

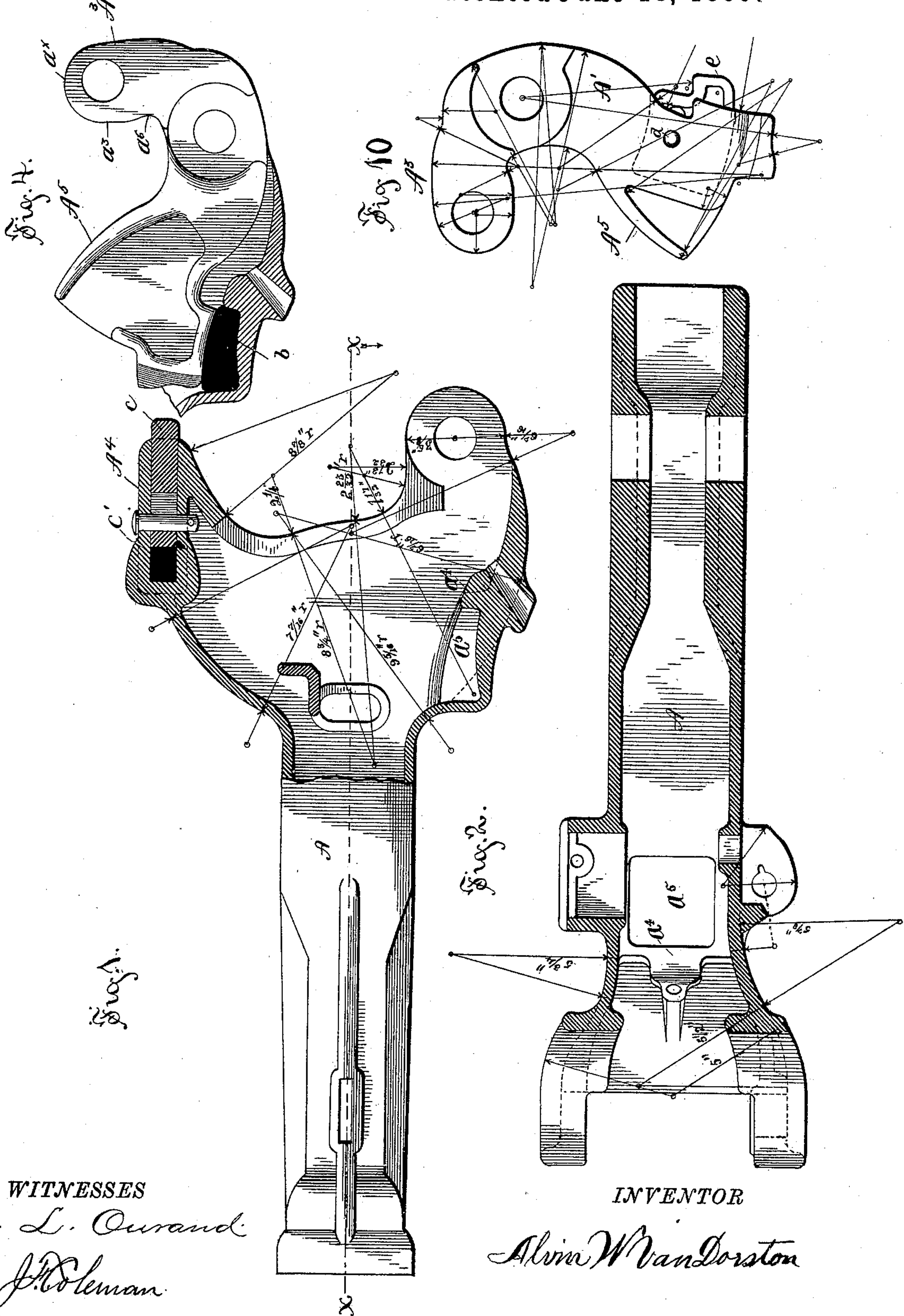
(No Model.)

4 Sheets—Sheet 1.

A. W. VAN DORSTON.
CAR COUPLING.

No. 405,384.

Patented June 18, 1889.



WITNESSES

F. L. Ourand
J. Coleman

INVENTOR

Alvin W. VanDorston

(No Model.)

