

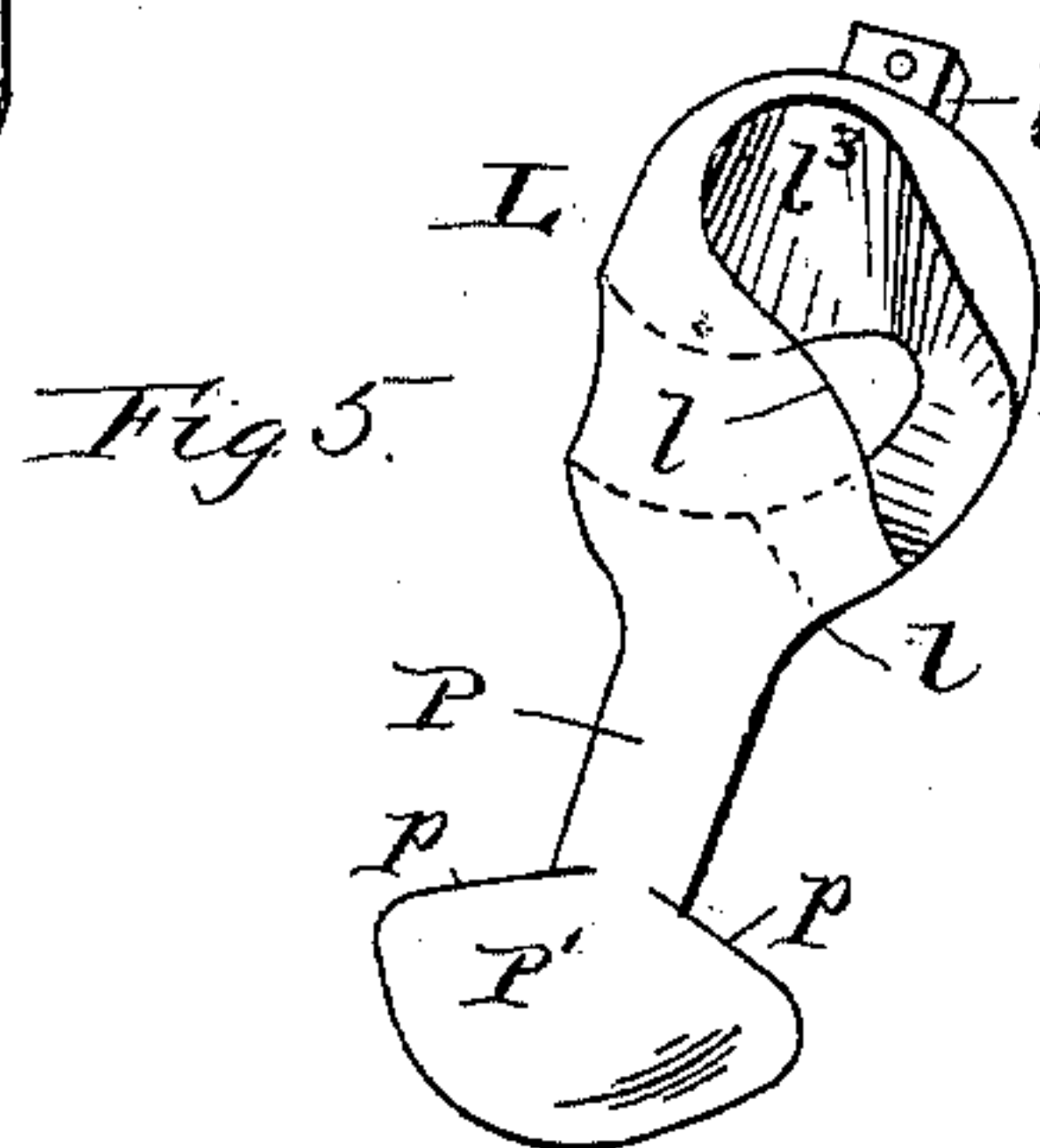
