

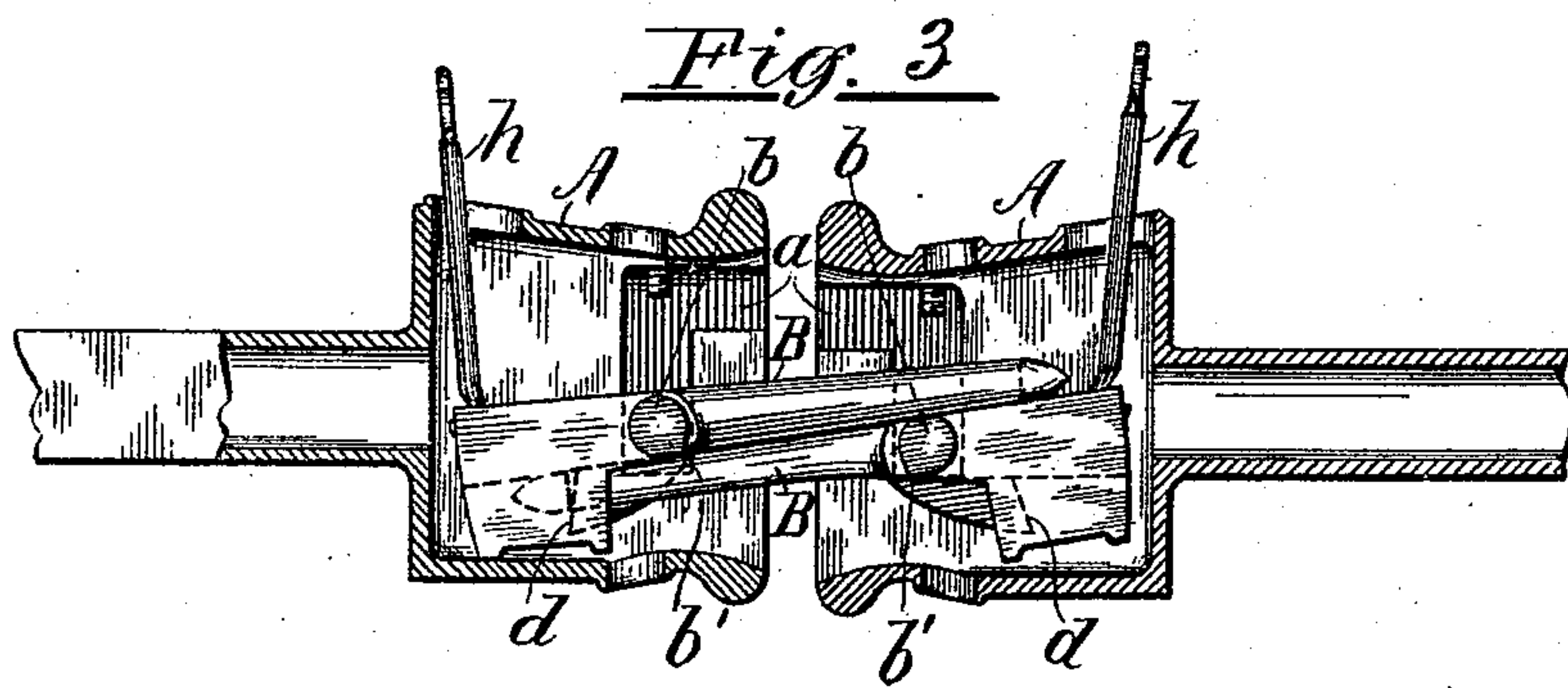
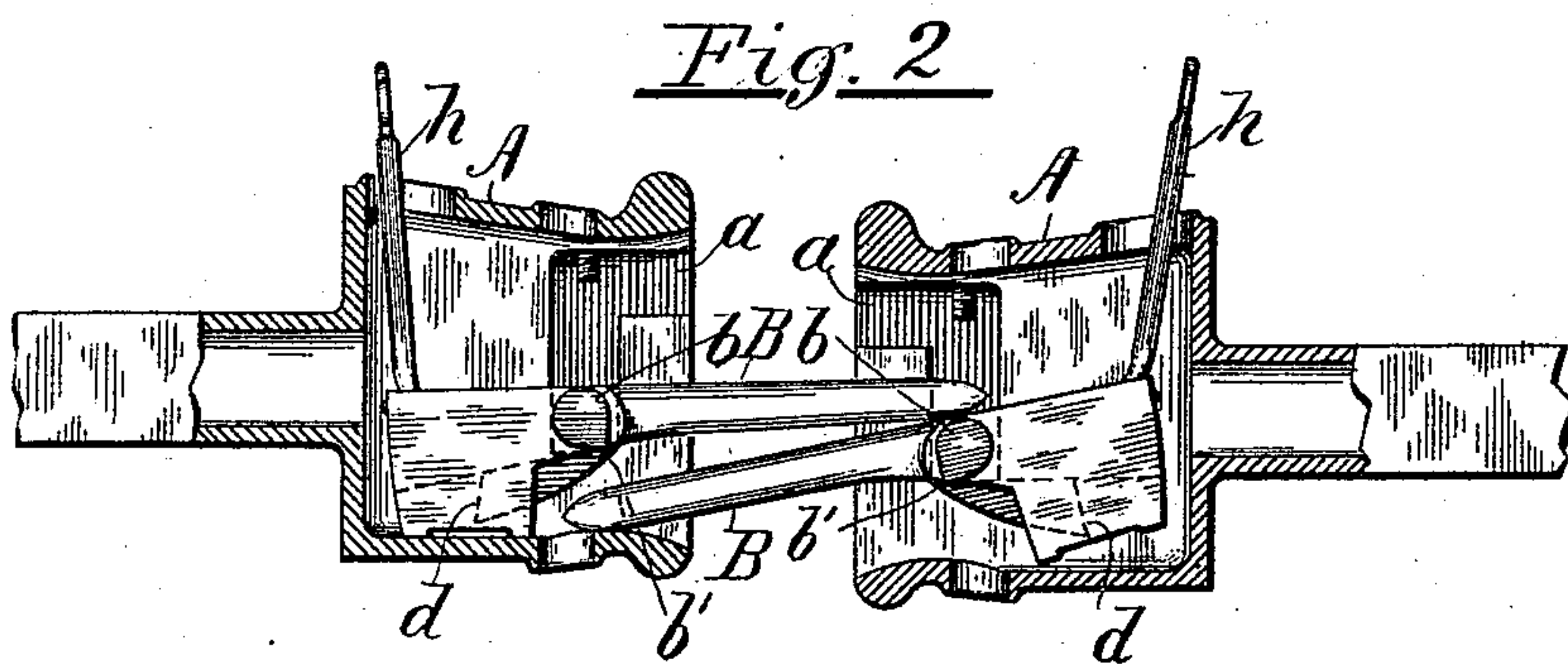
