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G. A. HERMANSON.  
CAR COUPLING.

APPLICATION FILED OCT. 30, 1905.

2 SHEETS—SHEET 2.

Fig. 4

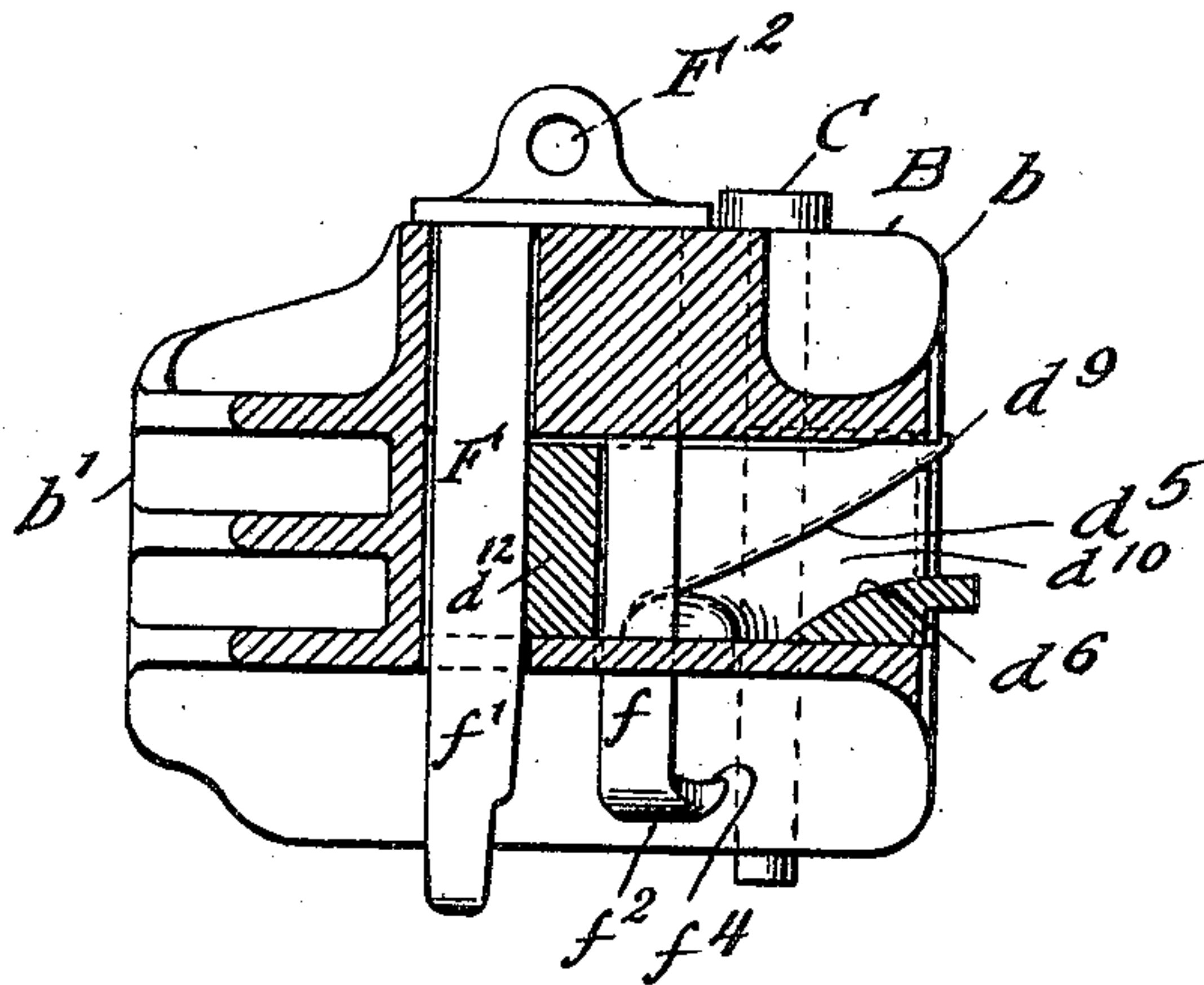