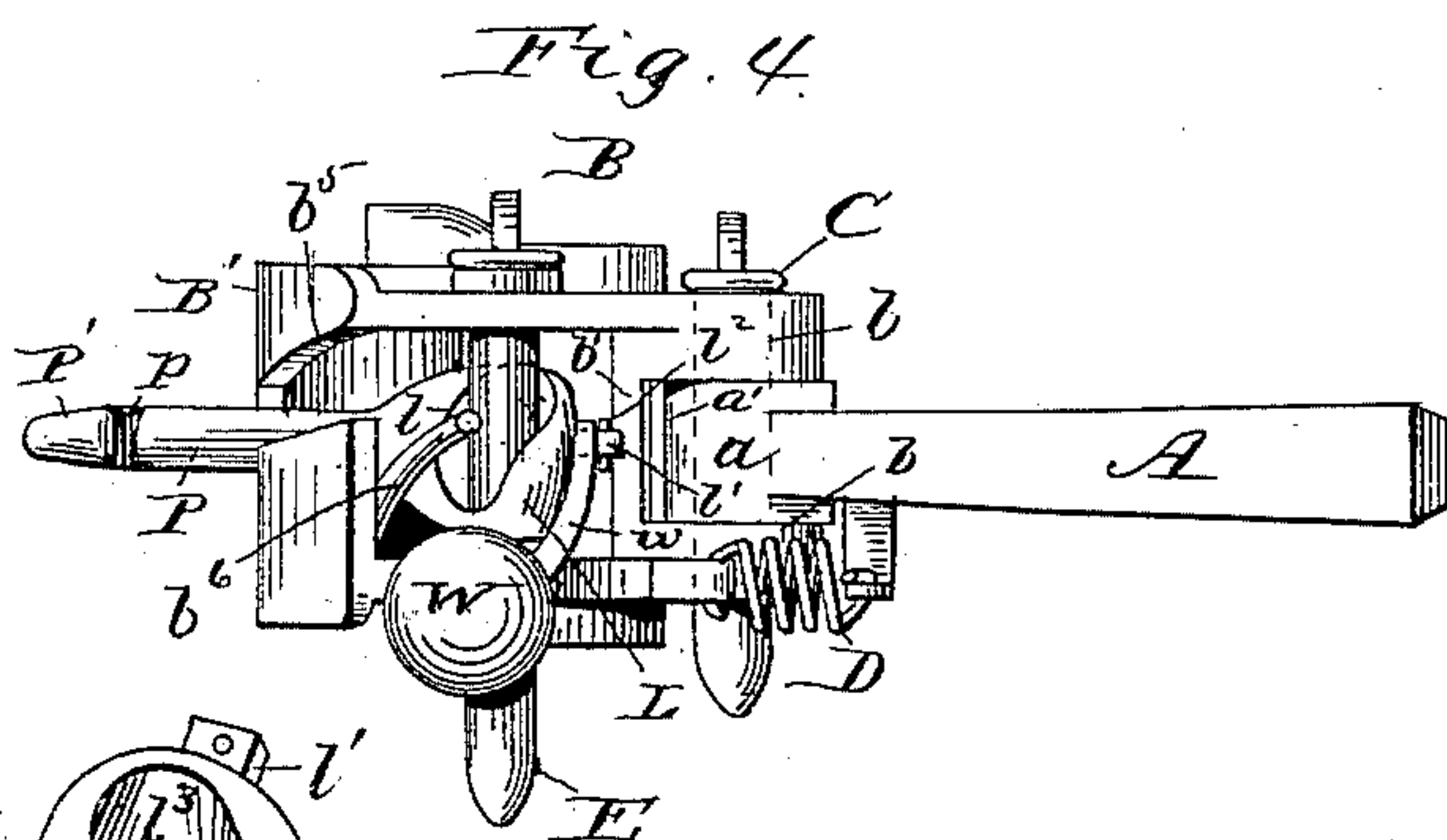
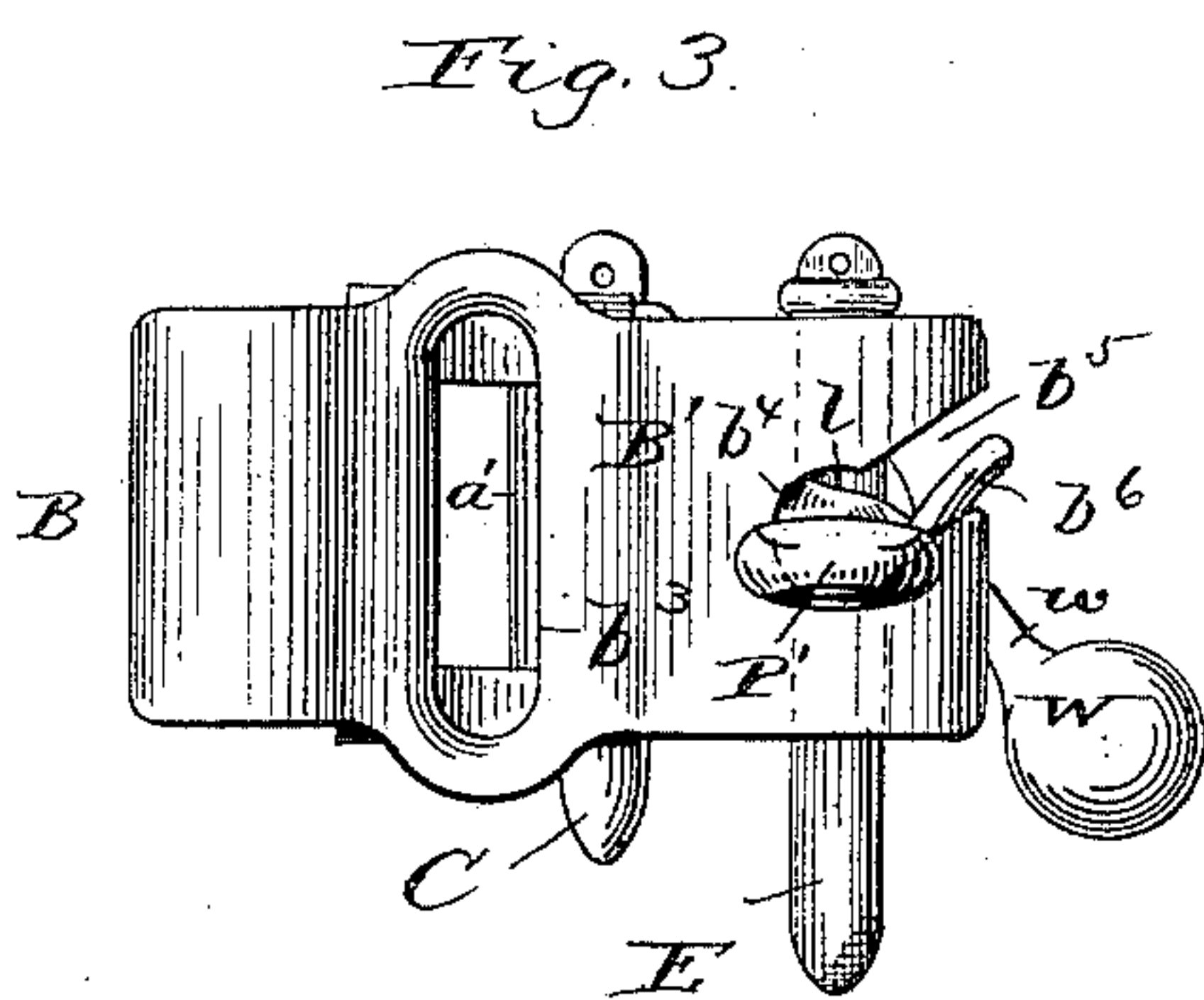
