

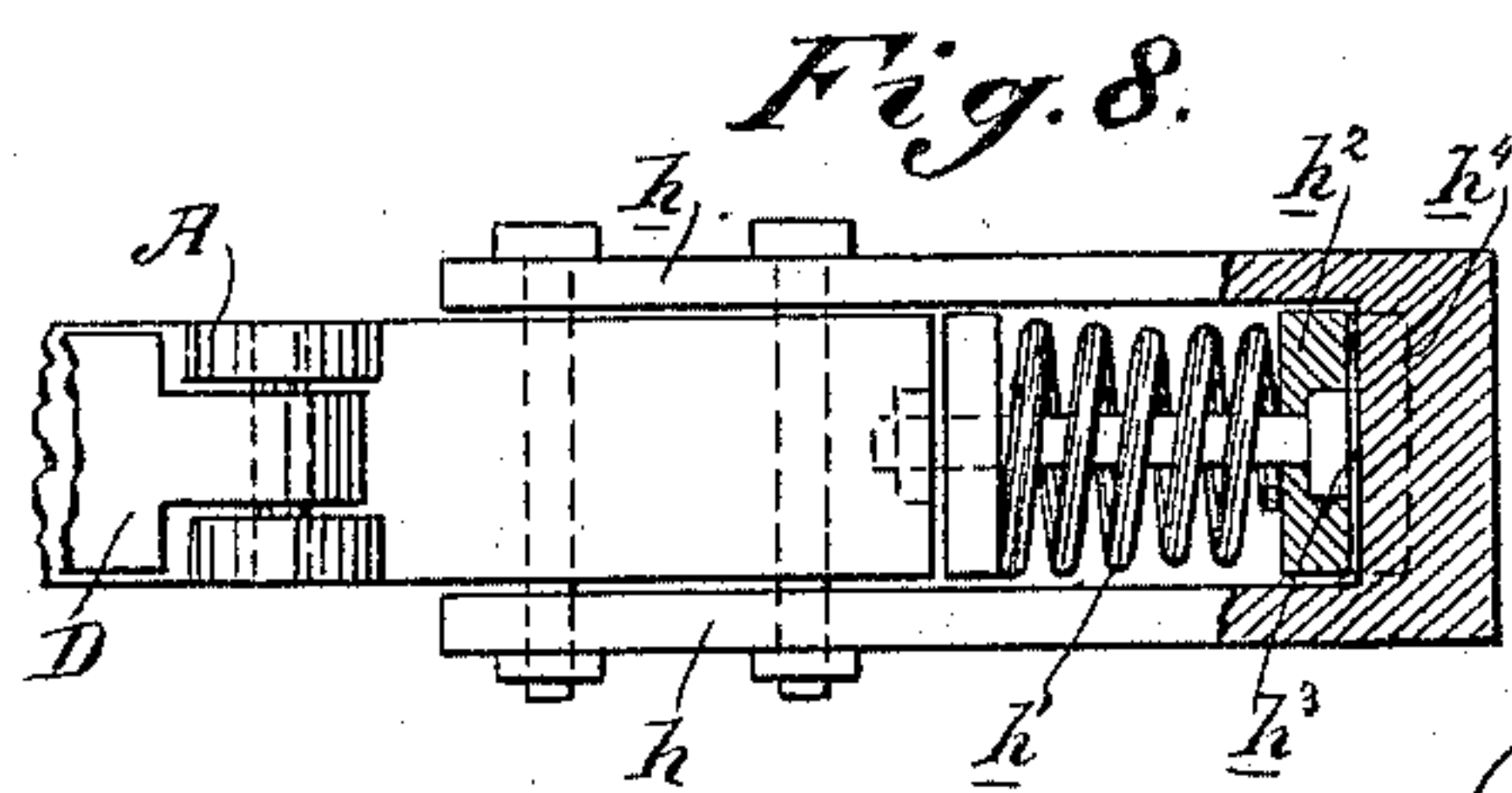
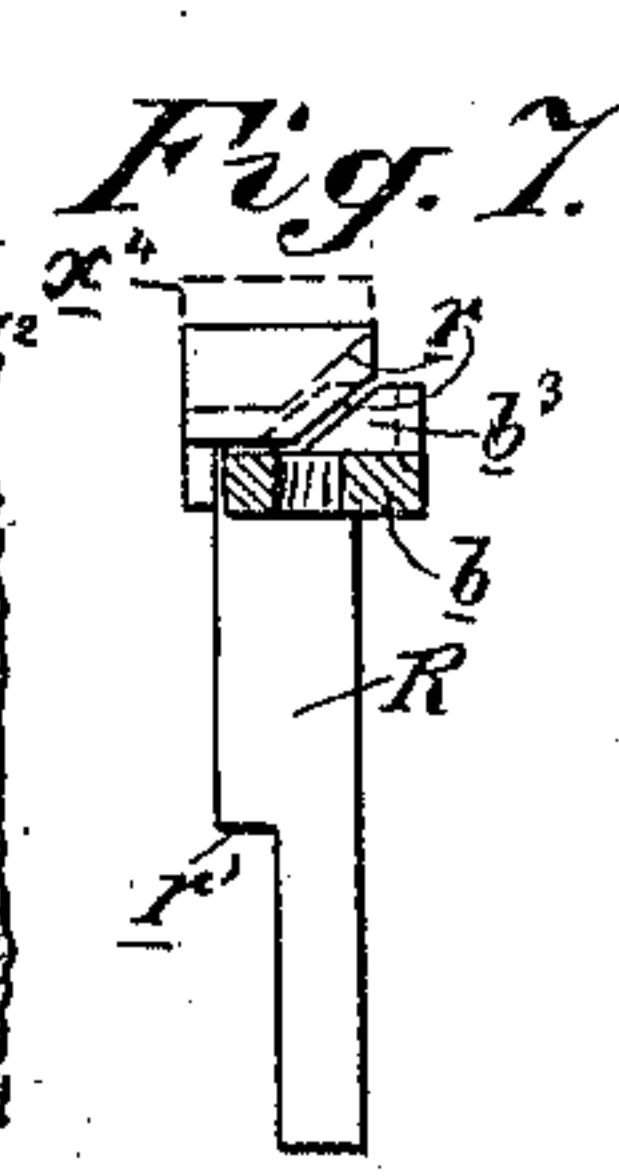