Fig. 7

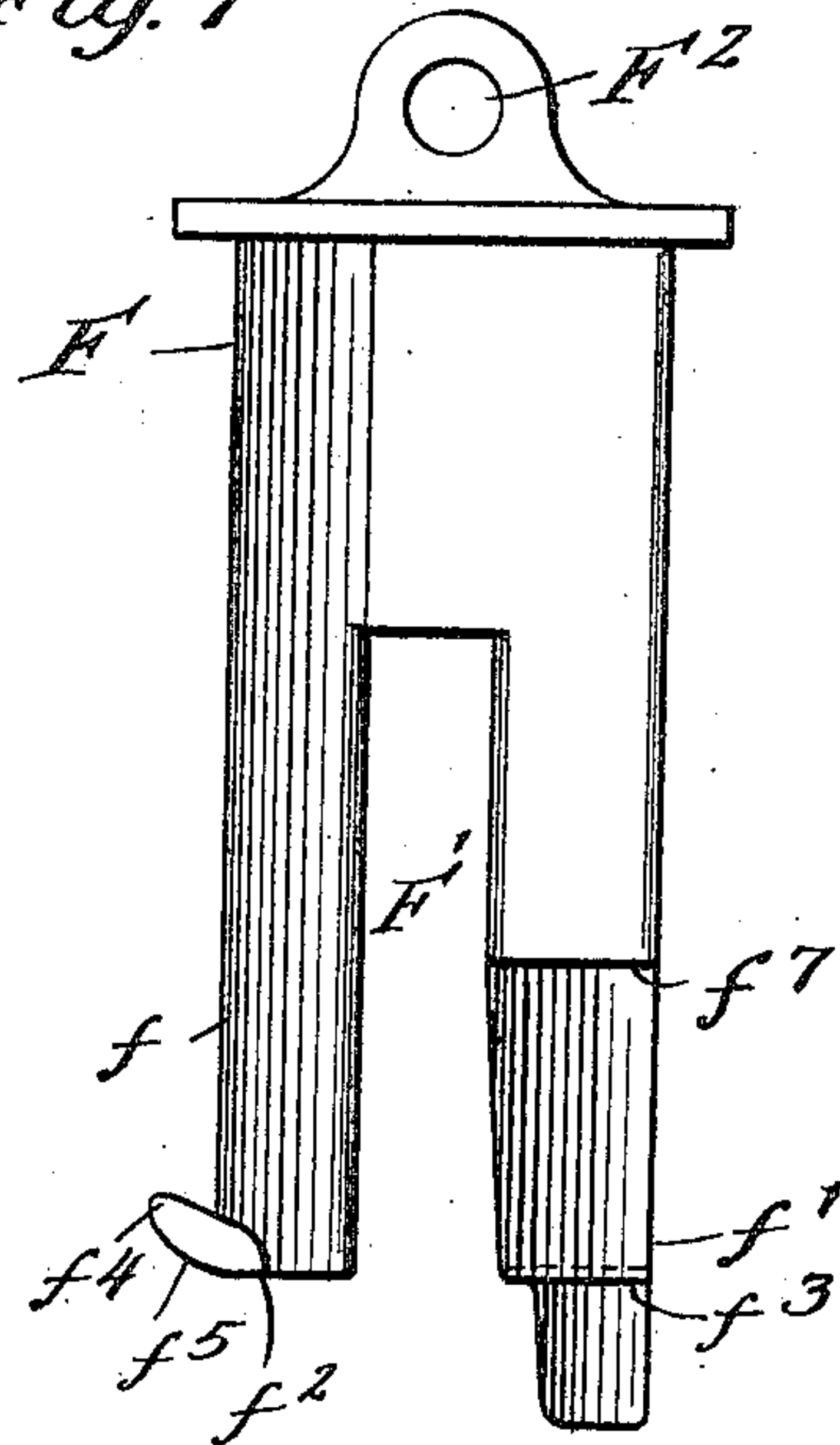


Fig. 5

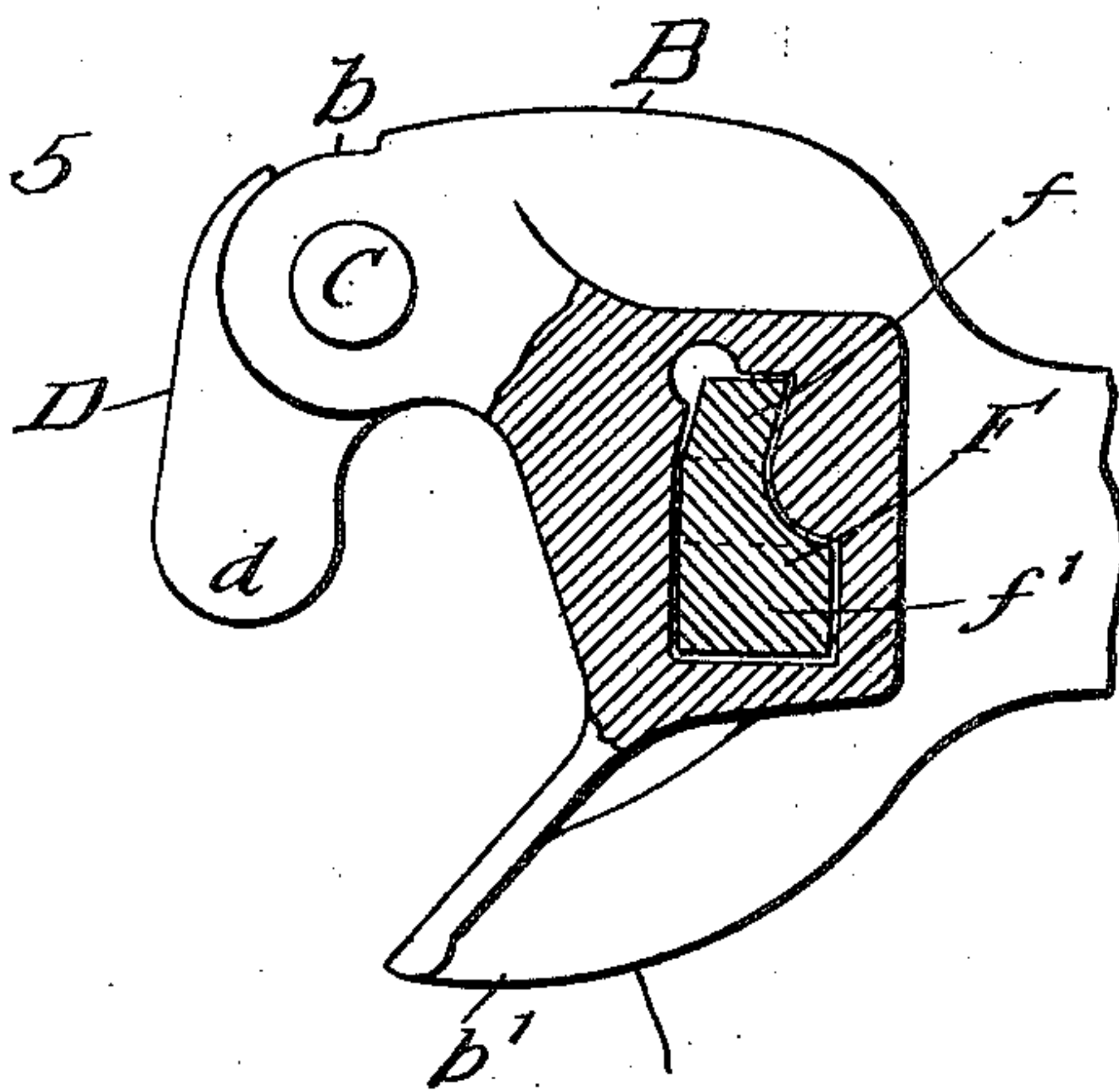