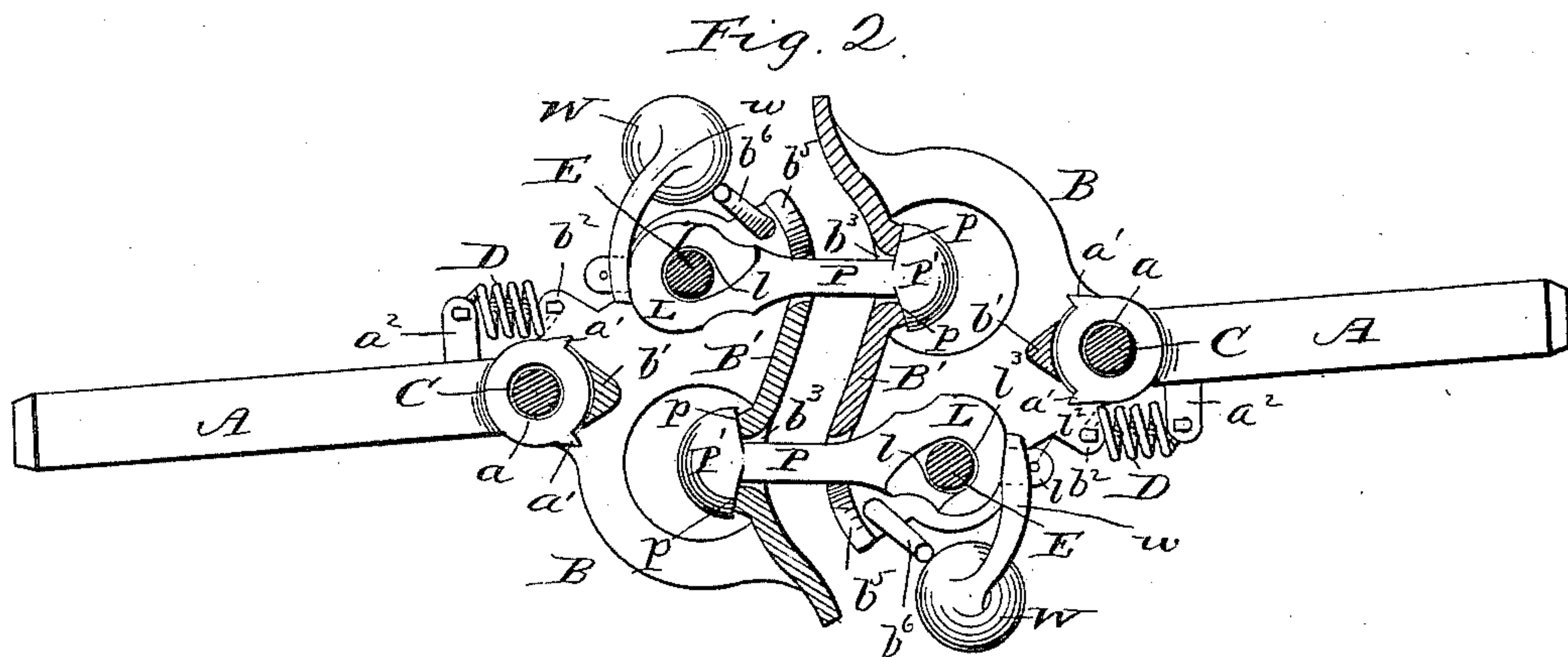