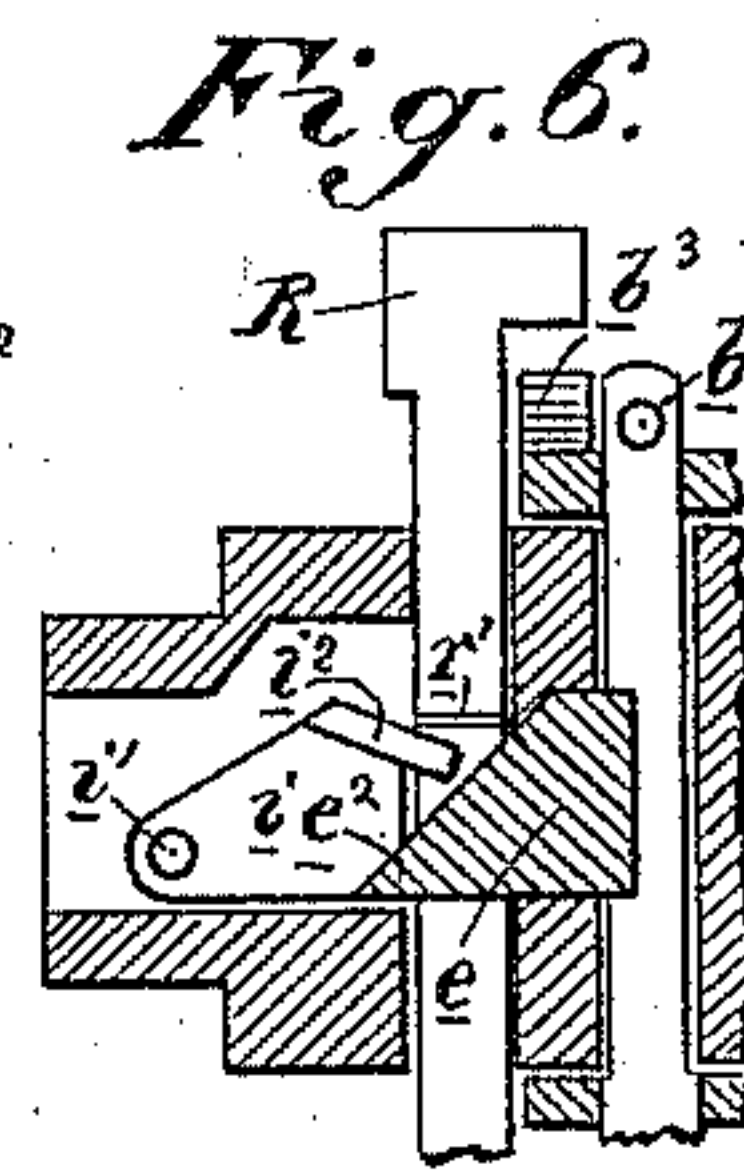
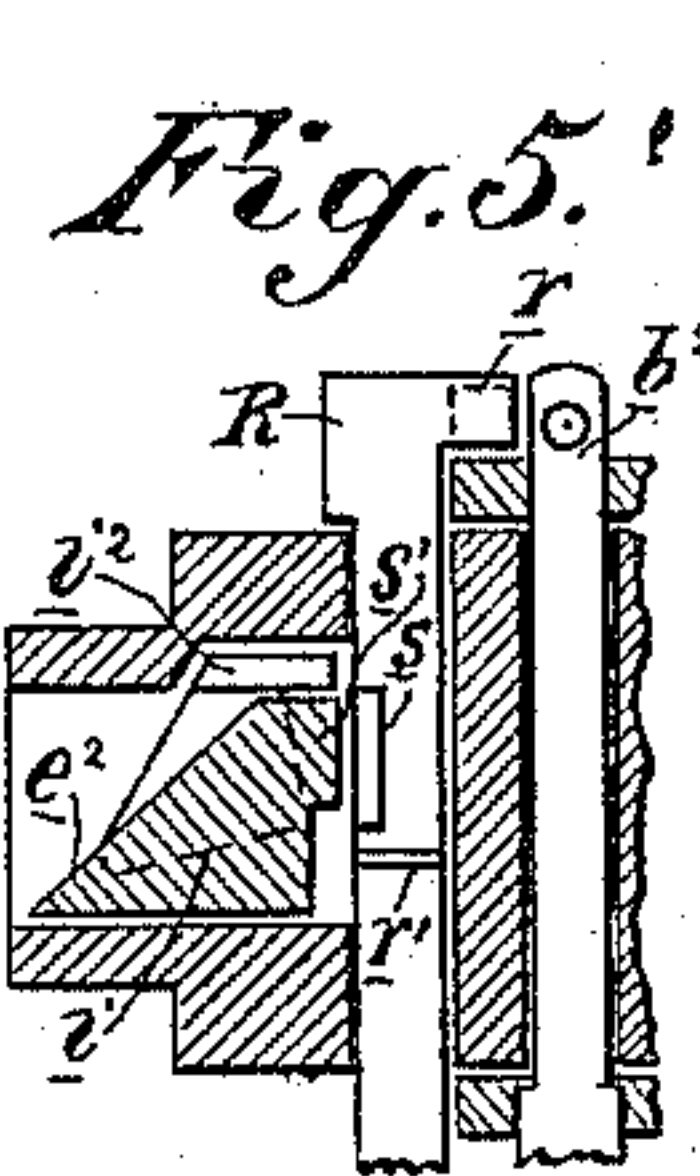