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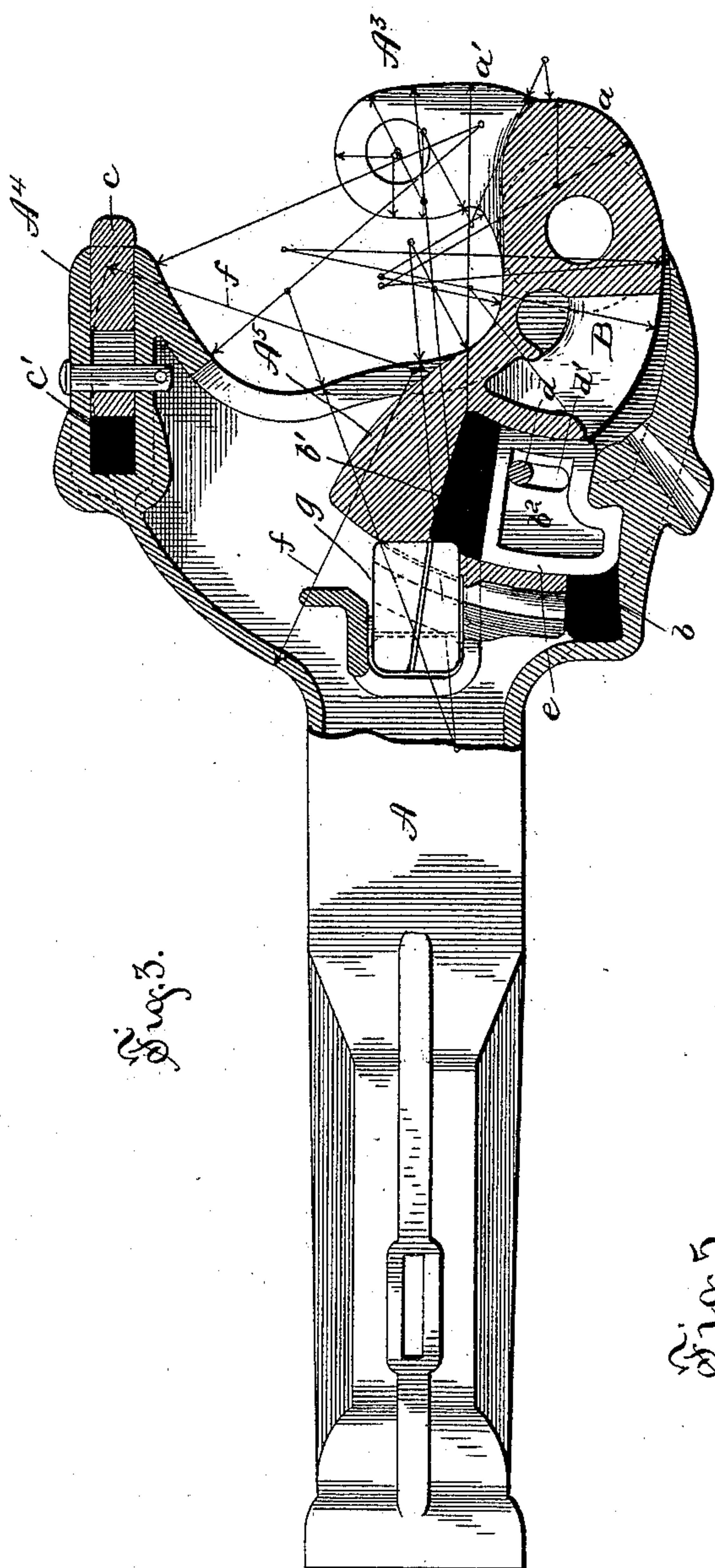


Fig. 3.

