

No. 714,693.

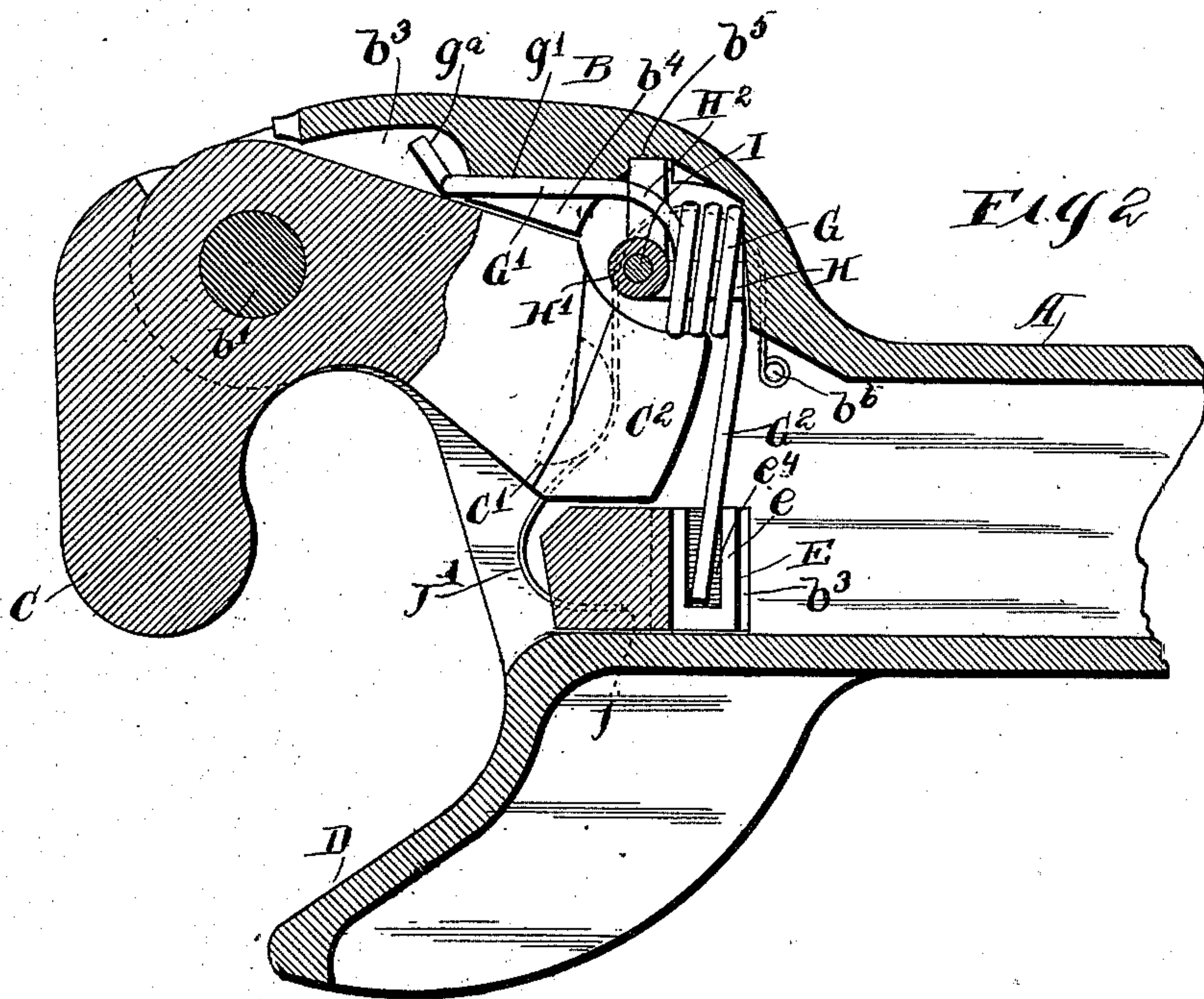
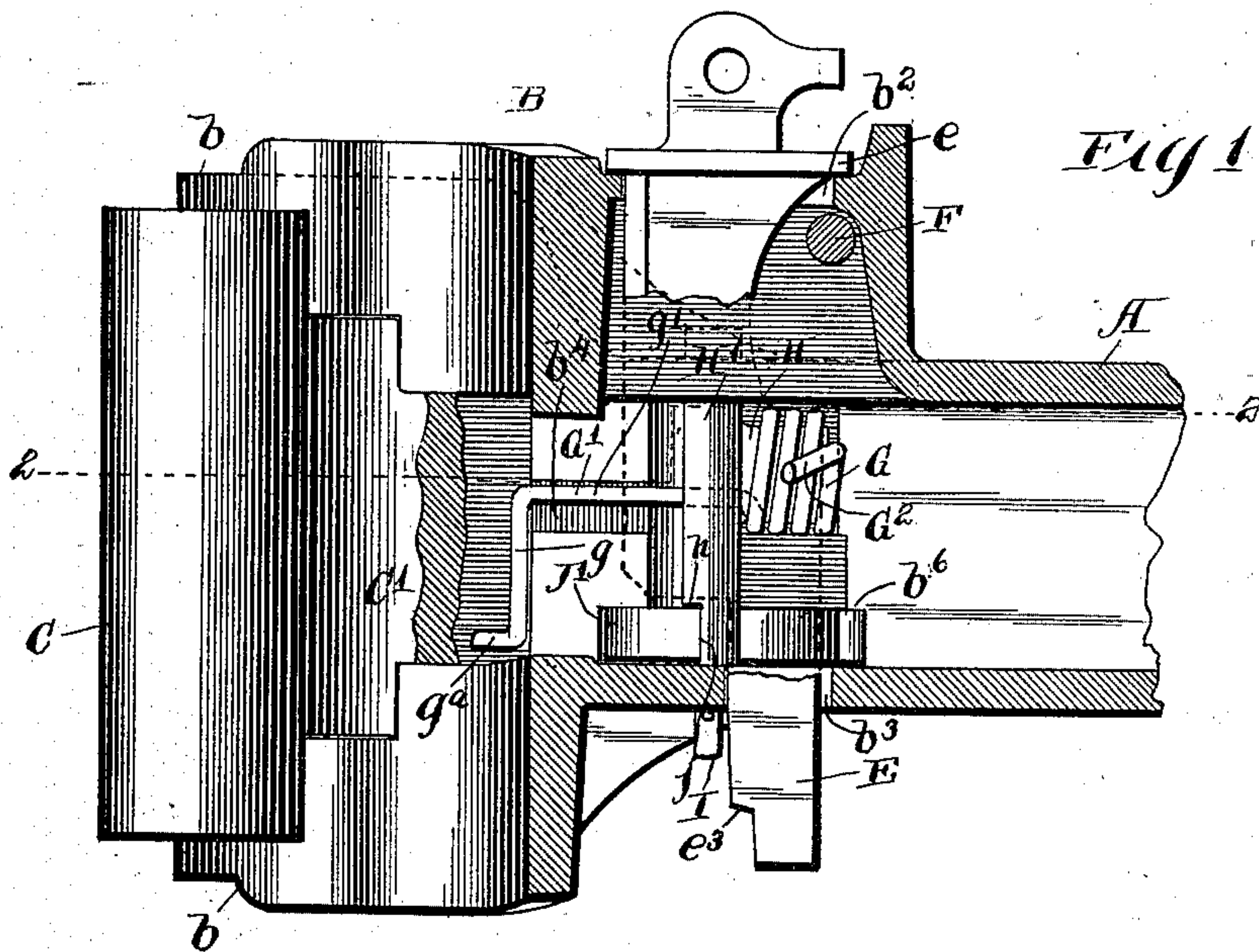
Patented Dec. 2, 1902.