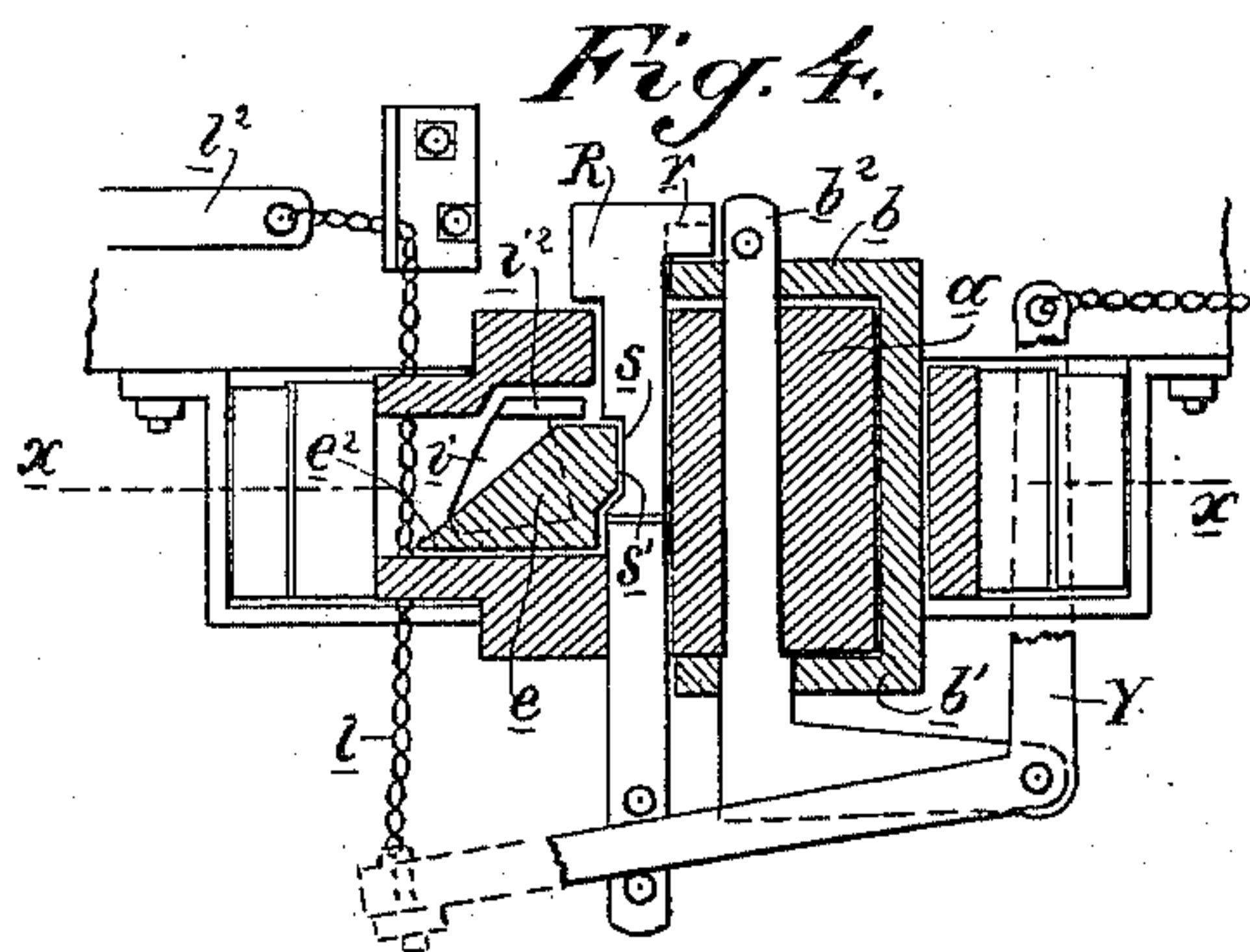
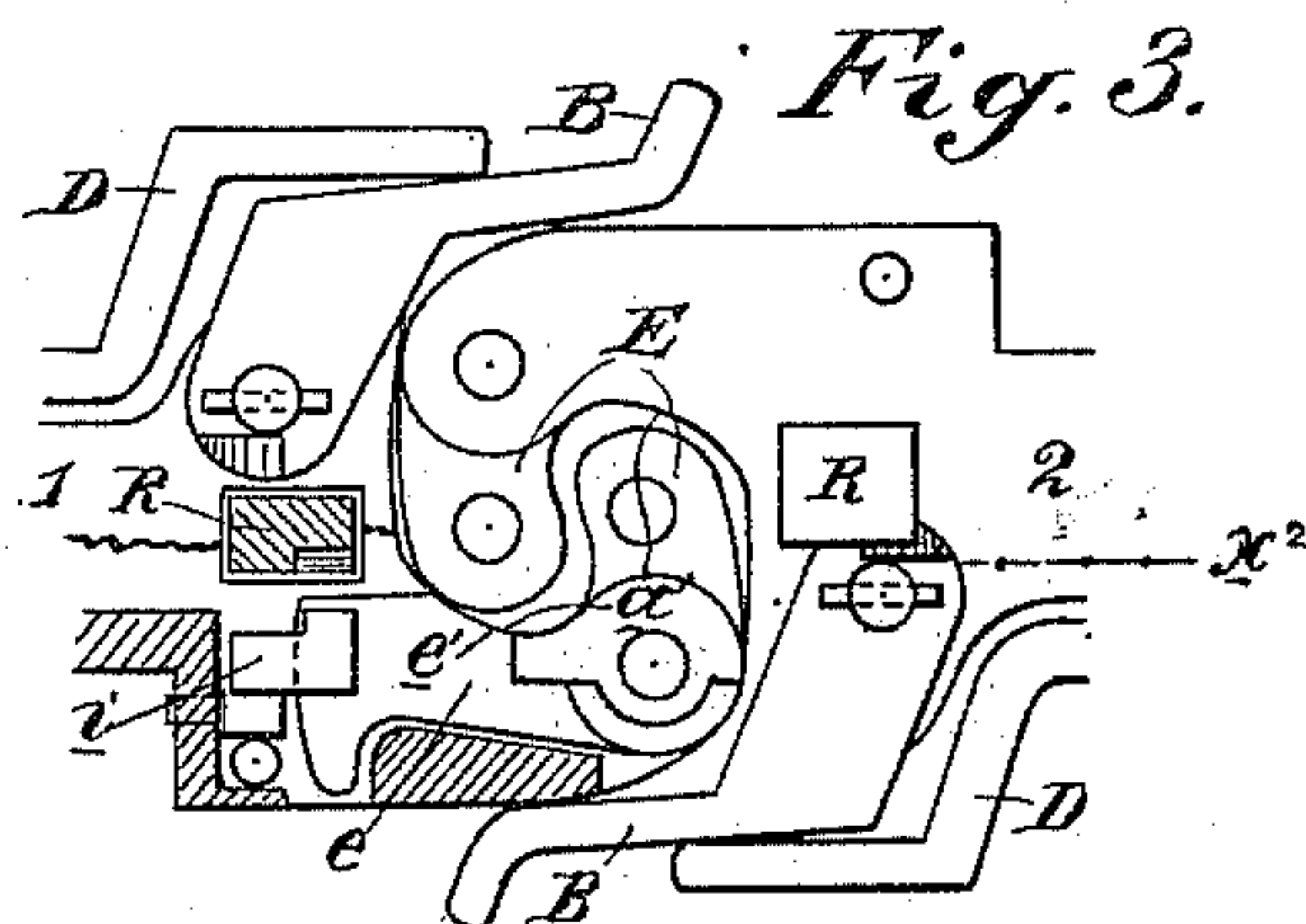
