when in their normal position, thus preventing all access of dust or dirt at those points to the interior of the draw-head, as well as all access thereto of moisture or snow, by which the operation of the coupler may be impaired. As shown, the inner faces of the coupling-jaws are curved outwardly, or from a point from the inner rear edge to the outer edge of the jaw, the curvilinear face being a segment of a circle whose center *x* lies in or approximately in the plane of said rear face or edge of the jaw, as shown in Figs. 2 and 4. In this curvilinear face *b* of the jaw is formed a groove *b*² for the passage of the coupling-bar C, that is provided at each end with what is commonly termed an "arrow-head" *c*. The groove *b*² in jaws B B' is gradually expanded or widened from its rear to its forward end, where it substantially merges with or into the face of the jaw, so that when said jaws are in their normal position (shown in Figs. 1, 2, and 4) they will form a flaring passage whose inner end is substantially cylindrical for a portion of its length, then gradually widens to the outer edges of the inner faces of the jaws, which are pivoted within the draw-head A on pivots *b'*, fitted in the bearings *a'* in the draw-head, previously described. The object of this construction of the groove *b*² in the jaws is to provide in each jaw a semi-cylindrical bearing of a certain length to form a cylindrical bearing for the corresponding throat *c'* of the coupling-bar C immediately back of the arrow-heads to firmly hold the bar between the jaws, yet allow it a lateral,

as well as a vertical, motion within certain limits, to permit the bar to swing to one or the other side when a train travels over a curve, or to permit of the coupler being used on cars differing in height.

To facilitate the play of the coupling-bar C, it is made slightly conical or flaring, as shown at c^2 , from the greatest diameter of the head c thereof to the throat or cylindrical part c' , as it is obvious that were the greatest diameter of said head to bear directly against the rear face of the jaws neither lateral nor vertical motion could take place to any extent, and a coupling-bar so constructed can only be employed in case such play is not necessary.

The outer faces of the coupling-jaws are constructed with a vertical bearing-surface b^4 at the forward end that bears against a corresponding face a^4 on the side wall of the draw-head A, and with a curvilinear portion a^5 , that is a segment of a circle drawn from the pivot-center of the jaw, and that bears against a like face a^5 of the forward vertical wall of the opening a in the lateral walls of the draw-head A, as shown in Figs. 2 and 4, thus permitting the jaws to be rotated on their pivots in uncoupling.

From the curved portion b^5 of the jaw to the rear end thereof the outer vertical face is rectilinear, and when in a normal position flush with the lateral outer faces of the draw-head.

The front end of the jaws extends substantially to the edge of the mouth of the draw-head, so that said jaws form with the draw-head a flaring mouth or passage for the coupling-bar C, whereby it is properly guided, and as the forward end of the jaws bears against the side walls of the draw-head access of dust or dirt, or moisture, or snow between the bearing-surfaces is effectually prevented.

At the rear end the jaws B B' are provided with inwardly-beveled bearing-faces b^6 , that bear against corresponding faces a^6 , formed by the rear vertical face of the opening a in the draw-head, thus completely relieving the pivot-pins from all strain or pull and push or thrust, such strain or pull being taken up by the bearing-faces a^4 , a^5 , and a^6 of the draw-head, while the thrust is taken up by the buffer-face of the draw-head.

Various means may be adopted to cause the locking-jaws to move synchronously on their pivots in uncoupling. The jaws may be connected together by a link D, that consists simply of a flat bar having at each end a journal or pivot d at right angles to the bar, which journal fits into a socket b^8 , formed in the upper face of the coupling-jaws, which latter are provided with a recessed portion b^7 , in which said link D lies and moves. The position of the socket b^8 is such that the link will engage the moving jaw B near the forward end of the recess and the moved jaw B' near the rear end thereof, so that when

said jaw B rotates inwardly the jaw B' will be caused to move in the same direction. This may be effected by an ordinary link pivoted to the jaws, as shown in Fig. 4, and instead of forming the recess in which the link lies and moves in the jaws themselves such recess may be formed in the roof of the draw-head. Finally, the jaws may be geared together, as shown in Fig. 7, each jaw being provided with gear-teeth t , formed in the faces thereof on one or both sides of the groove. The front face of the draw-head being polygonal, it affords an extended buffer-surface when two cars come together.

To uncouple the cars and to hold the coupling-jaws in their normal position, the jaw B has or may have formed thereon a hand-lever B^2 , that projects laterally therefrom, and is of such length as to be readily manipulated from the side of the cars. To said lever B^2 is attached one end of a spring B^3 , whose other end bears against the front wall of the slot a in that side of the draw-head, and operates to return the coupling-jaws into their normal position when moved out of it through the medium of the lever. Instead of connecting the spring with the hand-lever, the tail of the jaws, or that portion having the bearing-face b^6 , may be made slightly longer and the jaws connected by a coiled spring s , as shown in Fig. 4, in which case the hand-lever may be made detachable from the jaw B, and both jaws may be provided with a socket b^9 for the reception of a hand-lever, so that cars may be uncoupled from either side.

When the coupler is used on freight-cars, I provide a simple means for operating the uncoupling-lever B^2 , which consists of an operating-rod R, provided with a hand-wheel W, said rod carrying a cam C' at its lower end that operates upon lever B^2 when the rod is turned, as shown in Fig. 8.