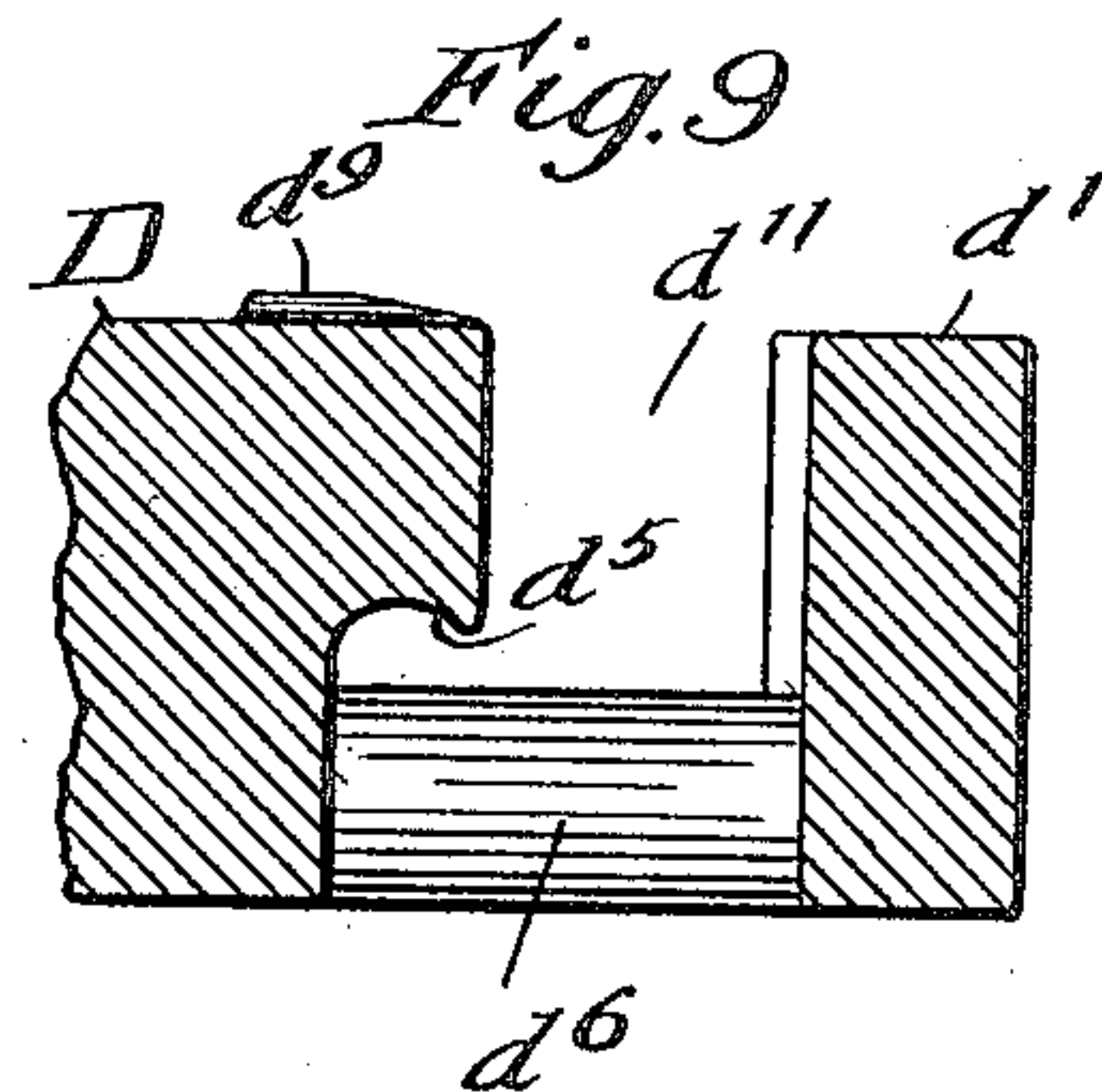
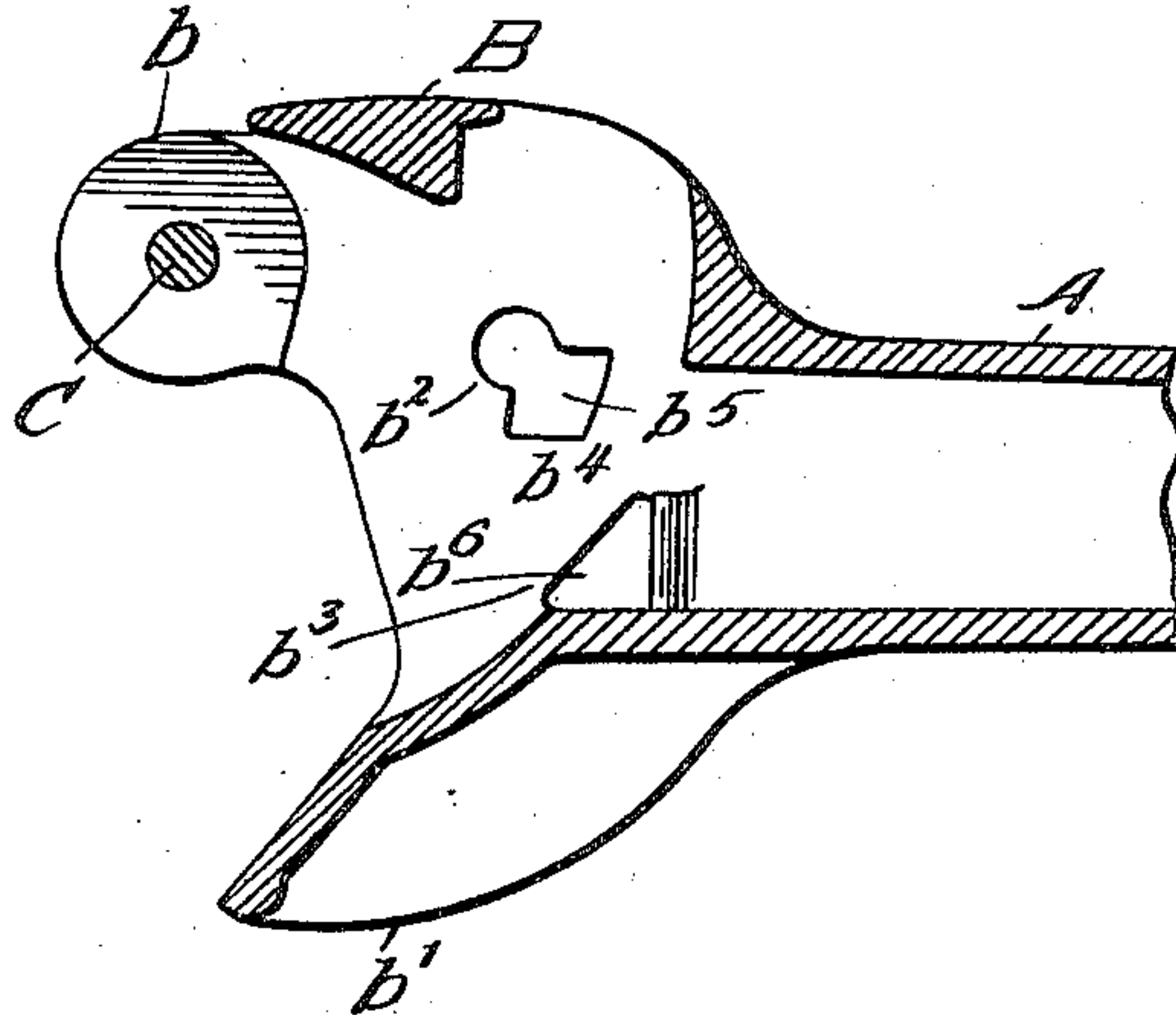