J. A. HINSON.  
CAR COUPLING.

(Application filed Sept. 3, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:-

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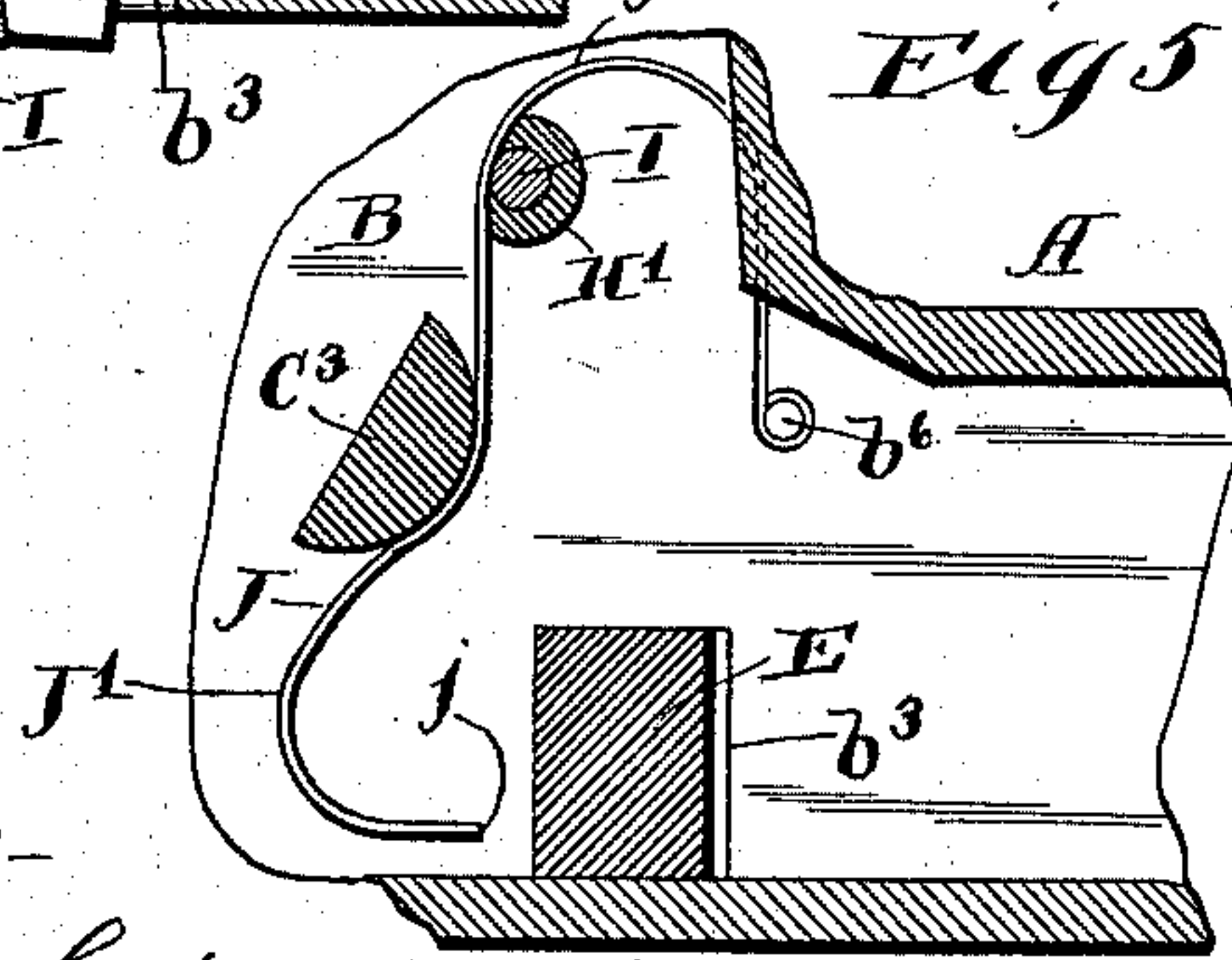
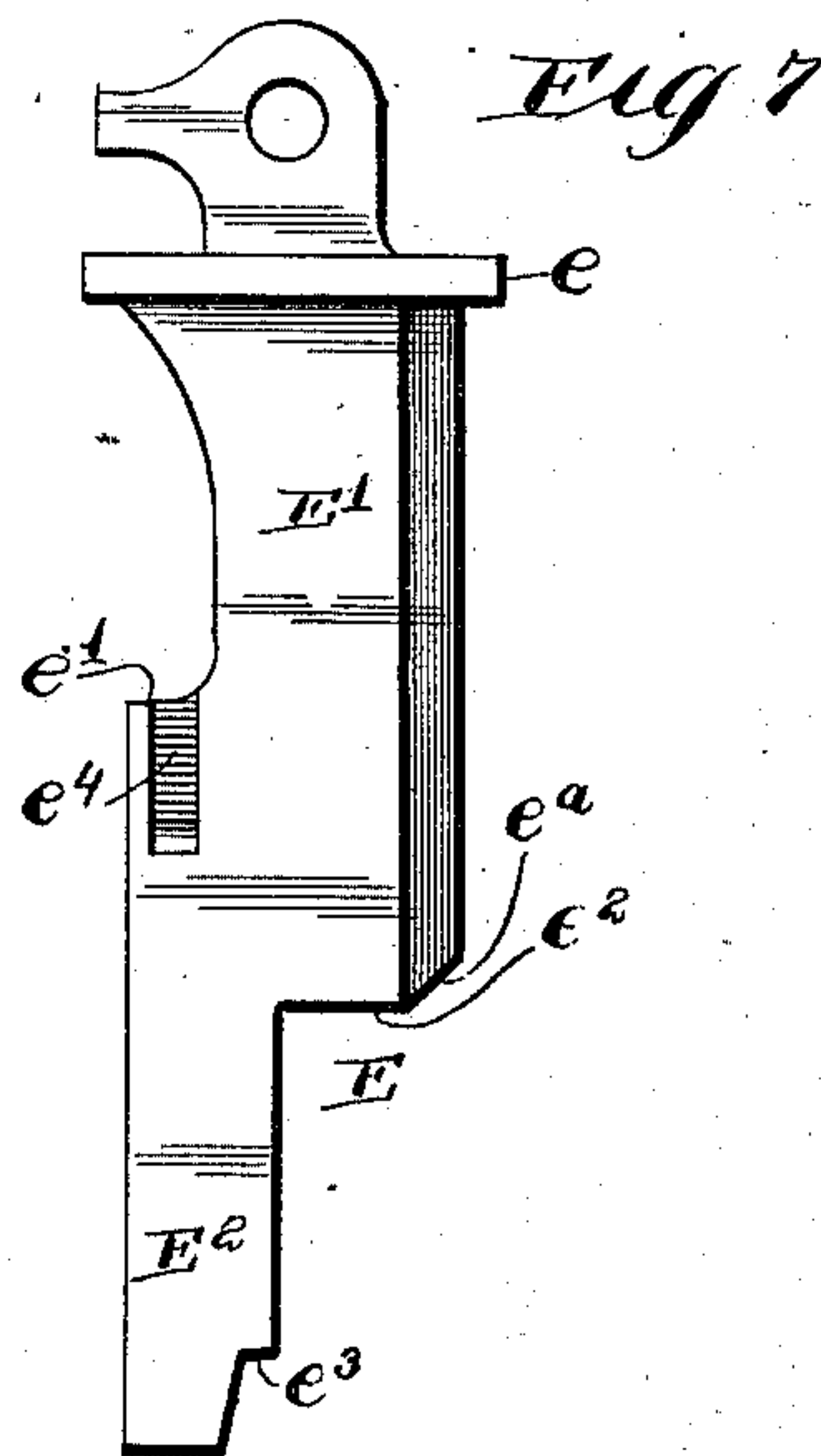
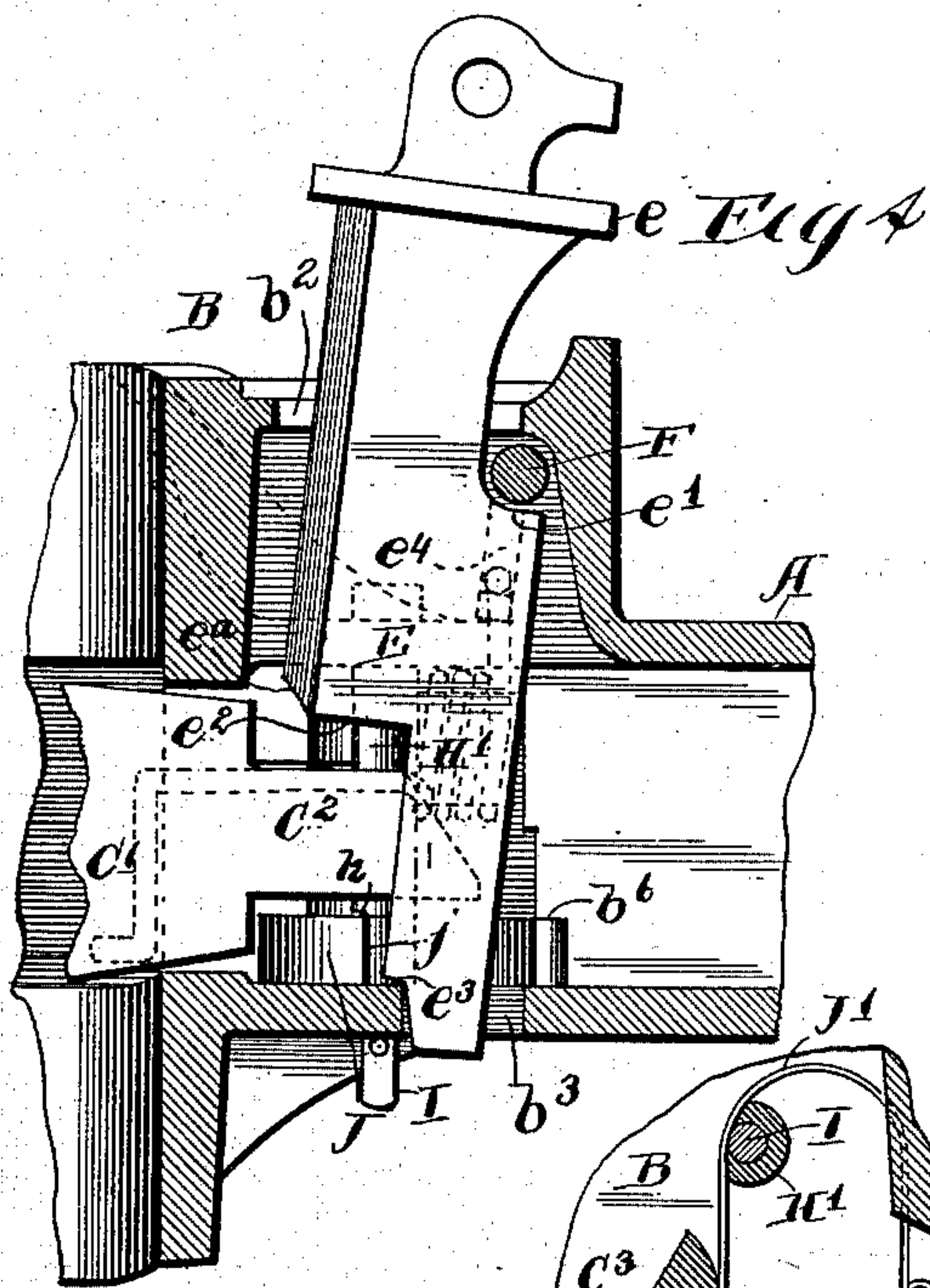
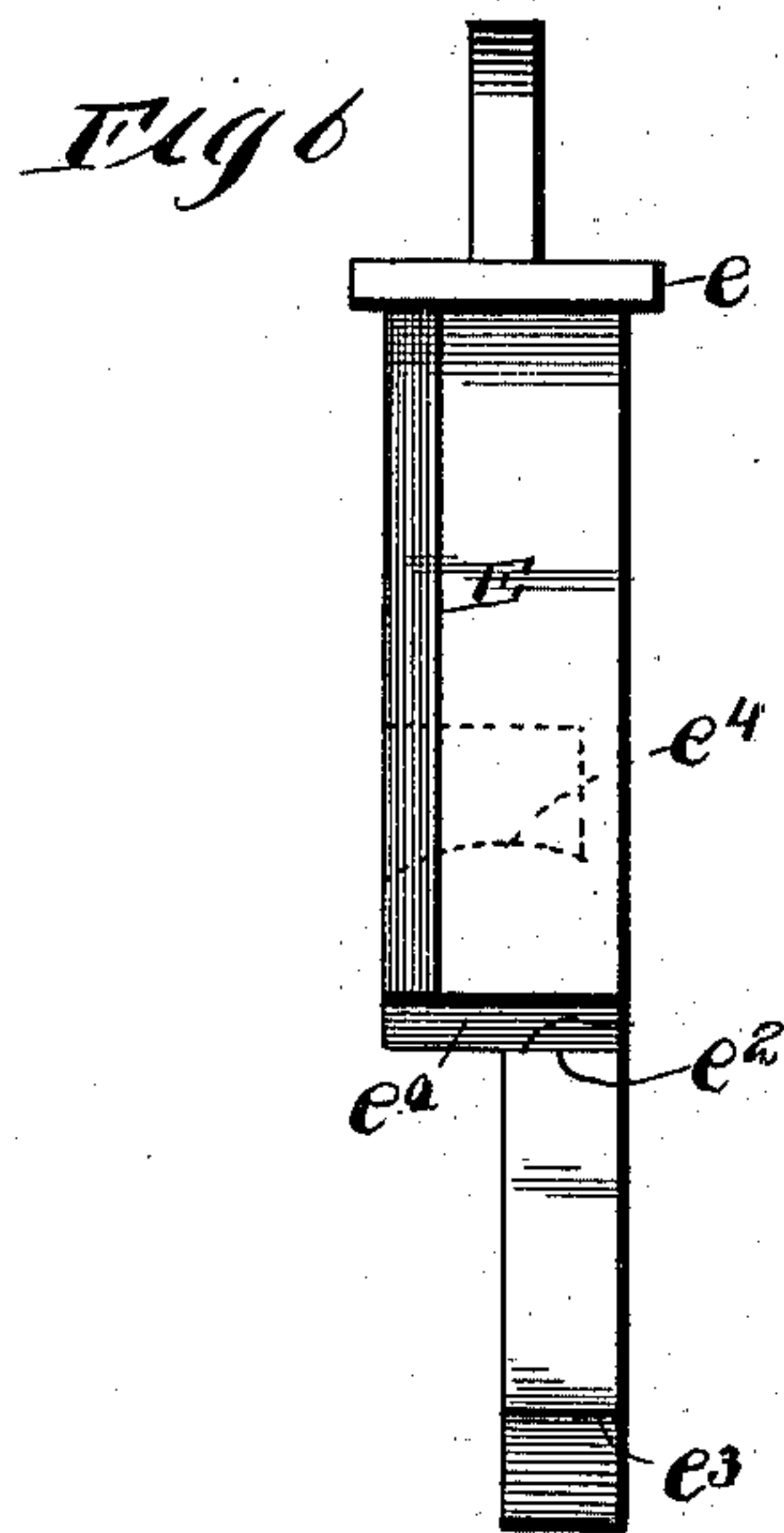