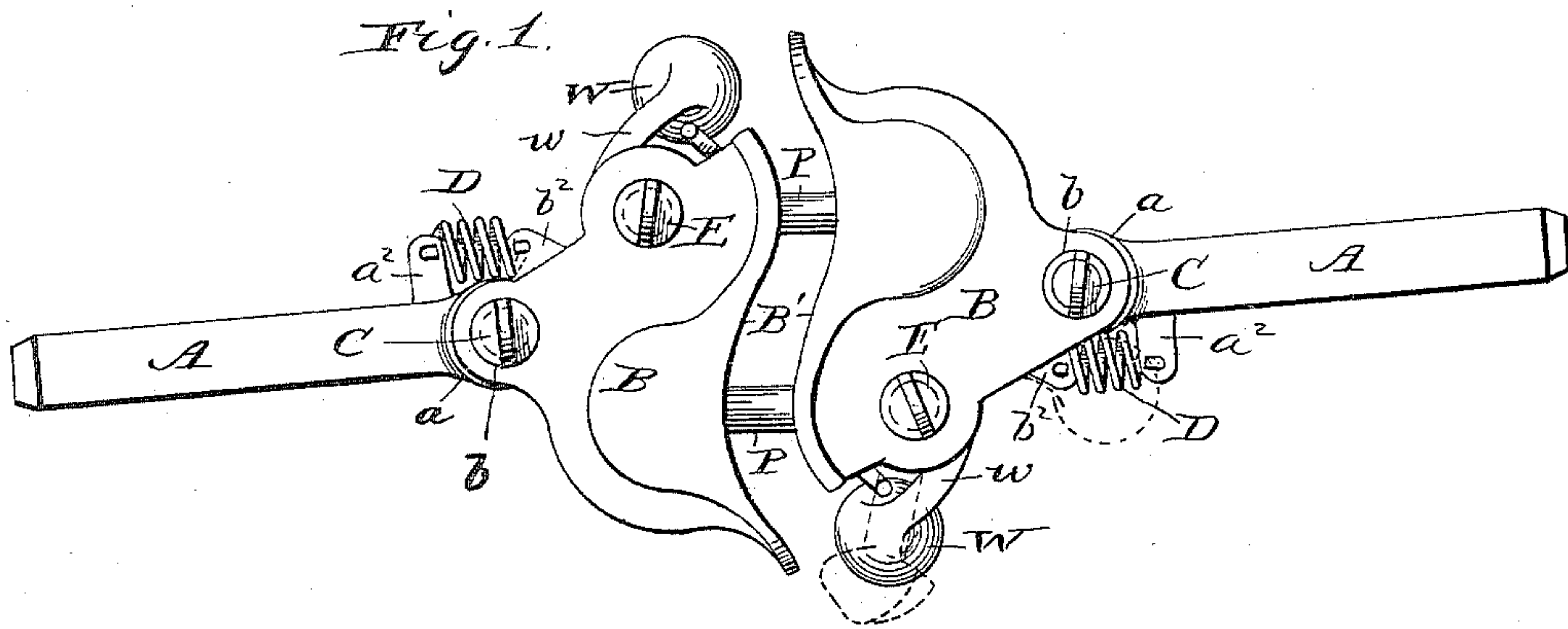
(No Model.)