Fig. 6



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# UNITED STATES PATENT OFFICE.

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## CAR-COUPLING.

No. 812,927.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed October 30, 1905. Serial No. 284,937.

*To all whom it may concern:*

Be it known that I, GUSTAF A. HERMANSON, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Car-Couplers, of which the following is a specification.

My invention relates to improvements in car-couplers.

The object of my invention is to provide a car-coupler of a simple, efficient, and durable construction composed of the fewest possible parts and each of a simple plain form capable of being easily cast or manufactured which will properly perform all necessary or required functions, including the setting or supporting of the lock in position for coupling and also in position for uncoupling and the automatic throwing of the knuckle open and which at the same time will afford great additional security and safety over the couplers heretofore in use in case the pivot-pin breaks or becomes lost or mischievously removed.

My invention consists in the means I employ for accomplishing the above objects or results—that is to say, it consists in a coupler of the ordinary Master Car-Builders' type in connection with the forked draw-head of a knuckle pivotally connected thereto and having its rear arm or tail furnished with a transversely-extending slot or passage-way, and an upwardly-extending incline or cam, and a vertically-movable lock provided with an integral knuckle-throwing leg fitting in the transverse passage-way of the knuckle tail, and having a foot or projection adapted to engage the upward incline or cam on the knuckle-tail, and thus throw the knuckle open when the lock is lifted to the required extent.