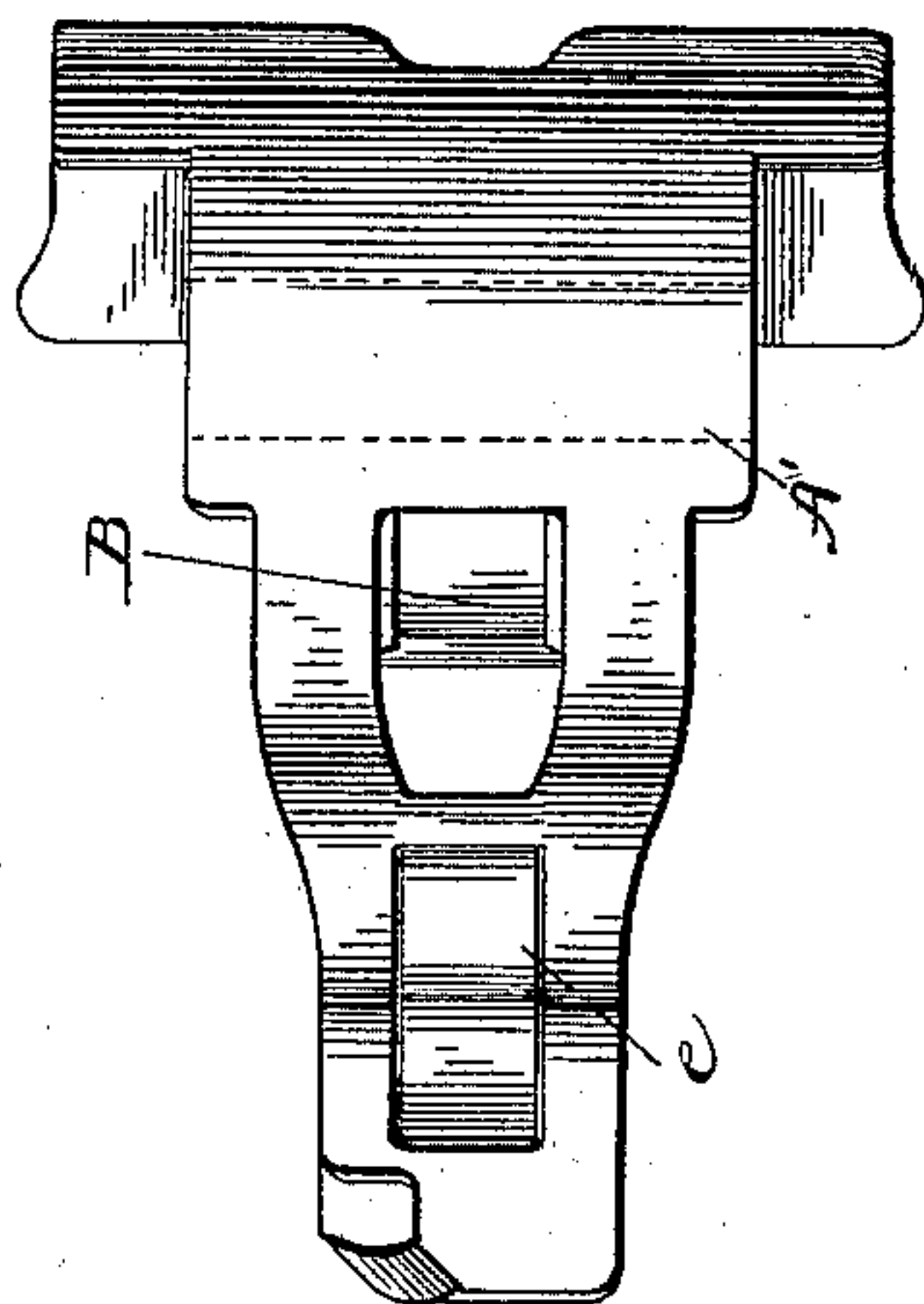


Fig. 6.

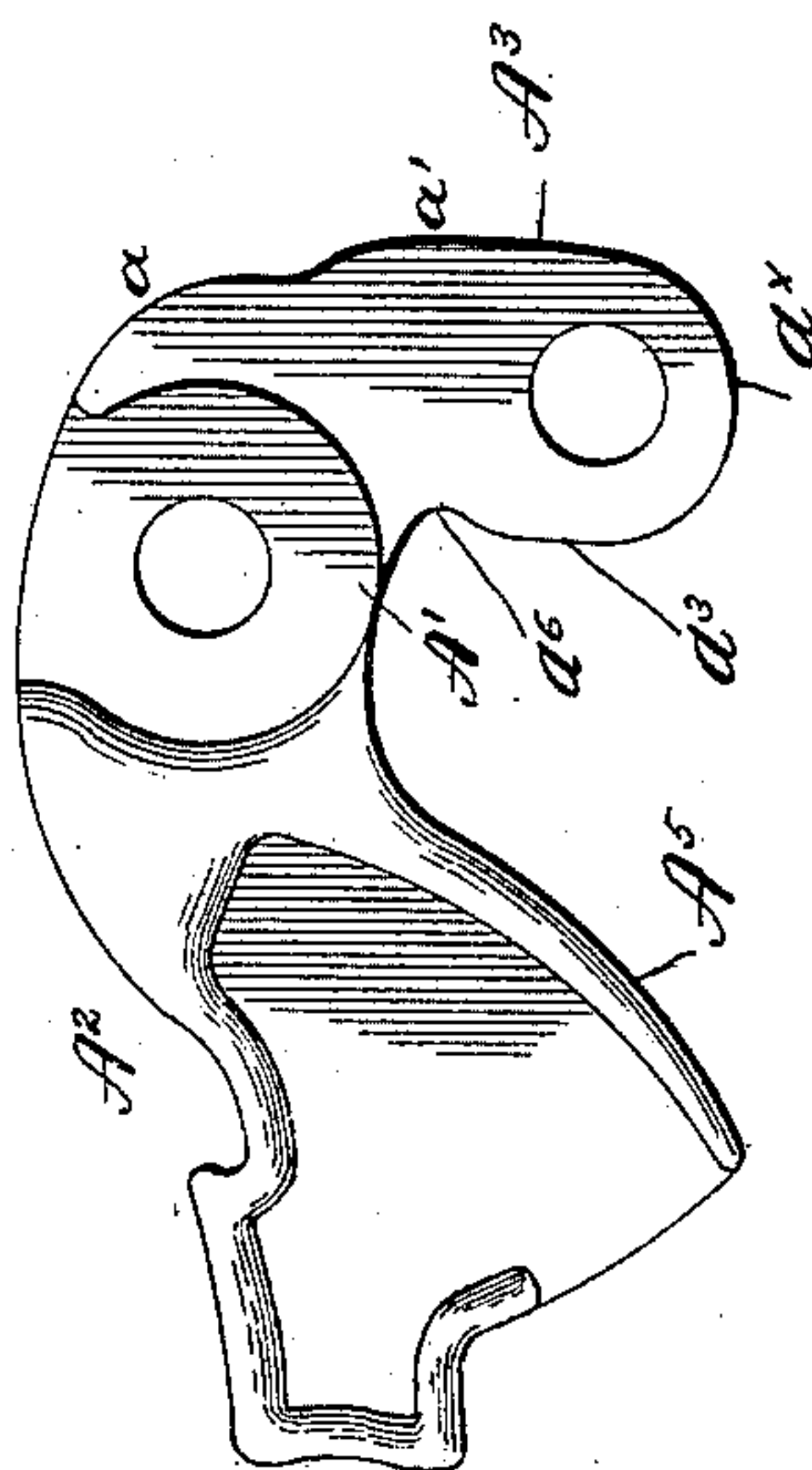


Fig. 5.