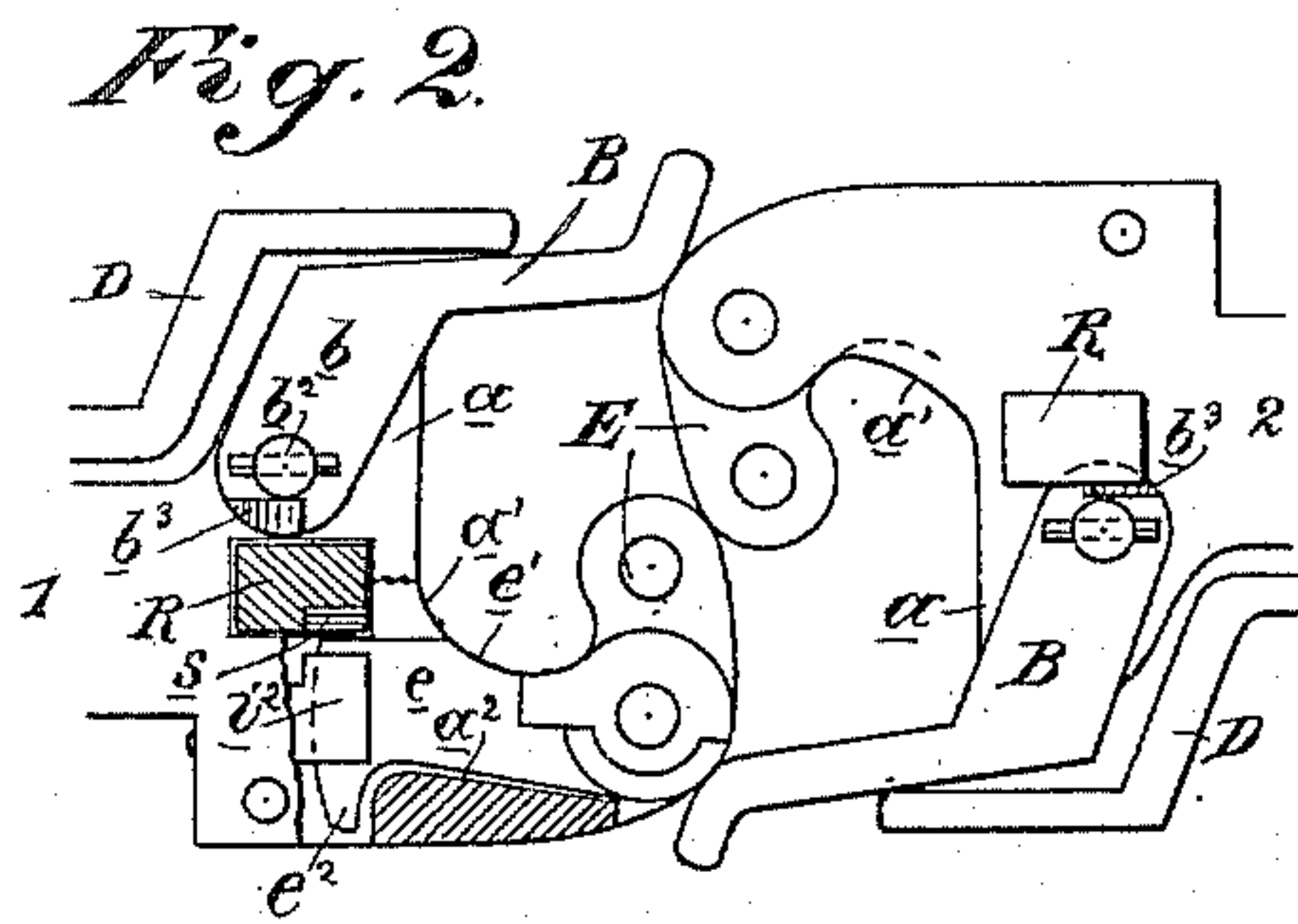
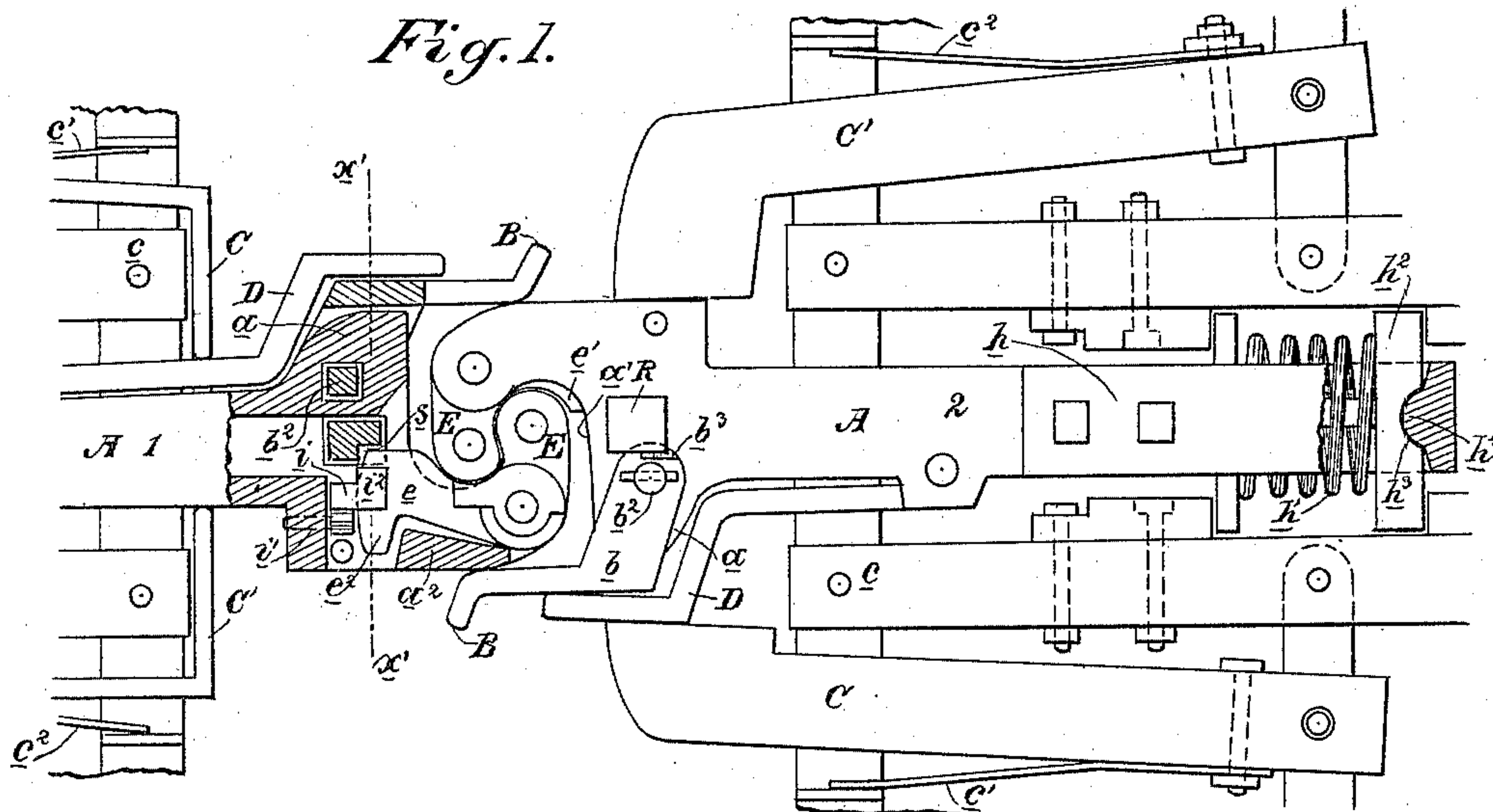
(No Model.)