It further consists, in connection with these parts, in having the knuckle-throwing cam or incline on the knuckle-tail on the pivot-pin side of the transversely-extending slot to thus bring such cam or incline nearer the pivot or center of motion of the knuckle, so that the cam or incline may serve to throw the knuckle completely open by an easy movement and without unduly lengthening the transverse dimension of the knuckle-tail.

As in my invention, the knuckle-throwing leg of the lock extends through the tail of the

knuckle in the transverse slot therein. It also serves as a strong and efficient means for holding the knuckle in the draw-head independent of the pivot-pin in case the latter should break, be removed, or become lost.

My invention further consists in connection with the before-mentioned parts, in providing the lock with a lock-set ledge or shoulder adapted to engage the floor of the draw-head for setting or supporting the lock in position for uncoupling. The lock is preferably provided with a further lock-set ledge at the lower end of its knuckle-thrower leg. The lock is further provided with a lock-set ledge or shoulder adapted to engage the tail of the knuckle for supporting the lock when the knuckle is partially open. The rear arm or tail of the knuckle is further provided with a ledge or shelf engaging the lower end of the knuckle-thrower leg of the lock to support the lock in its raised position when the knuckle is completely open.

My invention further consists in the novel construction of parts and devices and in the novel combinations of parts and devices herein shown or described.

In the accompanying drawings, forming a part of this specification, Figure 1 is a central vertical longitudinal section of a car-coupler embodying my invention. Fig. 2 is a similar view showing the lock in its raised position. Fig. 3 is a horizontal section on line 3 3 of Fig. 1. Fig. 4 is a section on line 4 4 of Fig. 3. Fig. 5 is a detail horizontal section on line 5 5 of Fig. 1. Fig. 6 is a detail horizontal section of the draw-head. Fig. 7 is a detail front elevation of the lock. Fig. 8 is a detail perspective view of the knuckle, and Fig. 9 is a detail section on line 9 9 of Fig. 8.

In the drawings, A represents the draw-bar; B, the draw-head having the customary pivot-arm *b* and guard-arm *b'*.

C is the pivot-pin, D the knuckle, and F the gravity-lock, the same having a knuckle-throwing leg *f* and a lock-set leg *f'*. The knuckle D has the customary front arm or nosed and rear arm or tail *d'*. The rear arm or tail *d'* of the knuckle has a transversely-extending slot or passage-way *d<sup>2</sup>* to receive the knuckle-throwing leg *f* of the lock F. This slot or passage-way *d<sup>2</sup>* in the knuckle-tail is preferably curved about the pivot of the knuckle as a center and has a slight en-



largement  $d^3$  in its front wall  $d^4$  to permit the lock to tilt slightly forward at its lower end and backward at its upper end to enable the lock-set shoulders or ledges  $f^2 f^3$  on the lock to properly engage the lock-set ledges or shoulders  $b^2 b^3$  in the bottom web or floor  $b^4$  of the draw-head adjacent to the openings  $b^5 b^6$  therein, through which the knuckle-throwing and lock-set legs  $f f'$  of the lock F project.

The knuckle-tail  $d'$  is also provided on the outer or pivot-pin side of the slot  $d^2$  with an upwardly-extending incline or cam  $d^5$ , adapted to be engaged by the foot or projection  $f^4$  on the knuckle-throwing leg  $f$  of the lock F, and thus cause the knuckle to be automatically thrown open when the lock is lifted to the required extent. The tail or rear arm  $d'$  of the knuckle D is also furnished with a shelf or incline  $d^6$ , adapted by its engagement with the lower end of the knuckle-throwing leg  $f$  to support the lock when the knuckle is open. The lower end of the knuckle-throwing leg  $f$  of the lock is provided with a beveled or inclined face  $f^5$  to adapt it to properly ride up the incline or shelf  $d^6$  of the knuckle-tail as the knuckle swings open. The lock F is also provided with a shoulder or ledge  $f^7$ , adapted to engage the knuckle-tail and support the knuckle thereon as the knuckle begins to swing open. The knuckle D also has on its tail or rear arm a hook or projection  $d^8$ , which when the knuckle is closed engages the projection or shoulder  $b^7$  on the draw-head B, and thus affords an additional anchorage for holding the knuckle in the draw-head and in part relieving the pivot-pin C from strain. The foot or projection  $f^4$  on the knuckle-thrower leg  $f$  of the lock F not only serves by its engagement with the knuckle-tail to automatically throw the knuckle open, but also serves as a means for preventing the lock from being entirely removed from the coupler without first removing the pivot-pin C and taking the knuckle itself out. In other words, it prevents the lock F from being raised too high. For this purpose also the knuckle-throwing cam or incline  $d^6$  is furnished with an extension  $d^9$ , slightly beyond the point necessary for fully throwing the knuckle open, and which by engagement with said foot or projection  $f^4$  of the lock prevents the lock from being removed when the knuckle is entirely open. The curved and inclined passage-way  $d^{10}$  in the front wall of the slot  $d^2$  in the knuckle-tail for the foot or projection  $f^4$  of the knuckle-thrower leg  $f$  has an open mouth  $d^{11}$ , so that when the lock is raised to the proper position and the pivot-pin C removed the knuckle can be removed from the draw-head and from its engagement with the lock-set leg  $f$  and foot  $f^2$ . This permits the ready removal of the parts and their easy assembling. As the knuckle-throwing leg  $f$  of the lock F extends through the knuc-