WITNESSES

F. L. Curand
J. Coleman

INVENTOR

Alvin W. VanDorston,

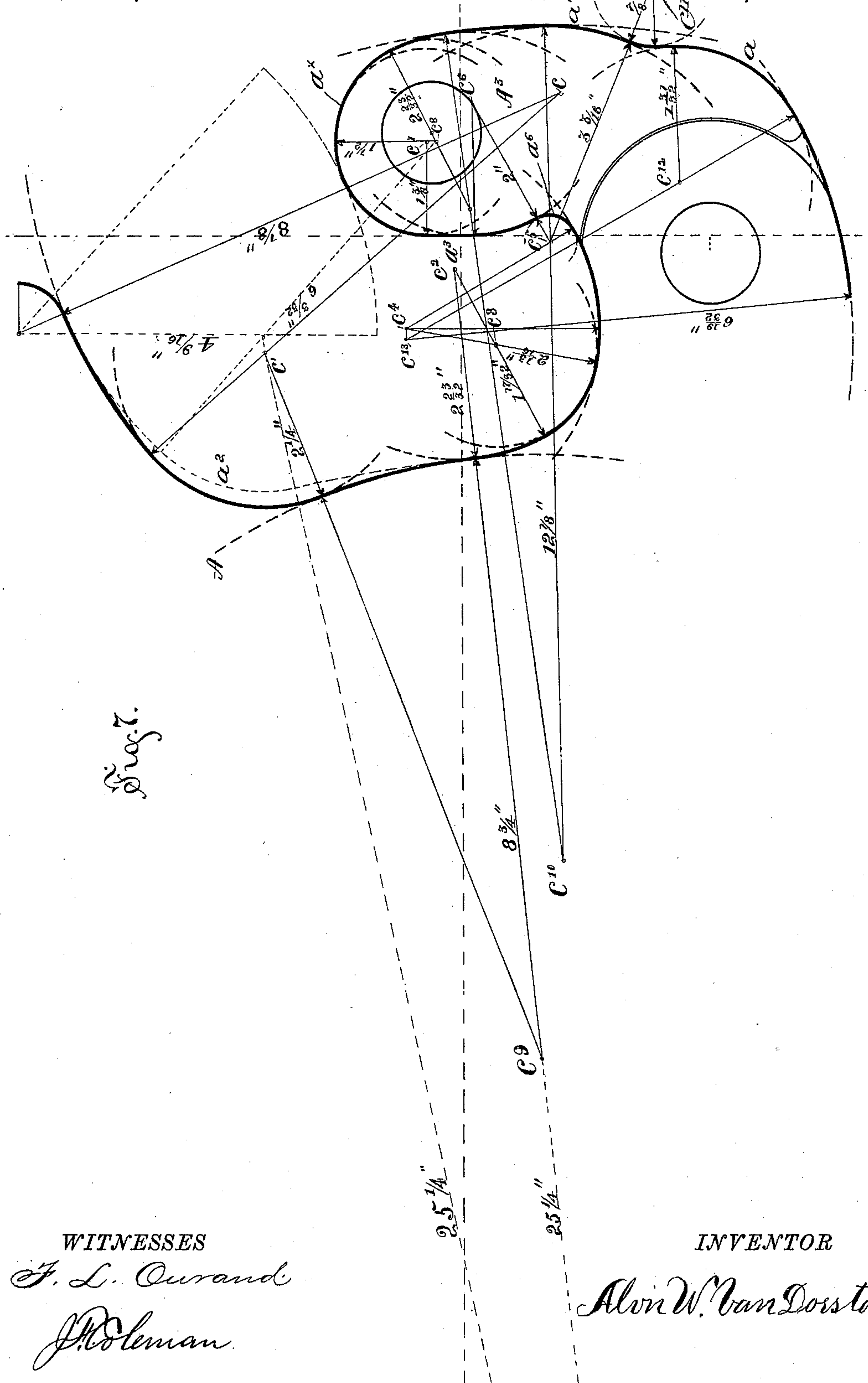
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J. Coleman.