2 Sheets—Sheet 1.

J. C. LOOK.  
CAR COUPLING.

No. 493,933.

Patented Mar. 21, 1893.



Witnesses,  
S. H. House  
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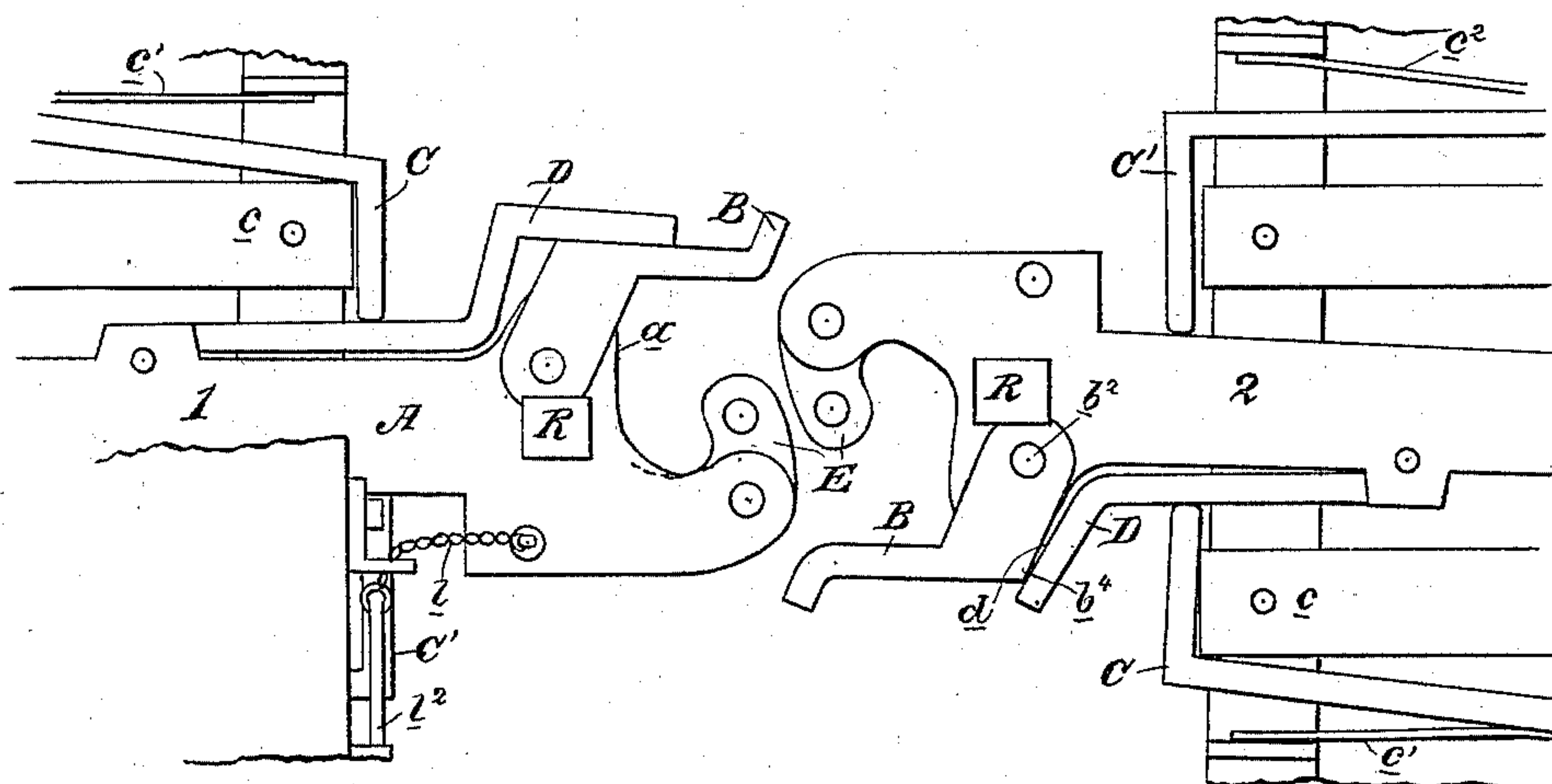
Inventor,  
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2 Sheets—Sheet 2.

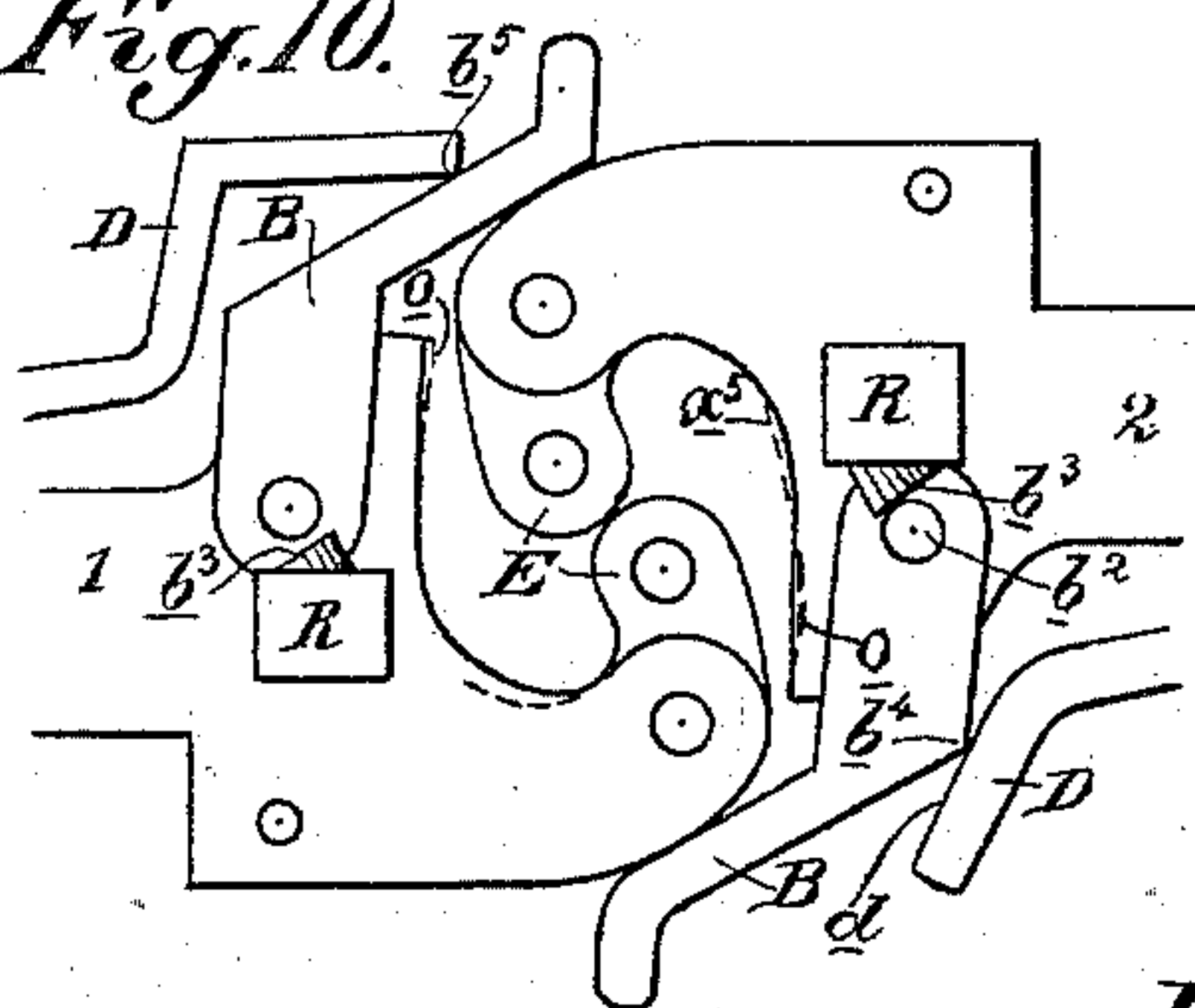
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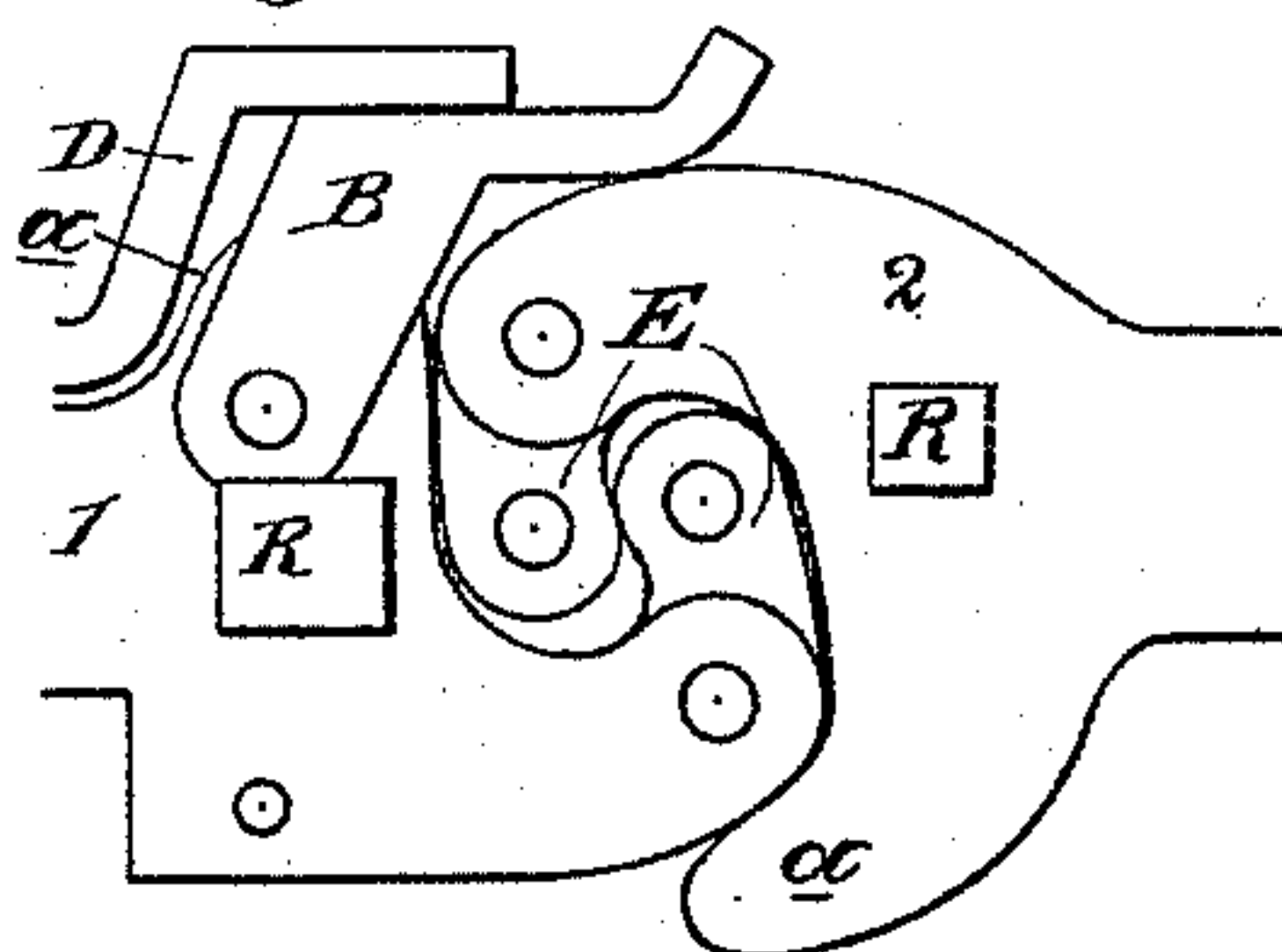
*Fig. 9.*