kle-tail, it affords a very firm and strong additional means for connecting the knuckle with the draw-head, and as the slot F' in the lock F between the main portion of the lock and knuckle-throwing leg  $f$  fits closely the portion  $d^{12}$  of the knuckle-tail thus straddled by the lock and its knuckle-throwing leg the knuckle cannot either open or be drawn out of the draw-head even if the pivot-pin C should break or be mischievously removed. My invention thus affords great additional strength, security, and safety to the coupling and to the train connected thereby.

G is the lifting-lever connected by a chain or link  $g$  with the eye  $F^2$  of the lock F.

I claim—

1. In a car-coupler, the combination with a forked draw-head, of a knuckle having a transversely-extending curved slot in its rear arm or tail and provided with a knuckle-throwing cam or incline, and a vertically-movable lock having a knuckle-throwing leg fitting in said transverse slot of the knuckle-tail and furnished with a foot or projection engaging said cam or incline to throw the knuckle open, substantially as specified.
2. In a car-coupler, the combination with the draw-head, of a knuckle having a rear arm or tail furnished with a transversely-extending slot, and provided with a knuckle-throwing cam or incline, and a lock having a lock-set leg and a knuckle-throwing leg fitting astride a portion of the knuckle-tail, said knuckle-throwing leg fitting in said slot of the knuckle-tail and provided with a foot or projection engaging said cam or incline on the knuckle-tail to throw the knuckle open, said knuckle-throwing leg passing through the knuckle-tail serving also as a means for connecting the knuckle with the draw-head, substantially as specified.
3. In a car-coupler, the combination with the draw-head having a rear arm or tail furnished with a transversely-extending slot and with a cam or incline, and a lock having a leg fitting in said slot of the knuckle-tail and furnished with a foot or projection engaging said cam or incline on the knuckle-tail to throw the knuckle open when the lock is lifted, the lower end of said lock-set leg being also adapted to engage the lower web or floor of the draw-head to set or hold the lock in position for uncoupling, substantially as specified.
4. In a car-coupler, the combination with the draw-head having a rear arm or tail furnished with a transversely-extending slot and with a cam or incline, and a lock having a leg fitting in said slot of the knuckle-tail and furnished with a foot or projection engaging said cam or incline on the knuckle-tail to throw the knuckle open when the lock is lifted, said lock having also a lock-set leg furnished with a ledge or shoulder adapted to



engage the lower web or floor of the draw-head to hold the lock in position for uncoupling, substantially as specified.

5. In a car-coupler, the combination with the draw-head having a rear arm or tail furnished with a transversely-extending slot and with a cam or incline, and a lock having a leg fitting in said slot of the knuckle-tail and furnished with a foot or projection engaging said cam or incline on the knuckle-tail to throw the knuckle open when the lock is lifted, said lock having also a lock-set leg furnished with a ledge or shoulder adapted to engage the lower web or floor of the draw-head to hold the lock in position for uncoupling, and the lower end of said knuckle-throwing leg of the lock being also adapted to engage the lower web or floor of the draw-head for holding the lock in position for uncoupling, substantially as specified.