INVENTOR

Alvin W. Van Doren

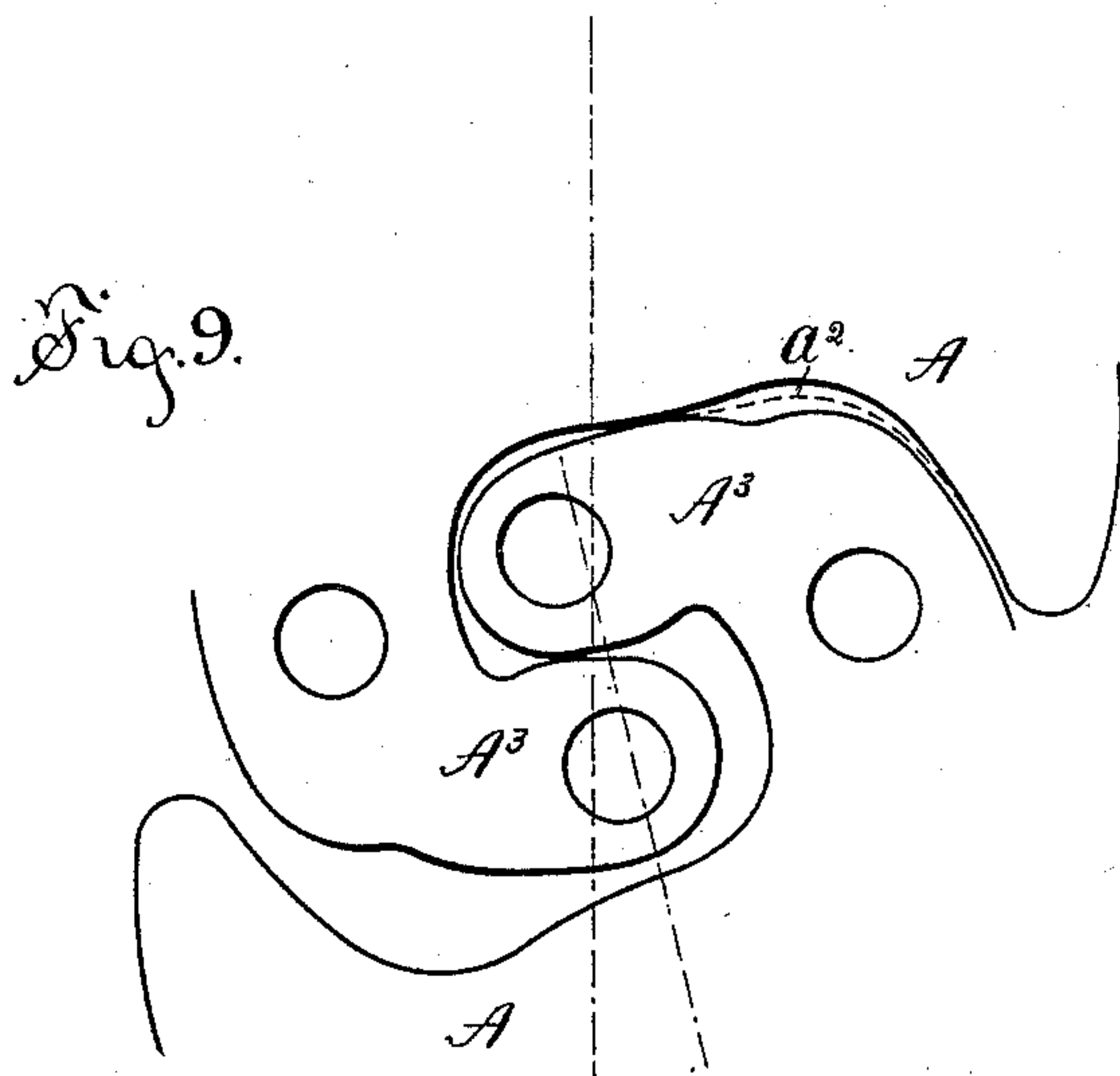
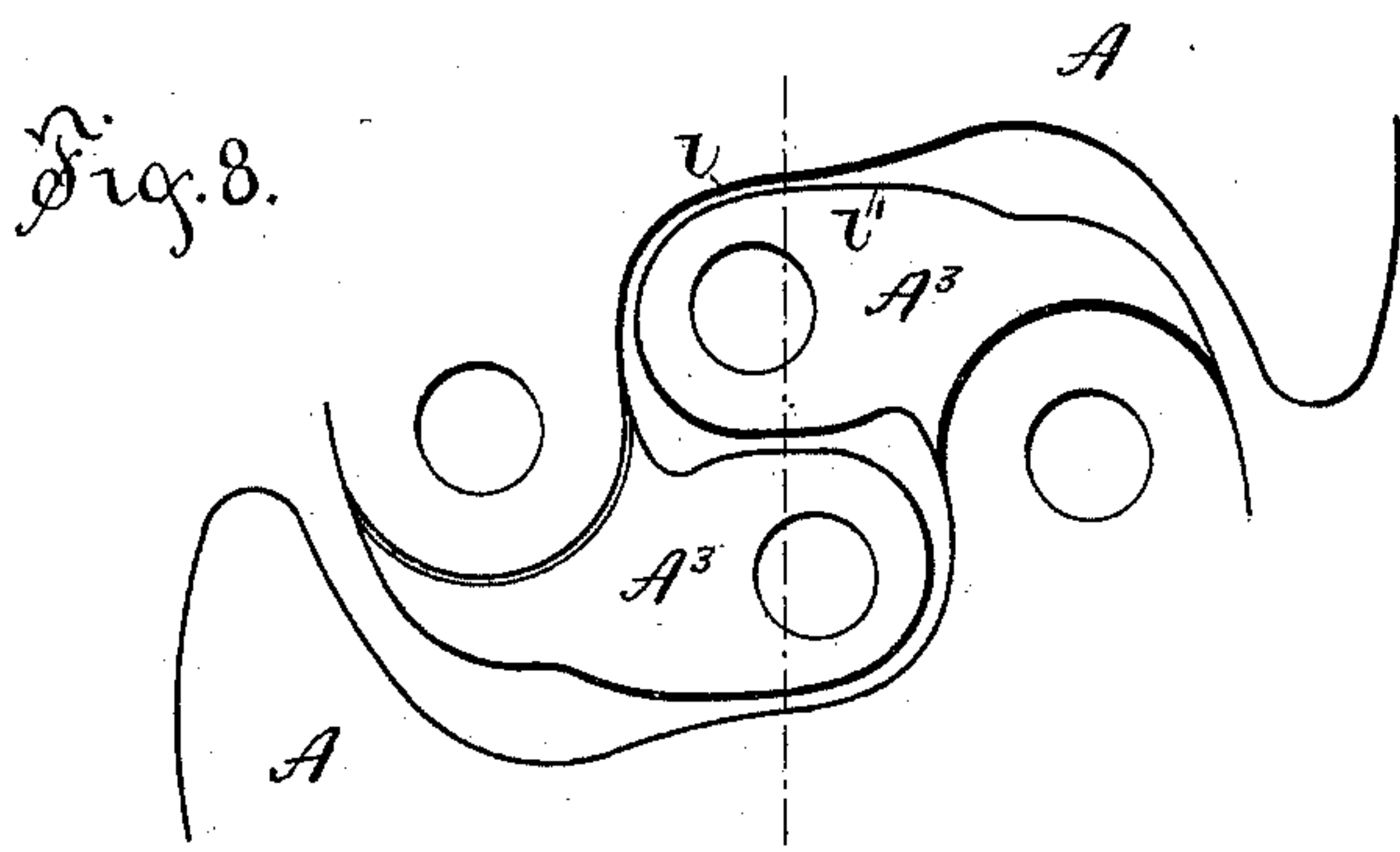
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Patented June 18, 1889.