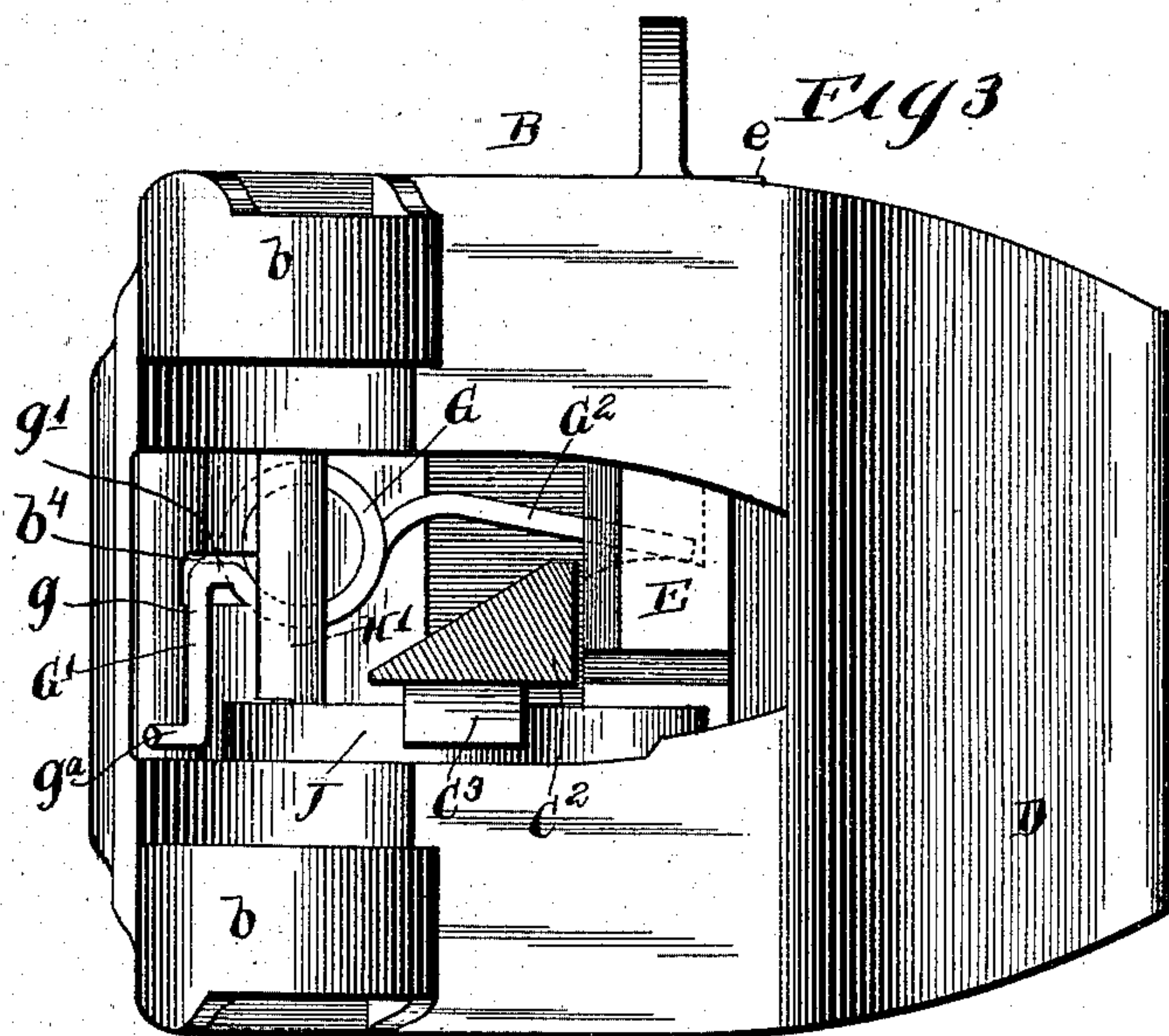
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Witnesses:-  
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# UNITED STATES PATENT OFFICE.