6. In a car-coupler, the combination with the draw-head having a rear arm or tail furnished with a transversely-extending slot and with a cam or incline, and a lock having a leg fitting in said slot of the knuckle-tail and furnished with a foot or projection engaging said cam or incline on the knuckle-tail to throw the knuckle open when the lock is lifted, said lock having a ledge or shoulder adapted to rest upon the knuckle-tail and support the lock when the knuckle begins to swing open, substantially as specified.

7. In a car-coupler, the combination with the draw-head having a rear arm or tail furnished with a transversely-extending slot and with a cam or incline, and a lock having a leg fitting in said slot of the knuckle-tail and furnished with a foot or projection engaging said cam or incline on the knuckle-tail to throw the knuckle open when the lock is lifted, said knuckle-tail being provided with a ledge or shelf adapted to engage the lower end of said knuckle-thrower leg to support the lock in its raised position when the knuckle is completely open, substantially as specified.

8. In a car-coupler, the combination with the draw-head having a rear arm or tail furnished with a transversely-extending slot and with a cam or incline, and a lock having a leg fitting in said slot of the knuckle-tail and furnished with a foot or projection engaging said cam or incline on the knuckle-tail to throw the knuckle open when the lock is lifted, said knuckle-tail being provided with a ledge or shelf adapted to engage the lower end of said knuckle-thrower leg to support the lock in its raised position when the knuckle is completely open, and said ledge or shelf having an inclined upper face to adapt it to slip under the lower end of said knuckle-thrower leg as the knuckle swings open, substantially as specified.

9. In a car-coupler, the combination with

the draw-head having a rear arm or tail furnished with a transversely-extending slot and with a cam or incline, and a lock having a leg fitting in said slot of the knuckle-tail and furnished with a foot or projection engaging said cam or incline on the knuckle-tail to throw the knuckle open when the lock is lifted, said knuckle-tail being provided with a ledge or shelf adapted to engage the lower end of said knuckle-thrower leg to support the lock in its raised position when the knuckle is completely open, said ledge or shelf having an inclined upper face to adapt it to slip under the lower end of said knuckle-thrower leg as the knuckle swings open, and the lower end of said knuckle-thrower leg being furnished with an inclined face, substantially as specified.

10. In a car-coupler, the combination with a forked draw-head, of a pivoted knuckle having a rear arm furnished with a slot, of a lock having a leg fitting in the slot in the rear arm of the knuckle, said rear arm of the knuckle and said leg of the lock having interengaging integral devices for throwing the knuckle open as the lock is lifted, and said rear arm of the knuckle having a shelf or device for supporting the lock by engagement with said leg when the knuckle is fully open, and said leg of the lock and the draw-head having interengaging parts to support the lock in position for uncoupling, substantially as specified.

11. In a car-coupler, the combination with a forked draw-head, of a pivoted knuckle having a slotted rear arm or tail, of a lock having two legs, one of which passes through the slot in the knuckle-tail, substantially as specified.

12. In a car-coupler, the combination with a forked draw-head, of a pivoted knuckle having a slotted rear arm or tail, of a lock having two legs, one of which passes through the slot in the knuckle-tail, said lock and knuckle-tail having interengaging devices for throwing the knuckle open as the lock is lifted, substantially as specified.

13. In a car-coupler, the combination with a forked draw-head, of a pivoted knuckle having a slotted rear arm or tail, of a lock having two legs, one of which passes through the slot in the knuckle-tail, said knuckle-tail having a cam or incline, and the leg of the lock passing through the knuckle-tail having a foot or projection engaging said cam or incline to throw the knuckle open, said foot or projection also serving to prevent the lock being removed or lifted too high, substantially as specified.

14. In a car-coupler, the combination with a forked draw-head, of a pivoted knuckle having a slotted rear arm or tail, of a lock having two legs, one of which passes through the slot in the knuckle-tail, said knuckle-tail

having a cam or incline, and the leg of the  
lock passing through the knuckle-tail having  
a foot or projection engaging said cam or in-  
cline to throw the knuckle open, said foot or  
5 projection also serving to prevent the lock  
being removed or lifted too high, said leg of  
the lock passing through the knuckle-tail

also serving to connect the knuckle to the  
draw-head, substantially as specified.

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