Witnesses
J. H. Hens.
Robt. T. Platt

Inventor
Alvin W. Van Dorston

UNITED STATES PATENT OFFICE.

ALVIN W. VAN DORSTON, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO THE VAN DORSTON CUSHIONED CAR COUPLING EQUIPMENT COMPANY, OF PORTLAND, MAINE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 405,384, dated June 18, 1889.

Application filed May 12, 1888. Serial No. 273,667. (No model.)

To all whom it may concern:

Be it known that I, ALVIN W. VAN DORSTON, a citizen of the United States, and a resident of the city of Washington, in the District of Columbia, have invented certain new and useful Improvements in Automatic Car-Couplings, of which the following is a full, clear, and exact description.

My present invention relates to improvements in automatic car-couplings of the twin-jaw class, and particularly such as are described in my application for Letters Patent filed December 12, 1887, Serial No. 257,662.

Various objects of my invention are as follows: first, to provide the draw-head and jaw-arm with cushions to receive the shocks, and thus prevent the draw-heads and jaws from being broken or damaged when effecting connection, and in the longitudinal motion of the cars, and when coming in contact with any other class of couplers; second, to adapt such cushioned draw-heads for use with a non-cushioned jaw, or a cushioned jaw with a non-cushioned draw-head, by the interchanging of the jaws only; third, to adapt a double cushion to such couplings; fourth, to use such lines in the construction of the draw-head and jaw as to get increased service and to systematically interchange with the M. C. B. standard of vertical axis automatic couplers.

The invention consists in the construction of parts and their combinations and arrangements, substantially as I will now proceed to more particularly set forth and claim.

In the accompanying drawings illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a top plan view with the draw-head in longitudinal section and with the jaw removed, the view also representing the form of construction of the draw-head by lines and figures marked thereon. Fig. 2 is a longitudinal vertical section taken in the plane of line x x , Fig. 1, and showing the interior construction of the draw head and bar. Fig. 3 is a top plan view, similar to Fig. 1, but showing the draw-head and jaw with the double cushion, the view also representing the cushioned

guard-arm and the dotted outline of a plain guard-arm, indicated by the arrows $f f$. Fig. 4 is a top plan view of the non-cushioned jaw-arm and jaw and a sectional view of part of the draw-head, having the pocket with india-rubber cushion located therein. Fig. 5 is a bottom plan view of the non-cushioned jaw. Fig. 6 is a side view of the jaw. Fig. 7 is a working diagram. Fig. 8 is a diagrammatic representation of two of the couplers as they appear when united on a straight line. Fig. 9 is a similar view showing two of the couplers united on a curve; Fig. 10, a top plan view of the jaw having the cushioned arm and showing the lines, centers, and radii on which the jaws are constructed.