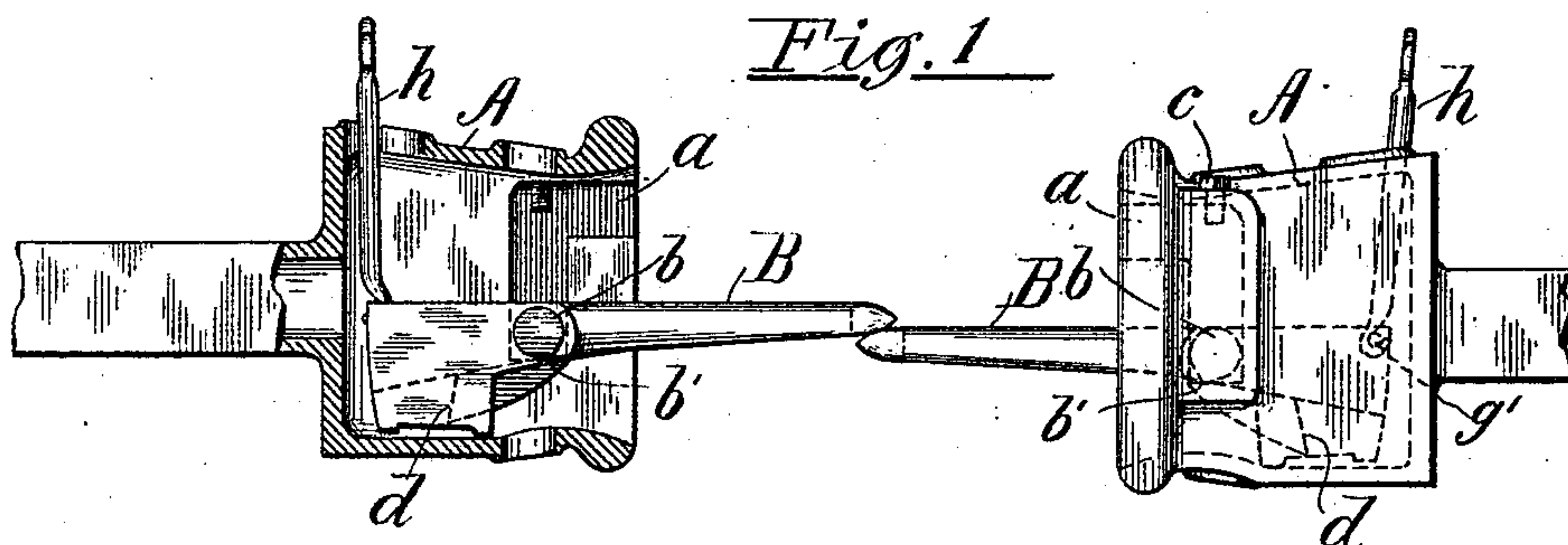
(No Model.)