2 Sheets—Sheet 1.

J. BROWN.  
CAR COUPLING.

No. 442,509.

Patented Dec. 9, 1890.



Witnesses  
 A. H. Burns.  
 E. K. Sturtevant.

Inventor  
John Brown  
by H. V. Low  
Attorney

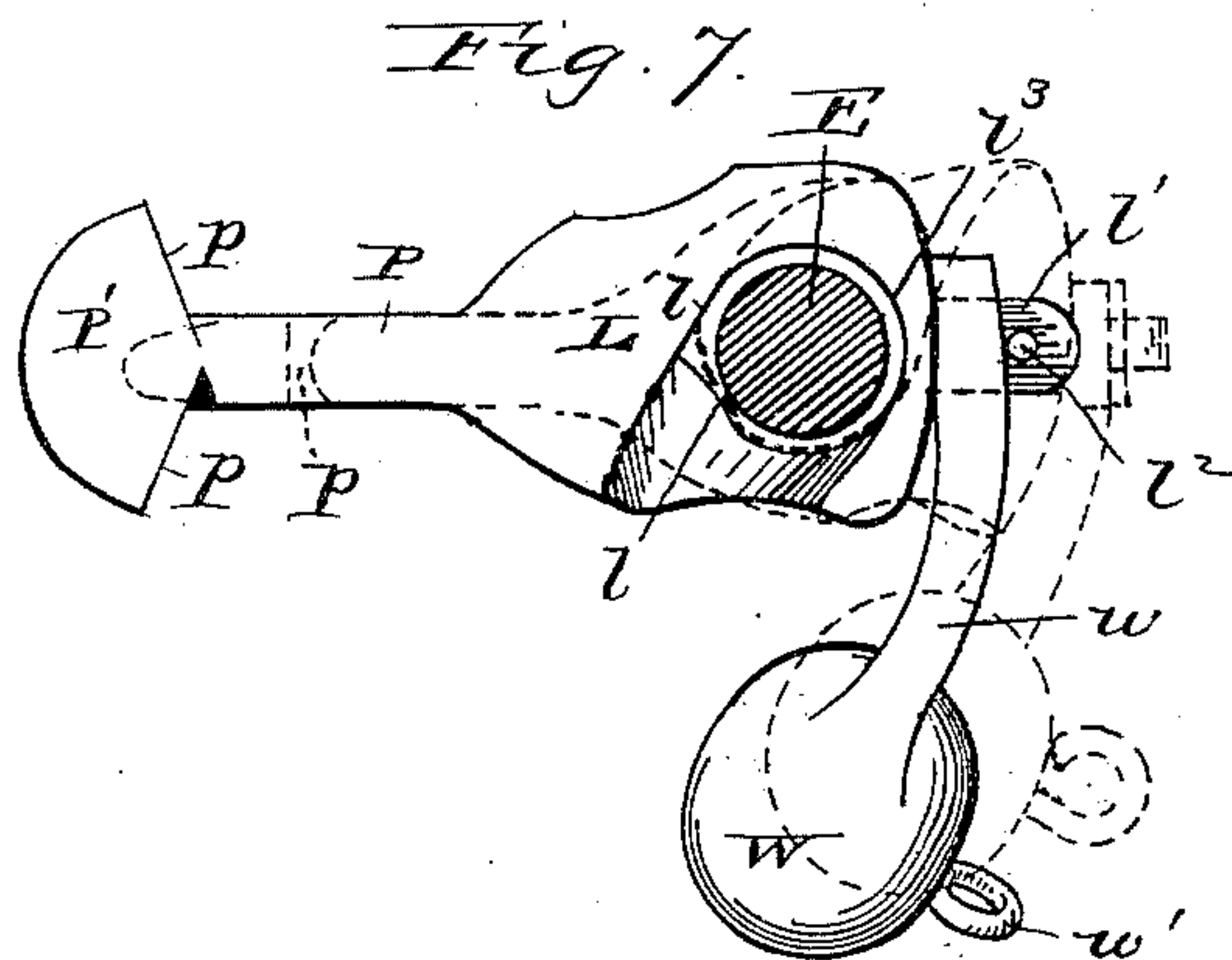
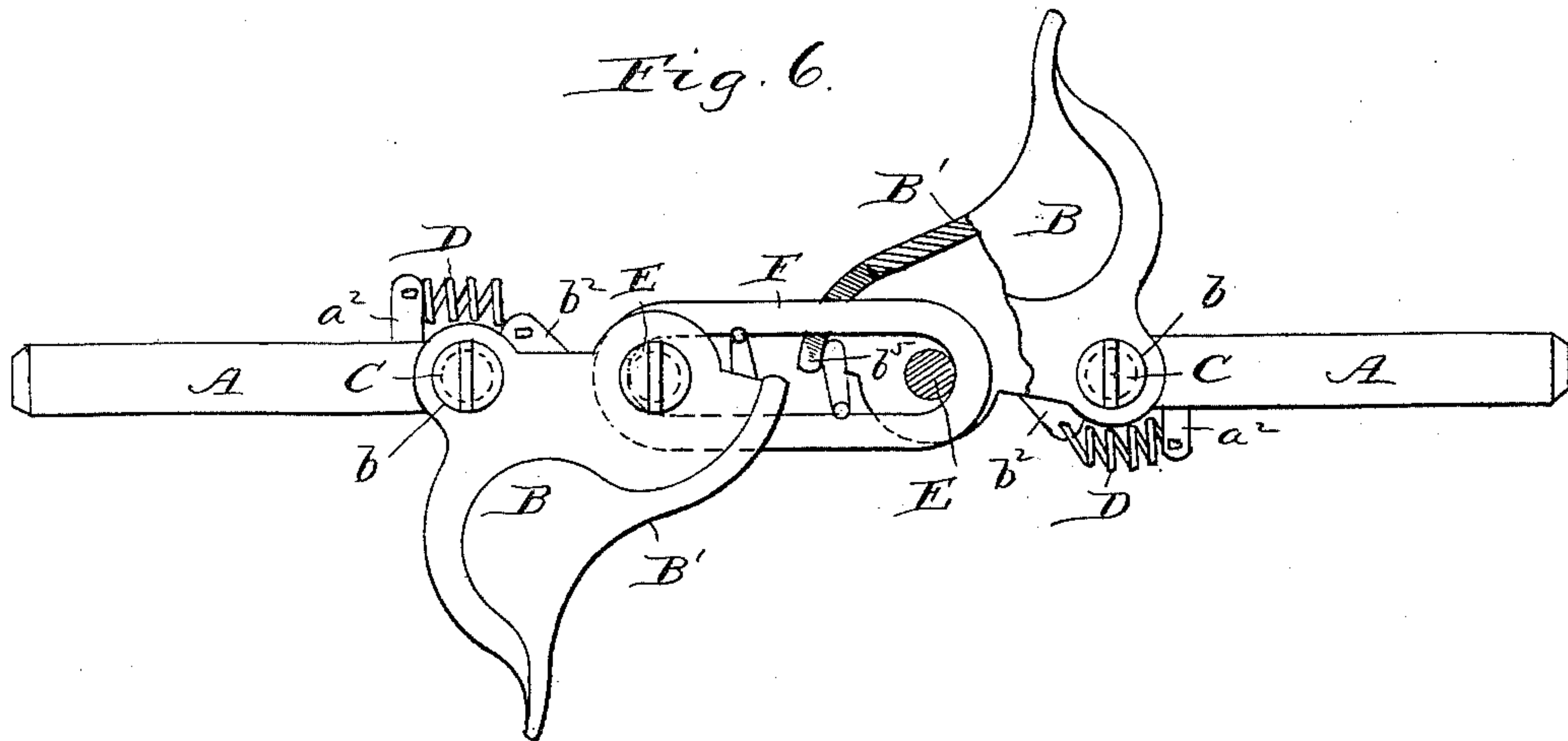
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2 Sheets—Sheet 2.