Referring to the drawings, A represents the draw-head and usual draw-bar, which may be constructed in any usual or approved manner, by casting or forging, and supplied with facilities for applying it to the car.

A' is the jaw, having an arm A^2 , constructed with a suitable recess for the reception of a block of india-rubber b' and a piston or buffer e . This piston e is constructed with a web b^2 , having a slot d' , and a pin or rivet d extends through said slot and into the arm A^2 to connect the two and permit freedom of motion of the piston within the recess in said arm, its inner movement being against the resistance of the india-rubber b' , and the two forming a cushion to receive the shocks on the jaw and prevent blows of jaw falling rigidly upon the column a^4 and the side wall of the draw-head. In a pocket a^5 of the draw-head is arranged an india-rubber cushion b , located in the path of the inner end of the jaw-arm to take up shocks on the jaw. A cushioned jaw may be used with the cushion b , or without it. The provision of the cushioned jaw and cushioned draw-head A makes the draw-head applicable for interchangeability of jaws, so that a jaw having a plain arm can be used with the india-rubber cushion b ; or, in the absence of said cushion b , a cushioned jaw-arm operating against the column a^4 may be used to perform the same function.

The recess B is formed in the jaw-arm to

receive the reciprocating rod and spring for automatically opening the jaw, as set forth in my application before referred to.

The knuckle A^3 of the jaw is peculiar in its contour, as will presently appear.

The guard-arm A^4 is provided with a pocket containing an india-rubber cushion c' , as in the application before mentioned; but instead of a headed piston or buffer, as there employed, I here use a plain straight headless buffer c , which is preferable to the other on the score of economy of construction and diminished weight. The draw-head may be constructed also with a non-cushioned guard-arm, as in Figs. 8 and 9, and as shown by the lines ff , Fig. 3, though a cushioned guard-arm is preferable on account of its resistance to shocks and consequent reduced liability to breaking.

The tumblers g , for locking the jaw, may be such as those set forth in my application before referred to, and their operating mechanism may be the same or substantially the same.

The lines upon which the draw-head and jaw are constructed are designed to reduce wear to a minimum, insure interlocking of the knuckles on any line, and the retention of such interlocking under all circumstances, save the positive manipulation of the unlocking device co-operating therewith.

In Figs. 1 and 7 I have given practical working details by centers, radii, and distances for constructing my invention. In general terms, the arms of the draw-head diverge, and the bottom wall connecting the two arms is described on an undulating line with the rise between the axial center of the draw-bar and the guard-arm. By this construction, when coupling or operating upon curves, the strain is taken off the nose of the jaw, and the point of contact is at a . I am thus enabled to reduce the fulcrum from four to two inches. Otherwise the strain is taken by one jaw. Again, the guard-arm A^4 of the draw-head affords a full bearing against the back of the jaw when operating on curved or straight track and prevents excessive wear upon said arm. This wall might be constructed on the line a^2 without departing from the invention.

The jaw is made with a guard A^5 , curved, substantially as shown, so that when in unlocked position this guard will stand well out in the mouth of the draw-head to receive the incoming knuckle and then transmit its thrust or blow to the cushion or cushions. The rear of the outer face is provided with a cut-away portion a to afford a clearance for the knuckle and opposite draw-head in coupling and to contact with the buffer c . The outer face proper a' is described substantially on an ellipse, so as to prevent a dead-blow and also to direct the interlocking knuckles. The nose a^x is rounded in furtherance of the same object, while the inner face a^3 is flattened with curved portions running into the nose on one side and into a clearance-cavity a^6 at the angle of the knuckle and jaw-arm. This

construction of the inner face of the knuckle will increase its wearing capacity fully fifty per cent. over ordinary forms, inasmuch as the wearing-surface is equably distributed, whether on straight or curved tracks. The clearance a^6 is provided to admit of the fullness of the inner face, and at the same time give the proper clearance in the wear of the inner jaw-faces to prevent them from wearing other than at right angles to the axial line of the draw-bars. Without this clearance the jaw-faces would wear to an angle outwardly inclined, and thereby force the jaws continually against the guard-arm side of the couplings, as is found in practice to be the case with couplings not embodying this invention.

I wish it to be understood that I do not limit my invention to the details of the drawings, either as to centers, radii, or otherwise, excepting in so far as they are expressly stated in the claims herein made, as obviously the working drawings will be modified to suit the exigencies of the case.