2 Sheets—Sheet 1.

J. MASON.  
CAR COUPLING.

No. 485,468.

Patented Nov. 1, 1892.



Witnesses:

H. H. Thurston  
J. J. Murphy.

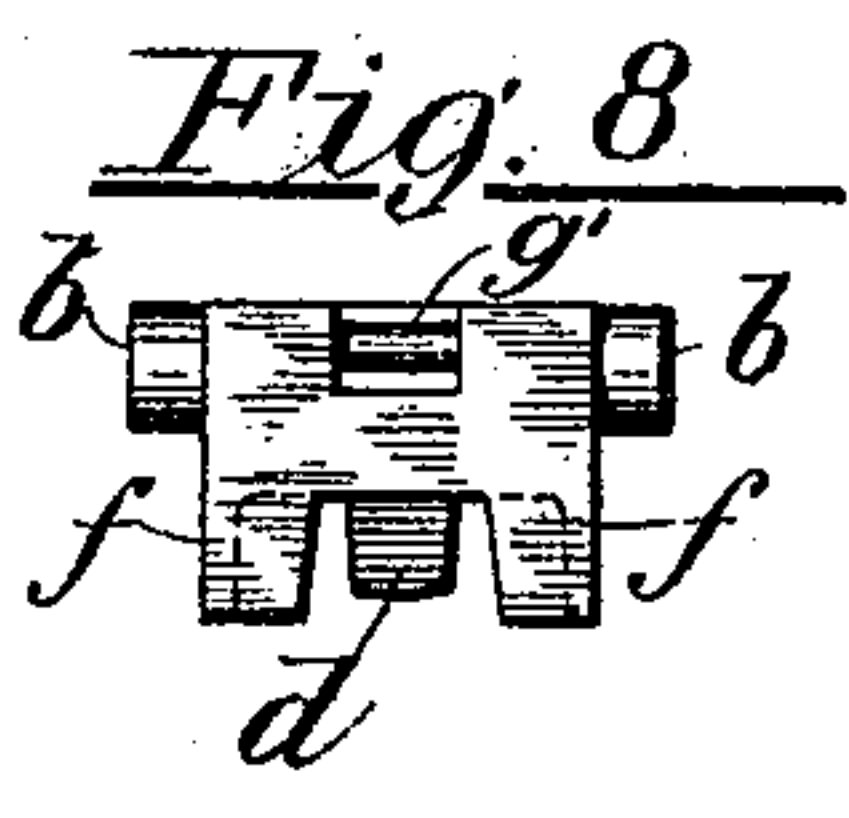
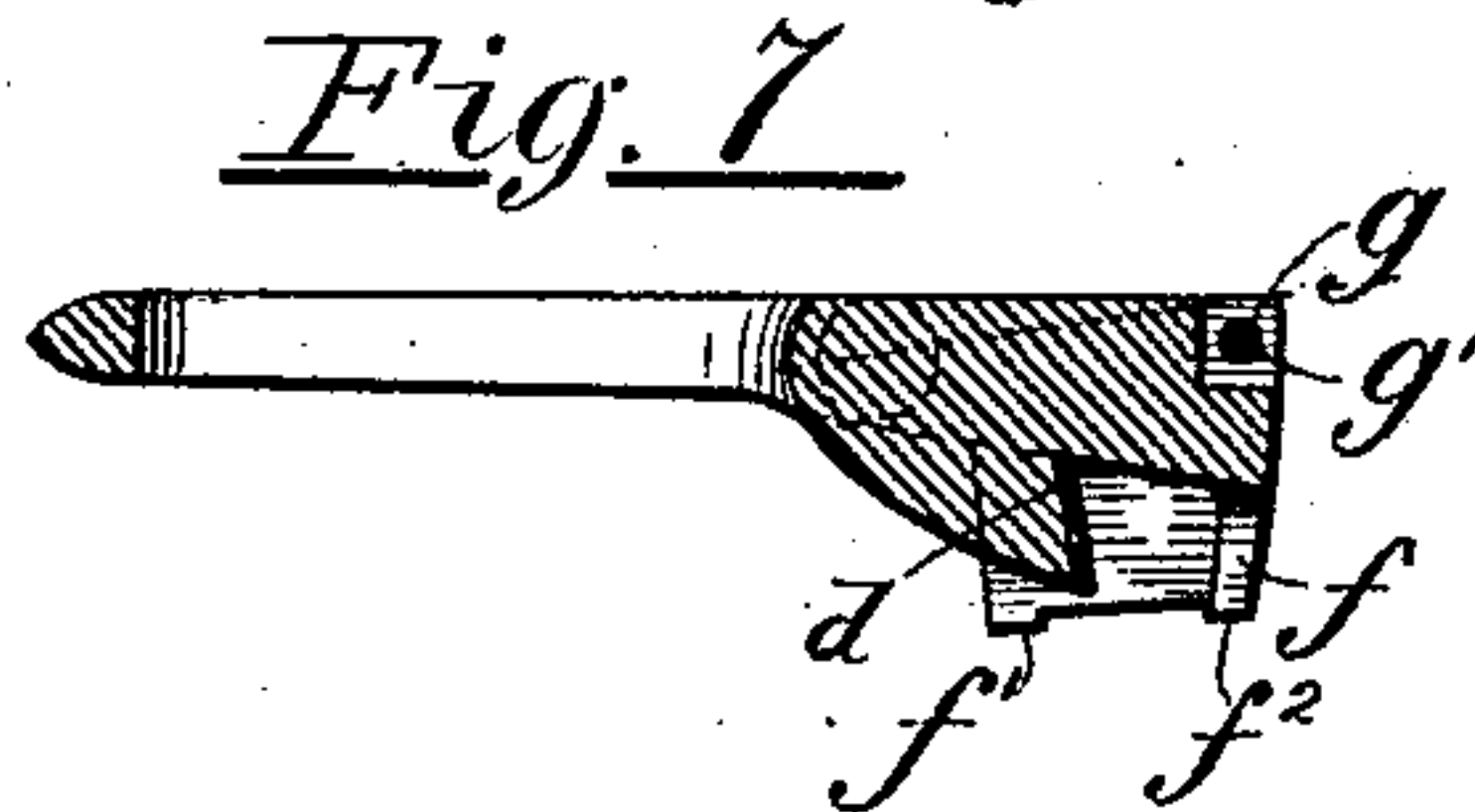