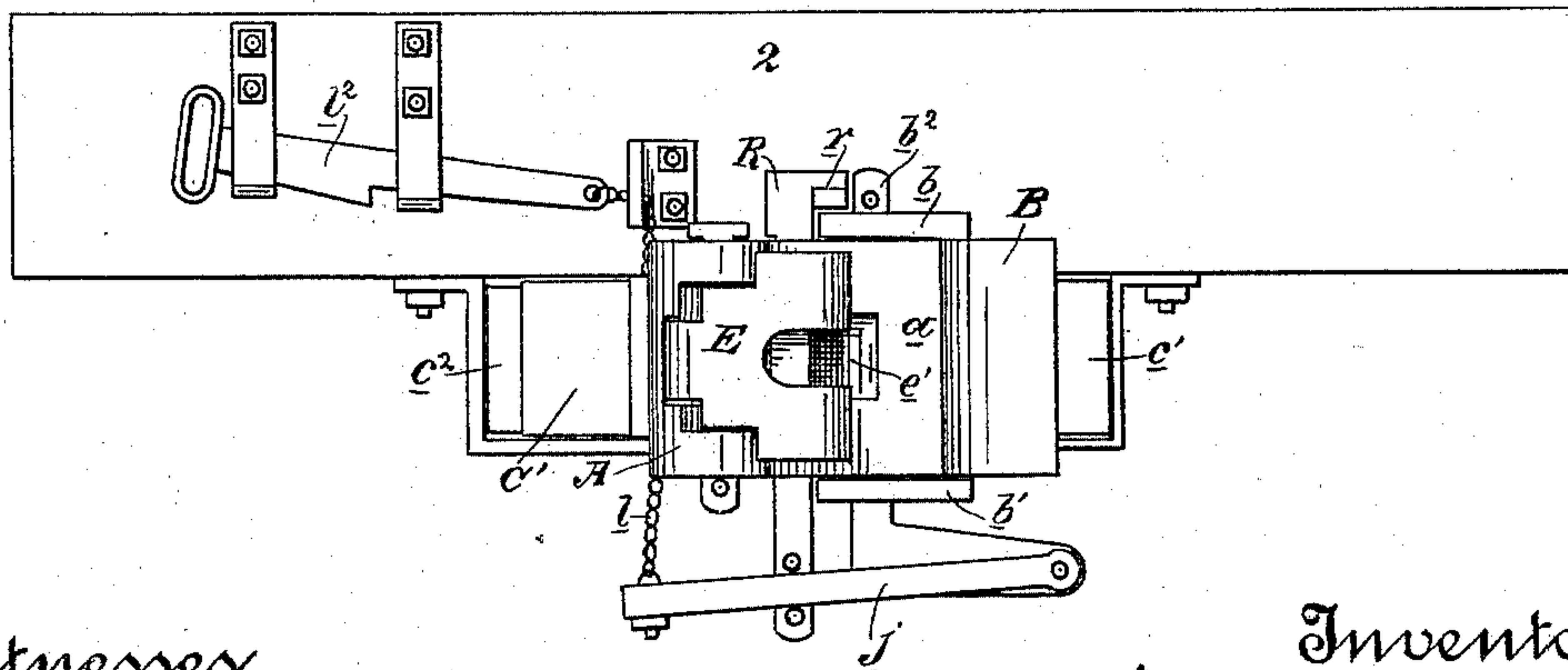
*Fig. 10.*



*Fig. 11.*



*Fig. 12.*



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# UNITED STATES PATENT OFFICE.

JOHN C. LOOK, OF SAN JOSÉ, CALIFORNIA.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 493,933, dated March 21, 1893.