The coupling herein shown and described belongs to that class known to the trade as "close-couplers," as distinguished from others of the same general type, but designated "free slack-couplers." The distinguishing characteristics of the two lie, first, in the intimacy of contact of the knuckles; second, in the amount of play such knuckle or jaw arms have, and, third, in the intimacy of contact or closeness of union the draw-heads have, and all these quite outside of mere structural differences rendered necessary by such an assemblage of parts as will give the results aimed at. In a close-coupler the mouth or cavity of the draw-head is shallow, and hence compels quick practically instant union of the knuckles upon contact, and admits of little or no longitudinal movement of such knuckles when coupled, thus placing the longitudinal motion of the cars and train upon the motion attained in the draft-springs at the rear of the couplers. Again, the knuckles, to these ends, have only about three-sixteenths of an inch play to admit of the vertical and lateral motion. In slack-couplers the draw-heads are deep and large, and are not intimately in contact, and the knuckles have a play therein and upon one another when united of one-half to three-fourths inch. In a close-coupler, therefore, provision must be made in the knuckles themselves to move them instantly into contact to cause them to interlock under slow speeds without depending on shocks against the draw-bar, and this provision in my coupler is attained in the construction of the guards A^5 , without which the shallowness of the draw-head is ineffectual; but, conversely, were knuckles with such guards used in a deep and large draw-head, there would be such play as to defeat in a large measure, if not entirely, the attainment and functions of the close-coupler herein described.

What I claim is—

1. In an automatic car-coupling, the combination, with a pivoted jaw having a recess, of an india-rubber block secured in said recess by means of a buffer acting in contact therewith to receive the shock and prevent damage to the side wall of the draw-head and to the said jaw, substantially as described.

2. In an automatic car-coupling, the jaw having a suitable recess, a rubber cushion therein, a buffer *e*, arranged in said recess, and the rivet *d*, for securing the buffer movably in place, substantially as described.

3. In a car-coupling, the draw-head having a cushion in one side, combined with a jaw pivoted in the draw-head on that side containing the cushion and also having a cushion in itself, the two cushions co-operating in the movement of the jaw to break the force of blows, and thus preserve the draw-head and jaw from damage therefrom, substantially as described.

4. In an automatic car-coupling, the interlocking jaw-arm having the guard *A*⁵, projecting forwardly beyond the plane of a right line drawn from the pivotal center of the jaw-arm to the inner forward end of said arm, substantially as shown, combined with a draw-head of the close-coupler, as distinguished from the free-slack kind, to compel said interlocking arm to rotate and engage with one or more of the locking-tumblers without contact or shocks upon the front jaw-faces and walls of the draw-head, substantially as described.

5. In a car-coupling, the draw-head having the pocket *a*⁵ and cushion therein, and the column *a*⁴ on that side of the draw-head in which the jaw is pivoted, combined with said jaw, and a cushioned buffer therein, substantially as described.

6. In a car-coupling, the jaw having a suitable recess containing a cushion *b*⁷, and a buffer or piston *e*, adapted to move back and forth in said recess, combined with a draw-head against one side wall of which the thus cushioned jaw strikes, substantially as described.

7. In an automatic car-coupling of the twin-jaw class, the combination of the jaw-arm provided with a cushioned piston with the draw-head having a column *a*⁴, against which the buffer or piston *e* of the jaw-arm strikes, to receive the blow on the jaw, substantially as described.

8. In a car-coupling, the socketed guard-arm having a cushion in its bottom, combined with the plain straight headless buffer *c*, substantially as described.

9. In an automatic car-coupling, the draw-head having diverging arms and a connecting bottom wall of undulating outline, combined with a pivoted jaw whose outer face is substantially elliptical, its nose round, and its inner face flattened between two curvilinear surfaces, and terminating in the clearance *a*⁶ to give thickness and increased wearing-body to the knuckle, substantially as described.

10. In an automatic car-coupling, the draw-head having divergent arms with an intervening bottom wall whose surface is a compound or undulating curve with a rise between the axial line of the draw-bar and the guard-arm, combined with a jaw pivoted in said draw-head and having a knuckle whose outer face is substantially elliptical in outline, its nose rounded, and its inner face flattened between two curves, substantially as described.

11. In an automatic car-coupling, the draw-head having divergent arms with an intervening bottom wall whose surface is a compound or undulating curve with a rise between the axial line of the draw-bar and the guard-arm, combined with a jaw pivoted in said draw-head and having a knuckle whose outer face is substantially elliptical in outline, its nose rounded, and its inner face flattened between two curves and having a clearance-cavity at the angle of the jaw, substantially as described.

12. In an automatic car-coupling, the draw-head having divergent arms and a connecting-wall, combined with a jaw pivoted in said draw-head and having a knuckle with a substantially elliptical outer face, the rear of which is depressed or cut away to form a clearance and a buffing surface, substantially as described.

13. In an automatic car-coupling, a draw-head having divergent arms with an intervening connecting-wall having an undulating surface, combined with a jaw pivoted in said draw-head and having a knuckle with a substantially elliptical outer face, a rounded nose, and a flattened inner face bounded on each side by curved surfaces, and one or more cushions interposed between the arm of the jaw and the draw-head, substantially as described.

ALVIN W. VAN DORSTON.

Witnesses:

J. W. HESS,
ROBT. T. PLATT.