J. BROWN.  
CAR COUPLING.

No. 442,509.

Patented Dec. 9, 1890.



Witnesses  
*A. H. Curry.*  
*E. H. Sturtevant.*

Inventor  
*John Brown,*  
by *H. N. Low*  
Attorney



# UNITED STATES PATENT OFFICE.

JOHN BROWN, OF REDFERN, NEAR SYDNEY, ASSIGNOR TO JOSEPH CARTER  
OAKMAN, OF SYDNEY, NEW SOUTH WALES.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 442,509, dated December 9, 1890.

Application filed June 24, 1890. Serial No. 356,551. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN BROWN, a subject of the Queen of Great Britain, residing at Redfern, near Sydney, New South Wales, have invented certain new and useful Improvements in Automatic Central Buffer-Couplings; 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.

The invention is directed to the production of an automatic buffer and coupler of simplified construction, which nevertheless shall be convenient, durable, and generally efficient in operation under the various circumstances and in the different situations to which these devices are exposed.

To these ends the invention consists in the parts and combinations thereof, hereinafter particularly set forth and claimed, it being, however, understood that the invention may be availed of in other forms than that which, for the sake of illustration, is hereinafter in detail set forth.

In order to make the invention more clearly understood, I have set forth in the accompanying drawings that means for carrying the same into practical effect which is the best now known to me.

In said drawings, Figure 1 is a plan view of a pair of draw-bars and means embodying and united according to my invention. Fig. 2 is a similar view, the draw-heads and the pins being shown in horizontal section. Fig. 3 is a front view of one member of the coupler. Fig. 4 is a side view of the same. Fig. 5 is a perspective view of a coupling link or pin embodying certain features of the invention, the same being similar to the link shown in the other figures, but drawn upon a larger scale. Fig. 6 is a plan view of the two members of the coupling united by an ordinary coupling-link. Fig. 7 is a plan view of the combined coupling link and pin in its normal position, its position when forced back and partially rotated ready for coupling being indicated in dotted lines and the vertical pin upon which said link operates being shown in section.

Referring to the drawings, A A indicate the draw-bars, which may be of any suitable form

or character adapted to be yieldingly secured to the frame of the cars and provided at their forward ends with vertical bearings *a*.

B B indicate the heads of the coupler, each provided at its rear with flanges or eyes, in which are formed bearings *b*, similar to the bearings *a*, and adapted to be hinged to the latter by means of pivots or pins C. The head B is thus adapted to oscillate freely upon the draw-bar. This oscillation is preferably limited by a stop or stops, such as projections *a'*, formed upon the draw-bar and adapted to engage a vertical portion *b'* of the head. The head is also preferably kept normally in line with the draw-bar, excepting when it is pressed or pulled to one side or the other by means of a spring D, connected at one end with a bracket *a<sup>2</sup>* upon the draw-bar, and at the other end with a lug *b<sup>2</sup>* cast with the head B. The head is preferably open at the sides, its top and bottom portions or webs being united at the rear by the portion *b'* and at the front by the flange or face B', which receives the buffing impact, and is engaged by the coupling pin or link of the opposing head.