JAMES A. HINSON, OF CHICAGO, ILLINOIS.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 714,693, dated December 2, 1902.

Application filed September 3, 1901. Serial No. 74,219. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES A. HINSON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Couplers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in car-couplers; and the invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

As shown in the drawings, Figure 1 is a vertical longitudinal section of a coupler made in accordance with my invention with parts broken away. Fig. 2 is a plan section thereof taken on line 2 2 of Fig. 1. Fig. 3 is a front view of a coupler with parts shown in section. Fig. 4 is a fragmentary longitudinal vertical section of the coupler, showing the pin in its raised position. Fig. 5 is a fragmentary plan section taken on line 5 5 of Fig. 1. Figs. 6 and 7 are details of the coupling-pin removed from the draw-head.

As shown in said drawings, A designates a draw-bar; B, a hollow draw-head; C, a horizontally-swinging knuckle, which is pivoted to and between forwardly and laterally projecting arms  $b$  on one side of said draw-head by means of a vertical bolt  $b'$ , and D a guide-arm or guard projecting laterally from the other side of the head. Said knuckle is provided with a tailpiece  $C'$ , which projects rearwardly between the arms  $b$  of the draw-head and into the interior of said head. Said tailpiece is formed at its inner end to provide an extension  $C^2$ , adapted for engagement with a coupling-pin E, which passes downwardly through openings  $b^2$   $b^3$  in the top and bottom walls of the draw-head, said openings being so located as to hold the coupling-pin at one side of said extension and in position to lock said knuckle from swinging on its pivot when it is in its closed or locking position. The coupling-pin is provided at its upper end with a flange  $e$ , which projects over the upper wall of the draw-head and

serves to limit the downward movement of the pin. Said coupling-pin is provided in its rear edge with a recess  $e'$ , the bottom of which is adapted for contact with a horizontal stop-bolt F, located transversely in the draw-head at the rear of the opening  $b^3$ , as shown in Fig. 1, said bolt preventing complete withdrawal of the pin from the draw-head.

The coupling-pin E has a downwardly-facing shoulder  $e^2$  at its front edge, forming a wide upper portion  $E'$  and a narrower lower end  $E^2$ , which latter is adapted to pass through the opening  $b^3$  in the lower wall of the draw-head. The extension  $C^2$  of the knuckle-tailpiece is located in position for contact with the widened upper portion of the pin, at one side thereof, when the knuckle is in position to be locked by the pin, said widened upper part of the pin when the pin is in its lowermost position serving to prevent the tailpiece from swinging outwardly. The lower or narrower end of the coupling-pin is provided with a notch forming a second downwardly-facing shoulder  $e^3$ , which is adapted to engage the lower wall of the draw-head when the coupling-pin is elevated and its lower end is thrown forward, so as to hold the pin in position with the shoulder  $e^2$  above the tail of the knuckle, as shown in Fig. 4. In this position of the coupling-pin the widened part of the pin is raised above the level of the extension  $C^2$  of the knuckle-tailpiece and permits said tailpiece to swing outwardly in a manner to open the knuckle. The extension  $C^2$  of the knuckle-tailpiece is beveled laterally on its upper surface, as shown in Figs. 2 and 3, and said beveled surface is adapted to engage the downwardly-facing shoulder  $e^2$  of the pin in such manner as to lift the said pin when the knuckle is swung in its locking or closed position, the said beveled surface being inclined in a direction downwardly toward the side of the extension which first comes in contact with the coupling-pin when the knuckle is being swung toward its closed position. In order to insure the proper engagement of the beveled surface of the extension  $C^2$  with the shoulder  $e^2$  of the coupling-pin, the latter is provided with a beveled surface  $e^a$  at the outer or forward end of the said shoulder  $e^2$ . It



follows from the construction described that when the pin is in its lowermost position the knuckle may be swung inwardly to its closed position and automatically locked, the said  
 5 beveled surface of the extension  $C^2$  in the act of automatically lifting the pin first engaging the beveled surface  $e^3$  and then engaging the shoulder  $e^2$  of the coupling-pin, so as to raise the pin in a manner to permit the ex-  
 10 tension of the tailpiece to pass under the shoulder  $e^2$  thereof. After said extension has passed the pin said pin drops downwardly with the wider upper part thereof outside of and in the path of the tailpiece extension and locks the knuckle in its closed position, as common in couplers of this general class.

$G$  designates a coiled spring provided with two arms  $G'$   $G^2$ . The coiled portion of the  
 20 spring is mounted on a stud  $H$ , which is arranged horizontally and parallel with the draw-bar and within the cavity of the draw-head. Said coiled portion of the spring therefore has its central axis generally parallel  
 25 with the draw-bar. The said supporting-stud  $H$  and the coiled spring  $G$  are moreover arranged at the side of the draw-head at which the knuckle is pivoted and approximately in longitudinal alinement with the pivot of the  
 30 said knuckle. One of the arms  $G'$  of the spring is directed forwardly from the coiled portion thereof in a direction parallel with the axis of the spring and toward the pivot of the knuckle and is then directed downwardly at the inner face of the tailpiece.  
 35 The part  $g'$  of the arm  $G'$  is approximately horizontal and the depending or downwardly-extending part  $g$  thereof is arranged vertically, or nearly so, and its lower end is adapted to engage or bear against the outer face  
 40 of the tailpiece at a point at the rear of the pivot, said downwardly-extending part  $g$  preferably terminating in a horizontally-bent portion  $g^a$ . The horizontal part  $g'$  of said arm is arranged to pass through a horizontal notch  
 45  $b^4$  in the adjacent side wall of the draw-head. The other arm  $G^2$  of the spring  $G$  extends transversely across the draw-head in a direction substantially at right angles to the axis  
 50 of the coil and to the arm  $G'$ , as clearly seen in the plan view, Fig. 2. The extremity of said arm  $G^2$  occupies an upwardly-opening transverse notch  $e^4$ , formed in the lower wall of the recess  $e'$  of the coupling-pin. The horizontal  
 55 part  $g'$  of the arm  $G'$ , as clearly shown in Figs. 2 and 3, is located at some distance laterally from the body of the coiled part  $G$ , so that the depending part of the arm  $g$  is brought at the inner side of the tailpiece of the knuckle  
 60 when said knuckle is in its closed position, as clearly seen in Fig. 2. The notch  $b^2$ , in which the horizontal part  $g'$  of the arm  $G'$  rests, is made wide enough vertically to permit the said horizontal part  $g'$  of the arm  $G'$   
 65 to have oscillatory movement as the lower end of the depending part  $g$  of said arm is swung or moved laterally. These parts are, more-

ever, so arranged that when the coupling-pin is in its locking or depressed position and the free end of the spring-arm  $G^2$  is at the lower-  
 70 most limit of its movement the depending part  $g$  of the arm  $G'$  will stand in an approximately vertical position within the recess  $b^4$ , which is formed within the draw-head behind the tail portion of the knuckle, so that said  
 75 depending part  $g$  will at this time be entirely out of the way of the tail portion of the knuckle when the latter is swung inwardly into the draw-head and the knuckle is in its locked position. When, however, the coupling-pin  
 80 is drawn up or raised to its elevated or unlocking position, the end of the arm  $G^2$  engaged therewith will be correspondingly elevated, and if the depending part  $g$  of the arm  $G'$  be free to move outwardly an angular  
 85 movement in the said depending part  $g$  will take place corresponding with that of the arm  $G'$ . The horizontal part  $g'$  of the arm  $G'$  manifestly serves merely to connect the part  $g$  with the coil, so that the same effect is produced as  
 90 though the said part  $g$  were an arm extending directly from the coil as does the arm  $G^2$ , it being manifest that the arm  $G^2$  and the part  $g$  of the arm  $G'$ , connected with the coil by the part  $g'$ , as aforesaid, constitute, in effect,  
 95 two arms extending laterally from the coil. It follows that the upward movement of the free end of the arm  $G^2$  will tend to turn the coiled part of the spring on its supporting-stud  $H$ , so that if the depending part  $g$  of the  
 100 said arm  $G'$  be held from outward movement by the presence of the tail of the knuckle in front of it the coiled spring will be placed under tension, and the lower end of said part  $g$  will press on the tail of the knuckle and  
 105 tend to throw the latter outward. If the knuckle be in its locked position, as shown in Fig. 2, the lifting of the arm  $G^2$  of the spring in the manner described will result in the lower end of the arm  $g$  being thrown  
 110 against the inner face of the tail of the knuckle, and as the said arm  $g$  will then be prevented from being thrown forward or outward the lifting of the arm  $G^2$  under these circumstances will produce no movement in  
 115 the knuckle. If, however, the tail of the knuckle be free from the coupling-pin at the time the latter is elevated, the throwing forward or outward of the lower end of the part  $g$  of the arm  $G'$  under the action of the spring  
 120 when the coupling-pin is elevated will result in the tail of the knuckle being thrown outwardly and the knuckle being placed in position for coupling.