Application filed June 3, 1892. Serial No. 435,414. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. LOOK, a citizen of the United States, residing at San José, Santa Clara county, State of California, have  
5 invented an Improvement in Car-Couplings; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the vertical plane type having pivoted hook heads and pivoted  
10 guards; and consists in an automatic lock for the pivoted guard whereby it is held in a fixed position when the coupling is under draft, and released when buffing, or when a coupling is to be made; both locking and releasing be-  
15 ing accomplished automatically.

It more properly relates to an improvement on a car coupling described in Patent No. 474,090, granted to me May 3, 1892, the form of which will be used in connection with this  
20 description.

There are also other improvements on the aforesaid coupling, which will be hereinafter fully described.

In the drawings,—Figure 1 is a top view of  
45 two couplings in a coupled position; they being represented as under draft; the drawhead on car 1 being in section on line  $x-x$  of Fig. 4. Fig. 2 is a plan view of two coupling heads in the act of coupling when both hooks  
30 are closed; one drawhead being partly in section. Fig. 3 is a plan view of two coupling heads buffing; one drawhead being partly in section. Fig. 4 is a front elevation, the drawhead and guard, and lever arm being in section on line  $x'-x'$  of car 1, Fig. 1. It is represented as being under draft. Fig. 5 is a sectional part on the same line as Fig. 4, showing the position of the lever arm when released. Fig. 6 is a sectional part on the same line as  
40 Fig. 5, showing the vertical locking pin raised and supported by a swinging catch; the lever arm being shown as being partly out. Fig. 7 shows the vertical locking pin in connection with the arm of the pivoted guard taken on line  $x^2-x^2$  of Fig. 3, drawhead 2. Fig. 8 shows a side elevation of the stem of the drawbar of car 2, in Fig. 1; it is partly in section. Fig. 9 shows the position of the coupling heads when the cars are separated; both being closed.  
50 Fig. 10 shows two heads in the act of coupling. Fig. 11 shows a solid guard type coupled to a pivoted guard type; they are in buffing

contact. Fig. 12 shows a front elevation of a car fully equipped with the improved coupling.

The locking of the pivoted guard is accomplished by an incline in connection with the arm of the pivoted guard and the head of the locking pin. The locking pin R is of the usual type, inserted to lock the lever arm  $e$  of  
55 the pivoted head E. Near by this locking pin, on the buffer arm  $a$ , is pivoted the guard B. This guard has two arms  $b$  and  $b'$ , which pass over the buffer arm  $a$ , one above and one below, and are pivoted at  $b^2$ . The arm  $b$   
60 on the top extends beyond the pivot  $b^2$  to the locking pin R, and passes under the projecting head of said locking pin. On the extended portion of this arm is a lug  $b^3$ , that has an incline rising rearwardly; and the  
65 head of the locking pin that extends out over the lug  $b^3$  has a corresponding incline  $r$ . The relative positions are shown in Fig. 7, which is taken on line  $x^2-x^2$  of Fig. 3; this position is when the guard B is in its forward posi-  
70 tion and the locking pin is down to place.

The top view is shown in Figs. 1, 2 and 3, and the front view in Figs. 4 and 5; but should the guard B be flexed, as in effecting a coupling, which is shown in Fig. 10, the arm  $b$  of  
80 the guard B turns on the pivot  $b^2$ ; the lug  $b^3$  with the incline moves forward under the incline  $r$  of the head of the locking pin R, which causes said pin to rise, as is shown in dotted lines at  $x^4$  in Fig. 7; and when the hooks are  
85 coupled the side springs hereinafter mentioned press the guards into place and the pin drops. Now when the draft comes on the locking pin from the lever arm  $e$ , it will be quite difficult to raise the said locking pin, so  
90 that the lug  $b^3$  on the arm  $b$  is kept back, and only a lateral force on the guard to overcome the forward strain on the locking pin would raise the pin. The locking pin R is yet further secured by being notched as shown at  $s$ ,  
95 Figs. 4 and 5. Working in this notch is a corresponding projection  $s'$  on the lever arm  $e$  of the pivoted head E; in this case the lever arm must be thrown back out of the notch before the pin can be raised, as is seen in Figs. 2, 3  
100 and 5. This notch  $s$  and the projection  $s'$  may be inclined as is shown in Fig. 4. The value of the incline is two-fold; for should the locking pin not be quite down, or the guard



B not turned to place, the lever arm *e* working in the inclined notch will pull the pin down, and thus turn the guard by pressing the lug *b*<sup>3</sup> backward, which cannot be accomplished in either Figs. 5 or 6. And also should the coupling become detached at its rear end there would be only a slight pressure of the lever arm left and the chain *l* pulling upward from the car would raise the locking pin out of the incline *s*' and thus uncouple the pivoted head. But in Fig. 5 the coupling would be jerked away from the car, as the lock is positive. This incline may be increased or diminished; making the incline more horizontal increases its power, and making it more perpendicular decreases its power, so that any degree of lock may be had from a plain friction, as is shown in Fig. 6, to a positive lock as is shown in Fig. 5; and the same can be accomplished with the incline *r* in the head of the pin, only a more perpendicular incline increases the power, and a more horizontal diminishes it. This guard should not be held rigid against the back of the opposite coupling head, but have a small lateral play, to allow the coupling to work well on curves. To effectually couple, and lock, and release this device, a certain relation must exist between the vertical walls of the draw-bar and the lever arm *e*, as the lever arm must be thrown backward out of the catch *s* in the locking pin. This is accomplished by pressure on the front face of the pivoted hook head *E*, as is shown in Fig. 2, or by pressure on the incline *e*' in the lever arm *e*, as shown in Fig. 3. The locking pin is then free to be raised to uncouple, or to allow the guard to be flexed. The wall *e*' of the incline in the lever arm *e* is at this time even with the wall *a*' of the incline in the draw-bar; and the rear wall *a*<sup>2</sup> is set back to allow this to be accomplished, as shown in Figs. 2 and 3. When the coupling is under draft, the wall *e*' in the lever arm *e* is out beyond the wall *a*' in the draw-bar, as shown in Fig. 1, to allow it to be first pressed against in buffing, so that the locking pin is released on the slightest buffing contact. The lever arm *e* may be allowed to still further recede to form an incline on the front face of the hook-head *E*, toward the guard *B*, as shown in Figs. 2, 9 and 10 and yet not affect the operation of the coupling; for when the hooks have passed as far as represented in Fig. 10, they are forced into place by the lateral pressure of the guards. This incline on the face of the hook head may be made to correspond to the incline in the buffer arm of other couplings of this type that have a different incline, as shown in Fig. 11, drawhead 2, thus preventing the breakage of the hooks caused by the use of such other incline, and making it possible to use such an incline in this draw-bar, as shown in dotted line *x*<sup>5</sup>, Fig. 10. But in that case a reverse incline *o*, Fig. 10, must be used. The reverse incline may be used on the flat face buffer arm with good effect, but

the incline must be very slight, as is shown in dotted line *o* Fig. 10, car 1. The incline on the face of the hook also makes it possible to hold the coupling nearer the center line of the car when the cars are separated, than is described in the former patent, as the hooks will slide by each other in coming together, as is shown in Figs. 9 and 10.