The opening for the "link-pin," as I shall hereinafter designate the part which extends between and connects the draw-heads, is indicated at *b<sup>3</sup>* in the form of a narrow slot extending vertically in the face B' and situated at one side thereof. It is of sufficient length to allow for the differences in height of the draw-heads upon different cars which are to be coupled together.

The shank or projecting portion of the link-pin is indicated at P, and is provided with a head P', having at its rear lateral shoulders *p*. The head P' is flat, of substantially the same thickness as the diameter of the pin P, and a little less than the width of the slot *b<sup>3</sup>*. It is normally situated crosswise to said slot, but is adapted when turned with the shoulders *p*, extending the one upward and the other downward, to pass through said slot. If then the link-pin be caused by any usual or suitable means to be returned to its first or normal position, the shoulders *p* will engage the inner face of the plate B' and the link-pin will be securely connected with the draw-head, of which said plate B' forms a part. The rear or link portion of the link-pin is indicated at



L, and is adapted to be connected with and carried by the other draw-head. It is connected in such manner as to permit of the partial rotation of the link-pin above referred to, and is furthermore provided with inclined or cam-shaped surfaces, which are adapted, in conjunction with a suitable surface or surfaces upon or carried by its draw-head, to produce such partial rotation when the link-pin is forced longitudinally backward, as by the impact of the draw-head with which it is to be automatically coupled. Preferably said cam-surfaces  $l$  are formed by the walls of a slot which is cut through the part L. This slot has a substantially helical contour, as will be seen from a comparison of the various drawings, and is engaged by a vertical pin E, similar to an ordinary coupling-pin, which fits in suitable apertures formed in the draw-head which carries the link-pin. It will now be seen that when two draw-heads provided with the devices above described come together the link-pin of each will by the edges of the opposing slot  $b^3$  be forced longitudinally backward, causing the cam-surface  $l$  to travel over or along the side of the pin E and turn the link-pin into the position shown in dotted lines in Fig. 7.

The link-pin may be held in its normal position, Figs. 2, 3, and 4, by either of the well-known devices of a weight or spring. The former is illustrated in the drawings, and is shown at W, it being provided with an arm  $w$ , which fits over a squared projection  $l'$  upon the rear of the link-pin, where it is held in place by a cotter  $l^2$ . This arm extends laterally from the link-pin out through the open side of the draw-head and tends to hold the link-pin normally in the position shown in full lines in Fig. 7, while it freely permits a partial rotation of about a quarter of a circle. At the rear part of the slot formed in the link-pin is a socket  $l^3$ , and it is evident that any rotation of the pin L P will force the same inward relative to the draw-head carrying said socket  $l^3$  away from the pin E. If, however, the pin be coupled with an opposing draw-head, the longitudinal outward strain upon said pin L P will be so great that this rotation cannot occur, and there is therefore no possibility of an accidental uncoupling taking place.

When it is desired to uncouple, the link-pins may be operated in any desired manner, either by hand or by any of the uncoupling mechanisms which are suitable for the purpose.

In the construction shown the link-pin is provided with an eye  $w'$ , affixed to the weight W, to which may be attached a cord or chain extending from the platform-rail of a passenger-car, from the top of a freight-car, or from any desired lever or windlass or other uncoupling mechanism.

The face  $B'$  of the draw-head flares outwardly at each side of the slot  $b^3$ , Fig. 2, and thus insures that the head P' shall be en-

gaged and led or deflected to the slot  $b^3$  even though the opposing draw-heads should be as they approach each other considerably out of line. This motion is permitted, as well as the similar motion of bringing the draw-heads into line during the buffing action, by the oscillation of the heads upon their supporting-pivots C. It will also be seen that whenever the coupled cars are out of line with each other, as in turning sharp curves, the movement of the draw-heads upon their said pivots will permit the shoulders of both link-pins to remain in engagement with the inner faces of the plates  $B'$ . In order to enable both shoulders of each link-pin to engage said faces at all times, the said shoulders are beveled, Figs. 2 and 6, so that the pin is caused by the draft to move slightly to the right or left into that position in which both of its shoulders will be in contact with the plate  $B'$ .

The portion of the face-plate of the head through which the pin or shank P projects is provided with a suitable opening  $b^4$  for this purpose. This part of the face is also made convex to fit the opposing concavity, in which is formed the slot  $b^3$  of the other draw-head. The contour of the face of each draw-head has therefore a compound or reverse curve, and during the buffing action the draw-heads accurately fit and center each other. At the same time the draw-heads are exact counterparts of each other and may be cast in the same mold.