The supporting-stud  $H$  for the coil-spring  
 125  $G$  is shown as attached to a sleeve  $H'$ , arranged vertically within the recess of the draw-head, and supported on a vertical bolt  $I$ , extending through and secured in the upper and lower walls of the draw-head. This  
 130 construction provides means for conveniently inserting the spring within the draw-head.

$H^2$  designates a lateral arm attached to and rigid with the sleeve and adapted for engage-



ment with a recess  $b^5$  in the wall of the draw-head, so as to hold the sleeve and the lug H from pivotal or swinging movement.

If in the operation of the parts thus arranged the coupling-pin be lifted to release the knuckle, the arm  $G^2$  will also be lifted and the lower end of the arm  $g$  will be thrown toward or into contact with the tail of the knuckle, and after the latter has been thrown outward in the uncoupling of the cars the arm  $g$  will stand in an outwardly-inclined position. Assuming the coupling-pin to be in its lowermost position, therefore, and it be desired to set the knuckle in position for coupling, if the coupling-pin be lifted and its shoulder  $e^3$  engaged with the bottom wall of the draw-head, so as to hold the pin in its elevated position, the lifting of the arm  $G^2$  will result in the lower end of the part  $g$  of the arm  $G'$  being thrown outwardly, and said part  $g$ , acting on the tail of the knuckle, will throw the knuckle outwardly as the coupling-pin is lifted, thus bringing the knuckle into position for engagement of the knuckle of another draw-head therewith, or, in other words, preparing the draw-head for coupling. Manifestly, moreover, so long as the pin remains in its elevated position the spring-arm will hold the knuckle open or in position for coupling. When the knuckle is closed or interlocked with the knuckle of another draw-bar, moreover, the tail of the knuckle will hold the part  $g$  of the arm  $G'$  from outward movement, and thereby hold the arm  $G^2$  from rising, so that it will press constantly downward on the coupling-pin and hold the latter from becoming accidentally lifted and releasing the knuckle.

The spring  $G$  and its arms  $G'$  and  $G^2$  may and preferably will be so shaped or bent that the horizontal part  $g'$  of the arm  $G'$  when the spring is not under tension will, as the spring is seen in plan view, stand at an angle less than a right angle to the arm  $G^2$ . The result of this construction will be that when the knuckle and its tailpiece are thrown outwardly and the coupling-pin is depressed, so that the spring is not under tension, the horizontal part  $g'$  of the arm  $G'$  will stand in a position inclined outwardly from the adjacent side wall of the draw-head, and when the tailpiece is thrown inwardly the said horizontal part  $g'$  will be forced backwardly and its outer end will press laterally on the inner face of the said tailpiece in a direction to throw said tailpiece outwardly. The result of so shaping or forming the arms of the springs therefore will be that the arm  $G'$  will give a greater extent of angular movement than would be given by the action of the depending or vertical part  $g$  of the arm  $G'$  alone, it being readily understood that if the action of the lower end of the said depending part  $g$  is alone relied upon to move the knuckle the spring will act on the tailpiece only when the coupling-pin is raised and the free end of the arm  $G'$  correspond-

ingly lifted; but if the horizontal part  $g'$  of said arm  $G'$  is adapted to press outwardly on the tailpiece said tailpiece when released will be thrown outward, not only by the outward swinging movement of the lower end of the depending part  $g$  of said arm  $G'$  but also by the lateral or horizontal outward movement of the horizontal part  $g'$ , so that the lower end of said part  $g$  will follow the tailpiece a greater distance as the tailpiece swings outwardly, and said tailpiece will be subjected to the pressure of the spring-arm while moving through a longer distance, and the action of the spring in moving the knuckle will be correspondingly more prompt and effective.

As shown in the accompanying drawings, I have so arranged the spring  $G$  that the arm  $G^2$  thereof will not only press downwardly on the coupling-pin, but when the tailpiece of the knuckle is at its inner or locked position and the arm  $G'$  thereby held from swinging outward or forward said arm  $G^2$  will press outwardly or forwardly upon the coupling-pin, and thus tends to hold the lower end thereof in contact with the front edge of the aperture  $b^3$  in the lower wall of the draw-head, so that when the coupling-pin is lifted to bring the downwardly-facing shoulder  $e^3$  in engagement with said lower wall of the draw-head the said spring will tend to hold the coupling-pin locked in its elevated position and will prevent the displacement thereof or the disengagement of its lower end from the lower wall of the draw-head unless the lower end of the coupling-pin be intentionally pushed backward or inward for the purpose of releasing it. The coiled portion  $G$  of the spring is free to move to some extent on the supporting-stud H, and as the outward pressure of the end of the spring-arm  $G^2$  and the coupling-pin occurs only when the forwardly-projecting arm  $G'$  is pressed laterally or thrown laterally outward by the swinging of the tail of the knuckle against it when said knuckle is thrown to its locking position the forward pressure of the arm  $G^2$  on the coupling-pin, as described, will occur only when the knuckle is thrown inward, as when engaged with the similar knuckle of another draw-head. To provide for automatically shifting or moving the pin backward and thereby releasing the same to permit its descent when held in its elevated position by engagement of the shoulder  $e^3$  with the bottom wall of the draw-head, I have provided devices as follows:

I designate an actuating member arranged horizontally within the draw-head and resting on the lower wall of the same. Said actuating member has oscillatory movement in a horizontal plane and is arranged transversely of the draw-head, its free end being located at the side of the draw-head adjacent to the coupling-pin and its opposite end being held or confined from movement. Said actuating member is provided with a cam portion or surface  $J'$ , adapted for engagement



with a depending actuating projection or lug  $C^3$  on the tailpiece  $C^2$  of the knuckle. Said cam projection is so arranged that when the knuckle is swung or moved from its locked position to its unlocked position, or vice versa, the lug  $C^3$  will strike the cam portion of the actuating member, and thus throw its free end rearwardly into engagement with the coupling-pin. The movement given to the actuating member by the tailpiece in the manner described is sufficient to force the lower end of the coupling-pin rearwardly until its shoulder  $e^3$  is disengaged from the bottom wall of the draw-head. Manifestly when the lower end of the coupling-pin is thus forced rearwardly as soon as the said shoulder thereof is disengaged from the lower wall of the draw-head the coupling-pin will be free to descend under the action of gravity.