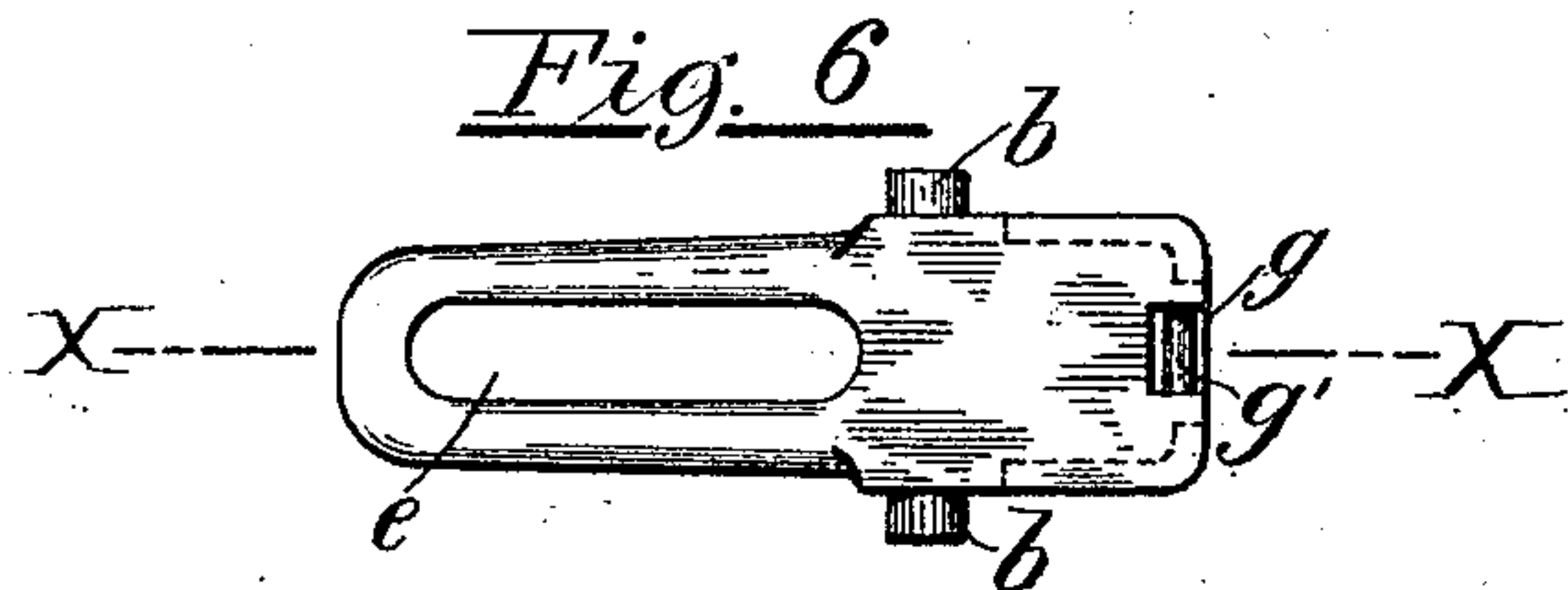
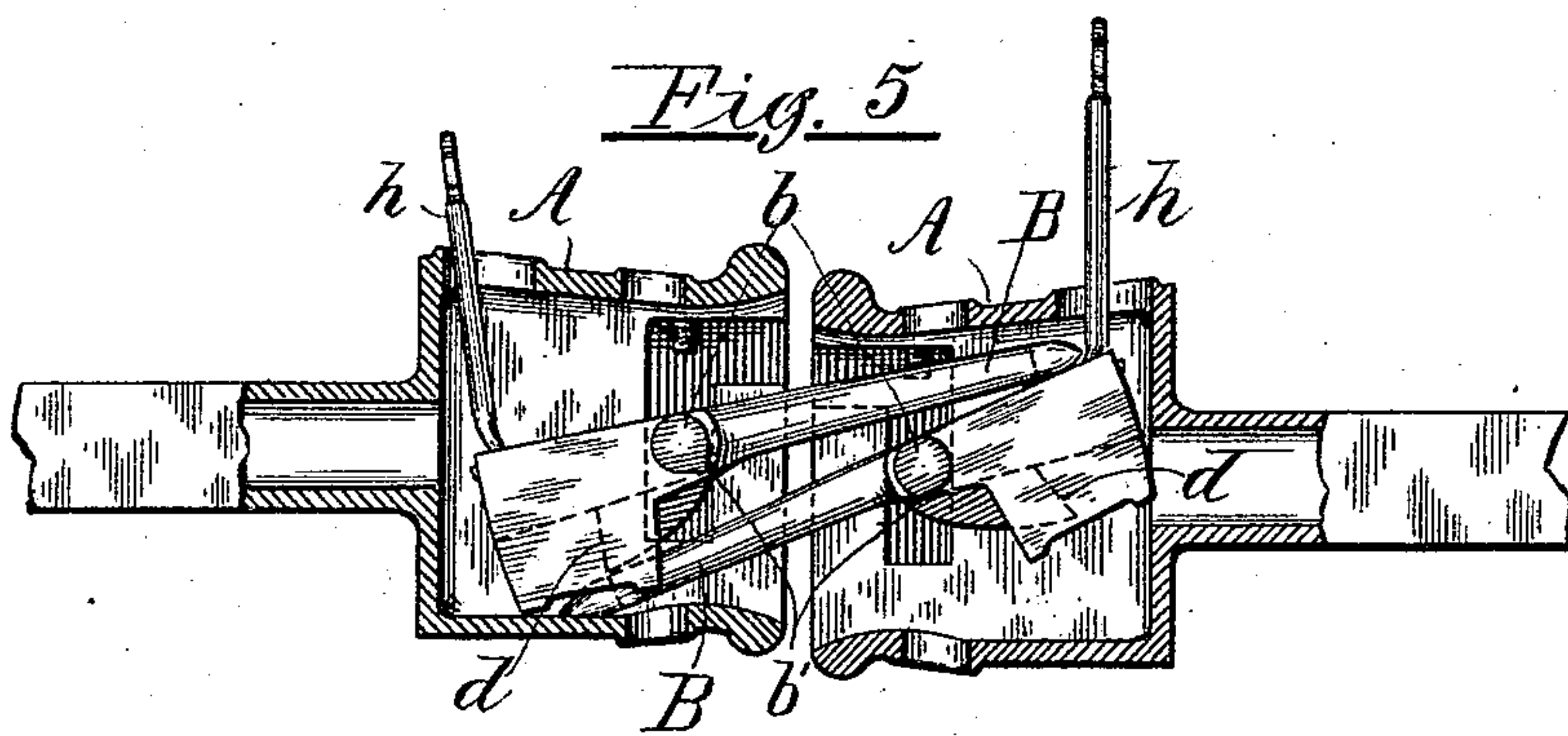
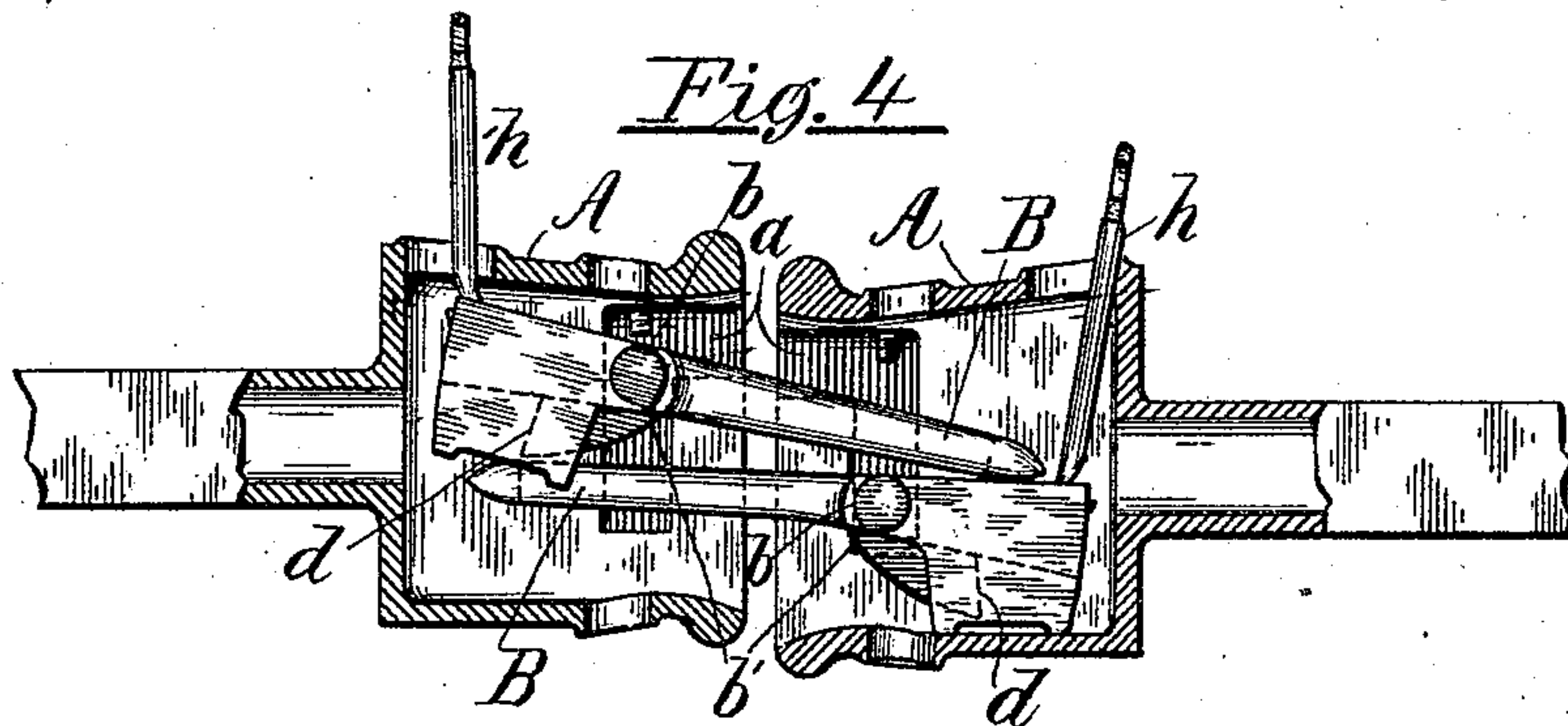
Inventor:

John Mason

J. MASON.  
CAR COUPLING.

No. 485,468.

Patented Nov. 1, 1892.



Witnesses  
H. H. Thurston  
S. J. Murphy.

Inventor:  
John Mason



# UNITED STATES PATENT OFFICE.

JOHN MASON, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO WELCOME B. DARLING, OF SAME PLACE.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 485,468, dated November 1, 1892.

Application filed June 4, 1892. Serial No. 435,481. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN MASON, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Car-Couplings; and I do hereby declare the following specification, taken in connection with the accompanying drawings, forming a part of the same, to be a full, clear, and exact description thereof.

My invention relates to improvements in that class of automatic car-couplings in which the coupling proper consists of a swinging or trunnioned link adapted to engage a hook or projection upon a fellow-link.

The object of the invention is to produce an automatic coupling of the class referred to, which shall be certain in its action, easily manipulated, and which when two cars are coupled together may be uncoupled from either car.

To that end my invention consists in the combinations and arrangements of parts hereinafter described.

Referring to the drawings, Figure 1 represents a side elevation, partly in section, of two opposing draw-heads provided with my improved coupling, the parts being in the position occupied when the links first come in contact in the act of coupling. Fig. 2 is a corresponding side elevation showing the parts in the position occupied just after the ends of the links have entered the opposing draw-heads. Fig. 3 is a like view showing the parts in coupled position. Fig. 4 is a like view showing the parts in the position occupied in uncoupling by the raising of the rear end of the upper link. Fig. 5 is a like view showing the parts in the position occupied when the uncoupling is effected by lifting the rear end of the under link. Fig. 6 is a top view of one of the coupling-links. Fig. 7 is a longitudinal section thereof on the line  $x x$ , Fig. 6; and Fig. 8 is a rear end elevation of the same.

A A represent two opposing draw-heads, which are to be connected to their respective cars in any well-known manner. In car-couplings of the class referred to as heretofore constructed the trunnions for the coupling-link were formed separately from the link itself and were inserted in place in the link after the latter was placed in the draw-head,

open slots being provided in the sides of the draw-head for the purpose. This arrangement was not only inconvenient, but also tended to weaken the construction, both on account of the slots cut in the draw-head and because the trunnions were separate from the coupling-link.

The first feature of my invention consists in the novel construction and combination of parts whereby the trunnions may be formed integral with the coupling-link and the link with the trunnions thus formed thereon be inserted and held in place in the draw-head.