In order that the link-pin may be preserved from injury in cases where it is accidentally forced against some draw-head or surface which is not adapted to receive it, means are provided whereby the link-pin may be automatically deflected to a position of safety—as, for instance, to a position at the rear of or flush with the face  $B'$ —as shown in dotted lines in Fig. 1. The link-pin is enabled to assume this position by reason of an opening or slot  $b^5$ , leading outward from the opening  $b^4$ . As the head P' strikes some object not adapted to receive it, it is ordinarily deflected outward, the shank P passing through the slot  $b^5$ . In order that the link-pin may be automatically returned when such pressure or force is removed, the slot  $b^5$  is formed on an incline leading downward toward the opening  $b^4$ , and a support  $b^6$  may also be provided in case the slot  $b^5$  does not extend far enough backward, which support is practically an extension of the lower edge of said slot and sustains the link-pin in position in line with the slot and ready to slide by gravity thereinto as soon as said pressure is removed. In the construction shown the support  $b^6$  consists of a bent or inclined pin fixed in and extending slightly through the open side of the draw-head.

In any instance where it is desirable or necessary I provide for uniting the above-described draw-heads or for uniting one of said draw-heads with another of the ordinary



type by an ordinary link, as shown in Fig. 6. This may be done in a very simply manner by inserting such link F partly through the open side of the draw-head and partly through the slot  $b^5$  and passing through it the pin E. The pivoted draw-head (or draw-heads when two of them are thus coupled) will then assume a position in which the pins E are in line with the pins C and with the draw-bar, Fig. 6, the springs D yielding sufficiently for this purpose.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In an automatic car-coupling, a combined link and coupling-pin, the link portion of which is provided with internal helical or inclined surfaces, whereby when said link is applied to a draw-head it is caused to be rotated by longitudinal pressure, substantially as set forth.

2. In an automatic car-coupling, a coupling part or link provided at its forward end with an engaging shoulder or shoulders and at or near its rear end with helical or inclined surfaces adapted to cause the rotation of said part or link when its forward end is forced back by longitudinal pressure, substantially as set forth.

3. In an automatic car-coupling, the combination, with the draw-bar, of a draw-head hinged or pivoted thereto upon a substantially vertical line, and a coupling part or link having at its forward end an engaging shoulder or shoulders for attachment to an opposing draw-head and having at or near its rear end helical or inclined surfaces adapted to be engaged by a transverse pin or projection upon or within said first-mentioned draw-head, substantially as and for the purposes set forth.

4. In an automatic car-coupler, the combination, with the draw-bar, of a draw-head hinged or pivoted thereto upon a substantially vertical line, means for holding said pivoted head yieldingly in a substantially central position, a coupling part or link having at its forward end an engaging shoulder or shoulders for attachment to an opposing draw-head and having at or near its rear end helical or inclined surfaces adapted to be engaged by a transverse pin or projection upon or within said first-mentioned draw-head, and means, such as a weight or spring, for turning said coupling part upon its longitudinal axis, substantially as set forth.

5. In an automatic coupling, a draw-head having a face shaped upon an ogee or reversed curve and a vertical slot in the concave part of said face, and a coupling part or link extending from the convex portion of

said face and having at its outer end an engaging shoulder or shoulders, the whole adapted to form an automatic coupling and buffer.

6. In an automatic coupling, a draw-bar, combined with a draw-head hinged thereto upon a substantially vertical axis and having a face shaped upon an ogee or reversed curve and a vertical slot in the concave part of said face, and a coupling part or link extending from the convex portion of said face and having at its outer end an engaging shoulder or shoulders, the whole adapted to co-operate with a similar opposing device to form an automatic coupling and buffer having a wide range of action.

7. In an automatic car-coupling, the coupling part or link having at its forward end an engaging shoulder or shoulders and having at its rear end internal helical or inclined surfaces, the rearmost part of which surfaces at the point of draft is concave, substantially as set forth.

8. In an automatic car-coupling, a coupling part or link provided at its forward end with oppositely-inclined or beveled engaging shoulders for equalizing the pull upon each side of said part and at its rear end with helical or inclined surfaces for causing the rotation of the link when moved longitudinally, substantially as set forth.

9. In an automatic car-coupling, a draw-head having an aperture for the coupling part or link inclined upward toward and open at one side of the head, combined with a coupling part or link passing through said opening and loosely connected in the rear thereof with the draw-head, whereby said part is adapted to be thrown to one side to avoid injury and to be returned to its proper position.

10. A combined pin and link having within its link portion helical or inclined surfaces and having at its other end an engaging shoulder or shoulders, substantially as set forth.

11. In a car-coupling, the combination, with a vertically-hinged buffer-head, of a coupling link or pin having an engaging shoulder or shoulders for connection with an opposing head and helical or inclined surfaces, and a pin seated in said head and engaging said surfaces to hold the pin and to cause its rotation when said pin is moved longitudinally, substantially as set forth.

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

JOHN BROWN.

Witnesses:

T. H. JONES,

G. E. RUSSELL JONES.