The actuating member  $J$  is herein shown as having the form of a leaf-spring, and its end which is secured to the draw-head is shown as secured to the same by being bent into U shape and arranged to engage a recess  $h$ , located at the lower end of the sleeve  $H'$ , as clearly shown in Fig. 1, at a point some distance from its end, while its said end is carried inward toward the central recess of the draw-head and is connected with the lower wall thereof by means of a stud  $b^6$ . By the engagement of the end of the spring with the stud  $b^6$  and engagement of the U-shaped part thereof with the notch in the sleeve  $H'$  the inner end of said strip is held or confined in position and prevented from getting out of place. The cam-shaped part  $J'$  of the spring is so arranged with respect to the lug  $C^3$  on the tail of the knuckle that when the knuckle is in its inner or locked position the said lug will be opposite a recessed or laterally-deflected portion of the spring inside of the cam portion thereof, and at this time the free end  $j$  of the strip will stand forward and free from the forward face of the coupling-pin. When, however, the tail of the knuckle is swung laterally outward, the said lug  $C^3$  acting on the cam portion  $J'$  of the spring will force the free end thereof rearwardly, and thus bring its extremity  $j$  into contact with the front face of the coupling-pin, with the result of forcing the same rearwardly and releasing it in the manner hereinbefore described.

From the foregoing it will be seen that the single actuating-spring, hereinbefore described, when arranged in the particular manner illustrated performs three distinct functions—viz., to hold the coupling-pin downward in its lowermost or locking position, and thus prevent accidental lifting or displacement of the same, throw the knuckle outward in position for engagement with the knuckle of another draw-head when the coupling-pin is lifted, and to hold the lower end of the coupling-pin in locking engagement with the lower wall of the draw-head, and thereby retain said coupling-pin positively in its elevated position.

The operation of the coupling device made as herein shown and described and the advantages arising from the employment of the several features thereof will be understood from the following: The arm  $G^2$  of the said spring bears with a downward pressure on the coupling-pin when the latter is at its lowermost or locking position and when the knuckle is in its closed or locked position, for the reason that at this time the contact of the tail portion of the knuckle with the depending part  $g$  of the spring-arm  $G'$  will hold said lower end of said arm outwardly or within the recess  $b^4$ , and thereby maintain the arm  $G^2$  depressed and in position to exert downward pressure on the coupling-pin. Said spring therefore acts to hold said pin from accidentally rising and permitting the outward movement of the tail of the knuckle and consequent uncoupling of the cars. If when the car to which the draw-head is attached be uncoupled and it be desired to place the draw-head in condition for coupling, the coupling-pin is lifted and locked in its elevated position by engaging its lower end with the bottom wall of the draw-head. The lifting of the pin has the effect of throwing the tail of the knuckle laterally or outward, and when this occurs the knuckle itself will be thrown into its extended position and parallel with the draw-bar. So long as the coupling-pin remains in its elevated position, moreover, the said knuckle will be held in such extended position in readiness for engagement with the corresponding knuckle of another coupler without any attention on the part of the brakeman or operator, so that said brakeman need not be present at the time the cars are brought together in coupling. In other words, when the draw-bar is provided with a spring  $G$ , arranged to perform the function of throwing the knuckle outward upon the lifting of the coupling-pin, it is unnecessary that the brakeman should be stationed at the place where the coupling is to take place or to see that the knuckle of the two coupling cars are swung outwardly or in position for coupling; but such brakeman need only see that the coupling-pins of both of the draw-heads are in their raised positions preparatory to coupling, and the act of lifting the coupling-pins will insure that the knuckles are thrown outward, and the draw-heads of both cars are in condition for automatic coupling when the cars afterward come together. The employment of the actuating member  $J$ , arranged to throw the lower end of the pin rearwardly against the action of the said spring tending to throw it forward, insures the descent of the coupling-pin as soon as the knuckle has been thrown into its locked position.

So far as the action of the arm  $G^2$  of the spring in throwing the coupling-pin forward, so as to retain the notch  $e^3$  at the lower end thereof in engagement with the lower wall of the draw-head, is concerned this action of the spring is of great advantage in the act of



uncoupling the cars, because it enables the operator to set the coupling-pin in position preparatory to uncoupling while the two draw-heads are still in engagement with each other, this being done when it is desired to set the parts in position for uncoupling when the cars are together and are to be later separated by the drawing of one car away from the other. Manifestly, assuming that the train is at a standstill and it is desired to uncouple two of the cars, the brakeman may lift the coupling-pins of the two draw-heads at the part where the cars are to be uncoupled, and the action of the spring-arms will insure the retention of the coupling-pins in their elevated positions, so that the brakeman need give no attention to the uncoupling after he has so lifted the coupling-pin, notwithstanding that the uncoupling may be deferred for a considerable period after the pins have been set. It will be manifest that in the act of uncoupling after the coupling-pins have been set for uncoupling, as described, as the knuckles swing outwardly the tailpieces thereof will act on the actuating members J, so as to thrust the lower ends of the coupling-pins backward and release the same, so that they will descend, and the coupling devices will be left in position for recoupling in the usual manner. The forward pressure of the spring-arms G<sup>2</sup> on the coupling-pins will be of course relieved as soon as the tailpieces are swung outwardly in uncoupling, so that when the pins are released they will no longer be subject to such forward pressure and will be perfectly free to descend or fall by gravity. Usually, however, the parts will be set for recoupling by lifting the coupling-pins, as above set forth, so as to insure that the knuckles shall stand in their extended positions when the draw-heads come together, the action of the depending parts g of the arms G' serving to throw the knuckles outwardly when the coupling-pins are lifted, as hereinbefore set forth.

Referring again to the action of the two arms G' and G<sup>2</sup> of the spring G—viz., that of throwing the tail of the knuckle outward and the knuckle in position for coupling—the said spring when adapted to perform these functions, in connection with the actuating member J, arranged to release the coupling-pin to allow it to fall into its locking position, affords another important result—that is to say, after the coupling-pins have been set for uncoupling at a given point in the train should it become desirable either on account of change of plans or otherwise that the uncoupling should not be made at this part of the train a recoupling may be effected without any attention whatever on the part of the brakeman by merely pulling one of the cars at such a distance from the other car as is required either to swing the knuckles outwardly or only so far as necessary to bring the lugs C<sup>3</sup> of the knuckle-tailpieces into contact with the actuating members J,

and then again bringing the cars together. Manifestly when the cars are separated or partially separated after the coupling-pins have been lifted in the manner described the projections C<sup>3</sup>, acting on the actuating members J, will throw the coupling-pins rearwardly and release them from the lower draw-head walls, so that they may both return to their lowermost or locking positions. In the act of separating the cars or draw-heads in this manner the coupling-pins of the two draw-heads will be released and allowed to fall while the knuckles are in their open or partially-open position, and when the draw-heads are again brought together the inclined surfaces on the knuckle-tailpieces C<sup>2</sup> will act on the coupling-pins in the usual manner to automatically lift the same as the tailpieces swing inwardly, and said coupling-pins will when the draw-heads come together finally descend into engagement with the said tailpieces and complete the act of coupling. The advantage of the employment of the devices referred to in the manner described may be understood by consideration of the fact that it often occurs that after the coupling-pins have been set preparatory to uncoupling two cars the brakeman is called to another part of the train, and in the use of prior devices should this occur and it be desired to separate the train at some other point than where the coupling-pins have been set it has been necessary for the brakeman to return to the part of the train at which the coupling devices have been set and return the coupling-pins to their locking positions. With my construction, as before stated, this necessity is avoided and the work becomes entirely automatic.