B B represent the coupling-links, each provided with trunnions  $b b$ , formed integral therewith, one of which links is secured in each of the opposing draw-heads in the following manner: The draw-head A is provided with a right-angular groove  $a$  upon the interior of each of its side faces, as clearly shown in the drawings. A set-screw  $c$  passes through the upper wall of the draw-head, the lower end of said set-screw projecting into the slot  $a$  in line with the vertical portion of said slot. By withdrawing the set-screws  $c$  upon the opposite sides of the draw-head A the coupling-link B, with its integral trunnions  $b$ , may be readily inserted within the draw-head, the trunnions  $b$  entering and passing along the horizontal portions of the slots  $a$  and thence into the vertical portions thereof, the links being thereby permitted to fall into place. The set-screws  $c$  are then turned so as to project sufficiently far into the slot  $a$  to prevent the withdrawal of the trunnions from the vertical portions of said slots, as clearly shown in the drawings.

Each of the coupling-links A is provided with a hook or projection  $d$  upon its under side and with an engaging-slot  $e$  at its forward end. The hook or projection  $d$  upon the coupling-link is arranged so that its engaging-face will lie considerably in the rear of the trunnions  $b$ , as shown in the drawings. The rear end of the coupling-link A is provided with downwardly-projecting lugs or ears  $f$ . The bottom edge of each of these lugs  $f$  is formed upon an incline and is preferably cut away, so as to form two separate projections  $f' f^2$ , as shown in the drawings, the effect of the incline being that when the



coupling-link A is in its normal horizontal position, as shown in Fig. 1, only the forward projection  $f'$  will rest upon the bottom of the draw-head. It is not necessary that the bottom of the lug  $f$  be cut away to form separate projections, as the same result may be accomplished without such cutting away. The metal composing the lugs  $f$  constitutes a weight or counter-balance, which acts to normally hold the link in a horizontal position, as shown in Fig. 1.

It is desirable that the length of the draw-head should not be materially increased as compared with those ordinarily in use, and in order to secure the proper leverage for the easy manipulation of the coupling-links in coupling and uncoupling I provide each of the trunnions with a bearing edge  $b'$ , arranged forward of the axis of the trunnion, as shown in the drawings. By this arrangement I am enabled to secure increased leverage without unduly extending the coupling-link in rear of its trunnions or unduly increasing the bulk of the counter-balance. A recess  $g$  is formed at the rear of the coupling-link upon its upper side, across which recess extends a pin or bar  $g'$ , which may be readily engaged by the hook of the bar  $h$ , to the upper end of which bar a chain may be secured running to any desired part of the car.

The operation of my improved coupling-link is as follows: By means of its weighted portion or counter-balance each of the links A is normally held in a horizontal position, as shown in Fig. 1. When in this position, the bearing edge  $b'$  of each of the trunnions  $b$  rests upon the bottom of its slot  $a$  and the forward projection  $f'$  of each of the lugs  $f$  rests upon the bottom of the draw-head. When, now, two cars are brought together, as the opposing draw-heads approach each other the end of one of the coupling-links will be raised, so as to ride upon the other, the forward ends of each link being beveled, as shown, to effect such action. As the opposing draw-heads continue to approach each other the outer or recessed end of the upper link will be raised somewhat above its normal position, and its tendency to return to its normal position will exert a force upon the outer end of the lower link, tending to depress the same. If there were any great resistance to the rising of the outer end of the upper link, the tendency to depress the outer end of the lower link would be so great that the end of the lower link would be liable to be directed below the open end of the draw-head, and thus be forced outside of the same. To guard against this and to secure the entrance of the outer end of the lower link into the open end of the opposite draw-head is one of the advantageous results secured by forming the bottom edges of the lugs  $f$  on an incline, whereby when the link is in its normal position only the forward corner of the counterbalanced portion or the forward projection  $f'$  will rest upon the bottom of the draw-head. With this

construction the first effect of raising the outer end of the upper link will be to swing the link as a whole upon such forward projection  $f'$  as a fulcrum until such time as the rear projection  $f^2$  comes in contact with the bottom of the draw-head, the bearing edges of the trunnions  $b$  being at the same time raised out of contact with the bottom of the slots  $a$ . By reason of the fact that the greater portion of the counter-balance is in the rear of the projection  $f'$  this tipping of the link upon such projection as a fulcrum and the consequent raising of the outer end of the link will be easily effected and the pressure of the outer end of the upper link upon the lower link and the consequent tendency to depress the outer end of the lower link will be materially reduced and so that the outer end of the lower link will be certain to enter the open end of the opposing draw-head, the counter-balanced portion of the lower link also serving to effect this result. The parts are so arranged and combined that the outer end of the lower link shall enter the open end of the opposing draw-head at least by the time the rear projections  $f^2$  have come in contact with the bottom of such draw-heads. As the opposing draw-heads continue to approach each other the parts will be brought into the position shown in Fig. 2, in which position, as will be seen, the outer end of the upper link has reached a point above and in line with the trunnions of the lower link. The further movement of the draw-heads toward each other will cause the outer end of the lower link to pass underneath the hook or projection  $d$  upon the upper link, such movement causing the upper link and the hook or projection thereon to be lifted bodily and so as to permit the passage of the recessed end of the lower link. When the lower link has entered the opposing draw-head sufficiently far to bring its recess  $e$  in line with the hook  $d$  on the upper link, the upper link will fall by gravity, so as to cause its hook to enter the recess in the lower link, the lower link at the same time, under the action of its counter-balance, swinging upon its trunnions as a fulcrum, thus bringing the parts into coupled position, as shown in Fig. 3. At this time the outer end of the upper link will have passed beyond the trunnions of the lower link, as shown in said Fig. 3, and resting upon the lower link in rear of its trunnions will assist in effecting the coupling movement.