A new device is shown for holding up the locking pin *R* when the lever arm *e* is out and the pin is left loose to couple. It consists of a swinging triangular catch *i* hung on a pin *i*' that is made fast to the wall in the draw-bar rearward of the place occupied by the lever arm *e*, as shown in Fig. 3. By the manner of swinging it, as shown in Fig. 6, the gravity is to the side toward the locking pin. On the top of this triangular piece *i* is a projection *i*<sup>2</sup>, which extends out over the lever arm *e* and then toward the locking pin. When the lever arm *e* is in place, as in Figs. 3, 4 and 5, the catch is raised up, the projection *i*<sup>2</sup> occupying a recess in the upper part of the drawhead; but when the lever arm is out, as in Fig. 6, this catch by its gravity falls, so that the projection *i*<sup>2</sup> comes under the shoulder *r*' in the locking pin. The pin may then be released from the car and held up by the catch *i*<sup>2</sup>. In connection with this arrangement, the lever arm has a projection *e*<sup>2</sup> which is inclined from its end upward, and this incline coming under the projection *i*<sup>2</sup> of the catch raises it up past the shoulder *r*' of the locking pin, which is then free to drop when the lever arm is in place.

Another way from that shown in my previous patent, is shown of applying the spring on the draw-bar *A* from the car, as represented by the spring bar *C*', Fig. 1, car 2, which saves cutting into the draft timbers, and produces the action directly opposite the spring bar *C*. Another way is shown in car 1, Fig. 1, and in Fig. 9, in which the the spring bars may be made in iron and press on the draw-bar immediately in front of the draft timbers. This result is the same as in car 2, Fig. 1, the pressure being exerted on the draw-bar and guard *D* to hold them together, by which action the guard *B* is held in place, and the stop *c* for the stronger spring *c*' so placed as to hold the coupling bar in the required position when the cars are separated. For in this case, as in my former patent, the spring *c*' is stronger than the spring *c*<sup>2</sup> and is controlled by a stop *c* whereby the coupling is held as desired.

In Figs. 9 and 10, car 2, the guard bar *D*, acts on the guard *B* with an incline. The spring bar *C* acting on the guard bar *D* forces it inward, and the incline *d* pressing on the rear of the guard *B*, at *b*<sup>4</sup> which is out from its pivotal center *b*<sup>2</sup>, forces it forward into the coupled position; the result being the same as in car 1 where the incline is formed at *b*<sup>5</sup> on the guard *B*, Fig. 10.

A new way is shown of forming the pivot for swinging the draw-bar *A*. It consists of the familiar U-shaped strap *h*, Figs. 1 and 8,



which is bolted on to the draw-bar, and incloses the draft spring  $h'$ , so arranged with the rear draw-plate as to form the pivot. This is accomplished by having the rear draw-plate  $h^2$  hollowed in the center vertically, as shown at  $h^3$ , and an oval boss  $h^4$  on the strap to work in the socket  $h^3$ .

In Fig. 4, a bell-crank Y is shown with which to raise the locking pin whereby the uncoupling may be done from the other side from that shown in Fig. 12.

In Fig. 12,  $l^2$  is the operating bar connected with the chain  $l$  which operates the lifting bar  $j$  for raising the locking pin R, being the same as in my previous patent.

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

1. In a car coupling, the combination of a draw-bar having a pivoted hook-head and pivoted guard, and a connection between the pivoted hook-head and pivoted guard comprising inclined surfaces on said hook-head and guard whereby the draft pressure on the pivoted hook-head tends to hold the pivoted guard in a fixed position on the draw-bar, substantially as herein described.

2. In a car coupling, the combination of a draw-bar having a pivoted hook-head and pivoted guard, and a locking device for the pivoted hook-head, and a connection comprising contacting inclined surfaces between the locking device and pivoted guard whereby the draft pressure on the locking device tends to hold the pivoted guard in a fixed position on the draw-bar, substantially as herein described.

3. In a car coupling, the combination of a draw-bar having a pivoted hook-head and pivoted guard, and a locking device for the hook-head, and an incline in connection with the locking device and pivoted guard whereby the locking device is operated as in uncoupling when the guard is flexed, substantially as herein described.

4. In a car coupling, the combination of a draw-bar having a pivoted hook-head and pivoted guard with extended arm  $b$ , a vertical locking pin for the hook-head, having a projection on its upper end extending out over the arm  $b$  of the pivoted guard, and an incline in connection with said projection and arm, whereby the pivoted guard is held forward into the coupled position when the locking pin is down and under draft pressure, substantially as herein described.

5. In a car coupling, the combination of a draw-bar having a pivoted hook-head with lever arm and a pivoted guard, a locking pin having an incline in connection with the pivoted guard whose downward pressure throws the guard forward, and a notch in the locking pin for the lever arm of the hook-head, whereby the locking pin is held down when the coupling is under draft, substantially as herein described.

6. In a car coupling, the combination of a draw-bar having a pivoted hook-head with lever arm and a pivoted guard, a locking pin for the hook-head, an incline in connection with the locking pin and pivoted guard to hold the guard, a notch in said locking pin for the lever arm of the hook-head, and an incline in connection with said notch and lever-arm, whereby the locking pin is drawn down more firmly under heavy draft pressure, and more easily uncoupled under light draft pressure, substantially as herein described.

7. In a car coupling, the combination of a draw-bar having a vertical wall  $a'$ , a pivoted hook-head with lever arm and yielding pivoted guard, devices for locking the pivoted guard including the notched locking piece for the reception of the lever arm of the hook-head, and the vertical wall  $e'$  of the incline in the lever arm standing out in front of the vertical wall  $a'$  of the incline in the draw-bar, when the lever arm is in the notch, and to recede back when there is buffing pressure, substantially as herein described.

8. In a car coupling, the combination of a draw-bar having a flat face pivoted hook-head and yielding guard, and a drawhead so recessed for the lever arm of the pivoted head, as to allow an inclined plane to be formed of the flat face of the hook-head, said incline pointing inwardly toward the direction of the guard, substantially as herein described.

9. In a car coupling, the combination of a draw-bar having a flat face hook-head and yielding guard, said hook-head forming an inclined plane of its front face, a spring to act from the car on the draw-bar side, and a stronger spring, in connection with a stop, to act from the car on the guard bar side, to hold the hook in a central location when the cars are separated substantially as herein described.

10. In a car coupling, a draw-bar having a flat face pivoted hook-head and pivoted guard, and the reverse incline  $o$ , substantially as herein described.

11. A laterally swinging draw-bar with U-shaped strap  $h$  having the oval boss  $h^4$  and socket  $h^3$  in the draw-plate  $h^2$ , substantially as herein described.

12. In a car coupling, a draw-bar having a pivoted hook-head with a locking lever arm, a vertical locking pin having a shoulder for the locking lever, the swinging catch  $i$  for resting under the shoulder of the locking pin when the locking lever is out, and the inclined projection  $e^2$  on the lever arm, substantially as herein described.

In witness whereof I have hereunto set my hand.

JOHN C. LOOK.

Witnesses:

S. H. NOURSE,  
J. A. BAYLESS.