While I have shown in the drawings one practical form of my device which is in some respects a preferred construction, I do not wish to be limited to the details illustrated except as hereinafter made the subject of specific claims, as it is obvious that said details may be widely varied without departing from the spirit of my invention.

I claim as my invention—

1. The combination with a draw-head, a horizontally-swinging knuckle and a vertically-sliding coupling-pin which is lifted to release the knuckle, of a part provided with two arms, one of which is adapted to bear against the tailpiece in a direction to open the knuckle and the other to bear downwardly against the pin; the parts being so constructed that when the knuckle is closed and the pin is in its lowermost position, the arm which acts on the tailpiece will be in contact with the said tailpiece and the arm which acts on the pin will be in downwardly-bearing contact with the said pin, and the arrangement of the parts being such that the action of the tailpiece against the arm in contact therewith holds the other arm in position to prevent the coupling-pin from rising.

2. The combination with a draw-head, a



horizontally-swinging knuckle, and a vertically-sliding coupling-pin which is lifted to unlock the knuckle, of a coiled spring located in said head behind the knuckle and provided with two arms which with the spring are adapted to turn on a horizontal axis, one of said arms extending downward from the spring and being adapted to bear horizontally against the tailpiece of the knuckle in a manner to open the knuckle, and the other arm extending laterally from the spring and being adapted to bear downwardly against the pin.

3. The combination with a draw-head, a knuckle and a vertically-sliding coupling-pin which is lifted to unlock the knuckle, of a coiled spring located in the draw-head in rear of the knuckle and which is adapted to turn on a horizontal axis and is provided with a downwardly-extending arm adapted to bear at its lower end against the tailpiece of the knuckle in a manner to open the knuckle, and with another arm which extends laterally from the spring and is adapted to bear downwardly against the pin, said tailpiece, when the knuckle is closed and the pin in its lowermost position, acting on the spring to effect downward pressure of the horizontal arm against the pin to prevent the latter from accidentally rising.

4. The combination with a draw-head, a knuckle and a coupling-pin, of a coiled spring supported in the draw-bar head at the rear of the tail of the knuckle, said spring having an arm which extends from the coil and extends across the draw-head and bears downwardly on the coupling-pin, and an arm which is carried forward at the rear of the tailpiece, and is then extended downwardly so as to bear at its lower end laterally on the tailpiece in a direction to open the knuckle.

5. The combination with a draw-head, a knuckle and a coupling-pin provided with a shoulder adapted to engage a part of the draw-head to hold the pin in its elevated position, of a spring applied to act on the knuckle in a direction to open the same and to press downwardly on the coupling-pin, and also to press on the coupling-pin in a direction to hold the shoulder thereof engaged with the draw-head.

6. The combination with a draw-head, a knuckle and a coupling-pin which is lifted to unlock the knuckle, of a coiled spring mounted to turn on a horizontal axis and having two arms, one of which extends downwardly from the spring and acts horizontally on the tailpiece of the knuckle in a manner to open the knuckle, and the other arm of which bears downwardly on the coupling-pin in a direction to hold the same closed and also bears thereon horizontally in a forward or outward direction.

7. The combination with a draw-head, a knuckle, and a coupling-pin adapted for engagement with the tailpiece to lock the knuckle in its closed position, of means for setting said pin to permit the knuckle to

open, a spring bearing laterally against the coupling-pin to maintain it in its set position, a spring-pressed actuating member movable toward and from the pin, and a lug on the tailpiece adapted to move said actuating member against the pin to release the latter to permit it to be returned to its locking position.

8. The combination with a draw-head, a knuckle and a coupling-pin adapted for engagement with the tailpiece of the knuckle to lock the knuckle in its closed position, of means for setting said pin to permit the knuckle to be opened, a coiled spring having two arms, one of said arms bearing against the tailpiece in a manner to open the knuckle and the other of which bears downwardly upon the coupling-pin and also laterally against said pin to hold it in its set position, and means for releasing said pin embracing an actuating member movable toward and from the pin, and a lug on the tailpiece adapted for engagement with said actuating member to move it into contact with the pin.

9. The combination with a draw-head, a knuckle and a coupling-pin which is lifted to unlock the knuckle and provided with a widened upper part which is located in the path of the tailpiece of the knuckle when the pin is in its lowermost or locking position, said coupling-pin being provided at its lower end with a shoulder adapted to engage the draw-head to hold the pin with the widened part thereof above the level of the tailpiece, of a spring one arm of which is adapted to bear against the tailpiece in a manner to open the knuckle, and the other arm of which is adapted to bear downwardly against said pin to resist the rising of said pin, and also laterally thereagainst to hold the shoulder thereof in engagement with the draw-bar, and means actuated by the swinging of said knuckle for throwing the lower part of said pin out of engagement with the draw-bar to permit the same to fall to its locking position.

10. The combination with a draw-head, a knuckle and a coupling-pin provided with a shoulder which is adapted for engagement with the draw-head to hold the pin in its elevated position, of an actuating member adapted to engage the coupling-pin and which is actuated by the knuckle, said actuating member consisting of a spring which is secured at one end to the draw-head.

11. The combination with a draw-head, a knuckle and a coupling-pin provided with a shoulder at its lower end adapted for engagement with the lower wall of the draw-head when the lower end of the pin is thrown outward, of an actuating member consisting of a spring arranged transversely within the draw-head and attached at one end to the same with its free end in position for contact with the pin; said spring being bent to provide an outwardly-deflected cam portion, and the tail of the knuckle having a depending lug on its lower face adapted for engagement



with said cam portion of the spring in the swinging of the knuckle.

12. The combination with a draw-head, a knuckle and a coupling-pin, of a spring consisting of a coiled portion and two arms, one of which engages the tail of the knuckle and the other the coupling-pin, and means for holding said spring in place comprising an upright sleeve provided with a lug around which the coiled part of the spring is placed, and a bolt passing through said sleeve and securing it to the draw-head.

13. The combination with a draw-head, a knuckle and a coupling-pin, of a spring consisting of a coiled portion and two arms, one of which acts on the tail of the knuckle and

the other on the coupling-pin, an upright sleeve provided with a lug to receive the spring, and a bolt for securing the sleeve within the draw-head, said sleeve being provided with an arm which engages the wall of the draw-head to hold the sleeve from turning on the said bolt.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 15th day of June, A. D. 1901.

JAMES A. HINSON.

Witnesses:

WILLIAM L. HALL,  
GERTRUDE BRYCE.