As hereinbefore stated, with the construction and arrangement of parts above described the uncoupling may be effected from either car, and when it is desired to uncouple all that is necessary to be done is to raise the rear end of either the upper or the lower link.

The operation of the parts in uncoupling by raising the rear end of the upper link will be first described. The parts when coupled being in the position shown in Fig. 3, it will be apparent that when the rear end of the up-



per link is lifted the outer end of the lower link will follow up said upper link, turning upon the bearing edges of its trunnions as a fulcrum until the forward projections  $f'$  of the lower link come in contact with the bottom of its draw-head, when the fulcrum will be shifted to said projections  $f'$  and the lower link then turned upon said projections  $f'$  as a fulcrum until the rearward projections  $f^2$  come in contact with the bottom of the draw-head, as shown in Fig. 4. The forward end of the upper link will then rest upon the counterbalanced portion of the lower link, as shown in said Fig. 4, and a further lifting of the rear end of the upper link will cause said upper link to swing upon its forward end as a fulcrum, thereby raising the rear or counterbalanced portion of said upper link and lifting the hook  $d$  out of the recess  $e$  of the lower link and effecting the uncoupling. By reason of the location of the projection  $d$  so that its engaging-face lies considerably in the rear of the trunnions it will be seen that the rear end of the upper link does not require to be raised as high as would otherwise be the case, with the result that the draw-head may be closed on the top and at the same time be of only slightly-greater height than the draw-heads ordinarily in use.

The operation of the parts in uncoupling by raising the rear end of the lower link is as follows: The parts being, as before, in the coupled position shown in Fig. 3, the raising of the rear end of the lower link will not only serve to throw the outer end of the lower link downward, but will also serve to raise the outer end of the upper link, said upper link turning upon the rearward projections  $f^2$  of its counterbalanced portions as a fulcrum, by which movements of the two links the hook  $d$  of the upper link will be withdrawn from the recess  $e$  of the lower link and the uncoupling thereof effected, as shown in Fig. 5.

By the construction and arrangement of parts above described an automatic coupling is produced which is certain in its action, which is easily manipulated, and which when two cars are coupled together may be uncoupled from either car. Furthermore, the movements of the parts are all within a comparatively-narrow compass, and by the principles of leverage employed a counterbalance of comparatively-small proportions may be used, whereby the draw-heads require to be only slightly larger than those ordinarily employed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A draw-head provided with right-angular grooves in its opposite interior faces for the reception of a trunnioned coupling-link, substantially as described.

2. The combination, with a draw-head provided with right-angular grooves upon its opposite interior faces, of a coupling-link provided with trunnions formed integral therewith and set-screws projecting one into each of said grooves to prevent the withdrawal of said coupling-link, substantially as described.

3. A coupling-link provided with trunnions and having a counterbalanced portion in rear of said trunnions and a hook or projection for engaging a fellow link, the engaging-face of said projection being likewise in the rear of said trunnions, substantially as described.

4. A coupling-link provided with trunnions and having a counterbalanced portion, the bottom edge of which is formed on an incline, substantially as and for the purposes described.

5. A coupling-link provided with trunnions and having a counterbalanced portion, the bottom edge of which is formed on an incline and cut away so as to provide two separate projections, one in the front and the other at the rear of said counterbalanced portion of the link, substantially as described.

6. A coupling-link provided with trunnions and having a counterbalanced portion and an engaging hook or projection, said trunnions being provided with bearing edges in front of the axis of said trunnions, substantially as described.

7. A coupling-link provided with trunnions and having a counterbalanced portion and an engaging hook or projection, said link being provided at its outer rear end with a recess, and a bar extending across said recess for the engagement of a rod for operating said link, substantially as described.

8. The combination, with two opposing draw-heads, of two trunnioned coupling-links, one mounted in each of said draw-heads, each of said coupling-links being provided with a coupling-slot and a counterbalanced portion and with a hook or projection for engaging its fellow link, the engaging-face of said hook or projection being in the rear of the trunnions, whereby the uncoupling of said links may be effected by raising the rear end of either of said links, substantially as described.

JOHN MASON.

Witnesses:

W. H. THURSTON,  
S. J. MURPHY.