It is obvious that when the hand-lever is moved forwardly the front end of the jaw B will move inwardly and the rear end thereof outwardly, a similar movement being imparted to the jaw B' through the link D. This causes the rear end of the passage-way for the coupling-bar C to spread or become enlarged sufficiently to permit the arrow-head c thereof to pass freely through that portion of the groove which is semi-cylindrical, and as the groove gradually widens from that point to the forward end of the jaws, and as the proximate faces of said jaws are arcs or segments of two adjacent circles, the passage gradually widens also, thus allowing the bar C to move freely from between the jaws. When the lever is released, the spring will at once move the jaws back into their normal positions. The coupling is effected automatically, as when the bar C moves into the draw-head between the jaws the latter will turn on their pivots in the same manner as when they are actuated by the hand-lever, allowing the said bar C to pass between them, and moving back into

their normal positions under the stress of the spring as soon as the arrow-head c on the bar C has cleared the rear end b^3 of the grooves b^2 .

In couplers for passenger-cars it is desirable that the coupling link or bar be held more or less steady to prevent too great a swaying or lateral motion of the cars, and it is also desirable that either in coupling or in stoppages the cars should not come together with too great a shock, which is now solely counteracted by the spring-buffers. These results I attain by the use of a spring-actuated block or shoe S , recessed to receive the end of the coupling-bar, as shown in Fig. 7, an elastic bearing being thus provided for the said bar that will effectually take up the thrust and at the same time hold said bar steady.

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

1. In a car-coupler of the class described, the combination, with an arrow-headed coupling-bar and the draw-head having a cavity of substantially rectangular form in cross-section, of coupling-jaws pivoted therein and having their proximate faces of curvilinear form, the outer edges thereof extending to the like edges of the draw-head cavity and having a groove formed in said proximate faces, substantially semi-cylindrical at its rear end, from which point to the forward edge of the jaws said groove gradually increases in width and decreases in depth to form a gradually-widening or outwardly-flaring passage from the rear edge of the jaws to the forward edge of the draw-head cavity, for the purpose specified.

2. In a car-coupler of the class described, the combination, with the draw-head and an arrow-headed coupling-bar, of two coupling-jaws pivoted within the draw-head and having their proximate faces of curvilinear form, and a groove formed in each of said faces, a link D , pivotally connecting the jaws, as described, and a spring to hold said jaws in a normal position, substantially as and for the purposes specified.

3. In a car-coupler of the class described, the combination, with the draw-head provided with the bearing-faces $a^4 a^6$, of two coupling-jaws pivoted within said draw-head and having corresponding bearing-faces $b^4 b^6$, substantially as and for the purposes specified.

4. In a car-coupler of the class described, the combination, with the draw-head provided with the bearing-faces $a^4 a^5 a^6$, of two coupling-jaws pivoted within said draw-head and having corresponding bearing-faces $b^4 b^5 b^6$, substantially as and for the purposes specified.

5. In a car-coupler of the class described, the combination, with the draw-head, of two coupling-jaws pivoted therein and provided with a recess b^7 , and a socket b^8 , arranged relatively, as described, a connecting-link consisting of a bar D , having journals or pivots d at right angles thereto and fitting into said

sockets of the jaws, and a spring to hold the jaws in a normal position within the draw-head, substantially as and for the purposes specified.

6. In a car-coupler of the class described, the combination, with the draw-head, two coupled or connected and synchronously-movable coupling-jaws pivoted therein, and a spring for holding the jaws in a normal position, of an actuating-lever extending laterally from one of the jaws for revolving the same on its pivot against the stress of the spring, substantially as and for the purpose specified.

7. In a car-coupler of the class described, the combination, with the draw-head and two coupled or connected and synchronously-movable coupling-jaws pivoted therein, said jaws having a socket b^9 , of a hand-lever for rotating one of said jaws on its pivot against the stress of the spring, said hand-lever fitting into said socket, substantially as and for the purposes specified.

8. In a car-coupler of the class described, the combination, with the draw-head and two coupled or connected and synchronously-movable coupling-jaws pivoted therein, of an actuating-lever extending laterally from one of said jaws, and a spring having its bearings on the lever and draw-head for holding the jaws in a normal position, substantially as and for the purpose specified.

9. In a car-coupler of the class described, the combination, with the coupling-jaws $B B'$, provided in their curvilinear proximate faces with a groove of substantially semi-cylindrical form at the rear end and gradually widening and decreasing in depth from that point to the forward end, of an arrow-headed coupling-bar C , having a throat c' , of cylindrical form in cross-section, immediately back of its arrow-head and increasing in diameter from that point to its longitudinal center, substantially as and for the purpose specified.

10. The combination, with the draw-head A , provided with openings a in its opposite sides and with bearing-faces a^4, a^5 , and a^6 , of the coupling-jaws $B B'$, constructed as described and fitted within the draw-head so that their outer lateral faces will lie flush with the corresponding faces of the draw-head and completely close the opening a therein, said jaws being pivoted within said draw-head and provided with corresponding bearing-faces b^4, b^5 , and b^6 , substantially as and for the purposes specified.

11. The combination, with the draw-head, the coupling-jaws, and the lever B^2 , of an actuating-rod R and a cam C' , secured thereto and arranged to operate on said lever, substantially as and for the purposes specified.

12. In a car-coupler of the class described, the combination, with the coupling-jaws $B B'$, having their proximate faces of curvilinear form and provided with a groove of substantially semi-cylindrical form at the rear end, and having square vertical rear faces, of an

arrow-headed coupling-bar C, having a flaring portion c^2 , and a cylindrical throat c' in rear of the greatest diameter of the arrow-head, substantially as and for the purpose specified.

13. In a car-coupler of the class described, the combination, with the coupling-jaws B B', having their proximate faces of curvilinear form and provided with a groove of substantially semi-cylindrical form at the rear end, and having square vertical rear faces inclin-

ing toward each other, of an arrow-headed coupling-bar C, having a flaring portion c^2 , and a cylindrical throat c' in rear of the greatest diameter of the arrow-head, substantially as and for the purpose specified. 15

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

QUINTON J. HOKE.

Witnesses:

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JOS. F. WALLACE.