

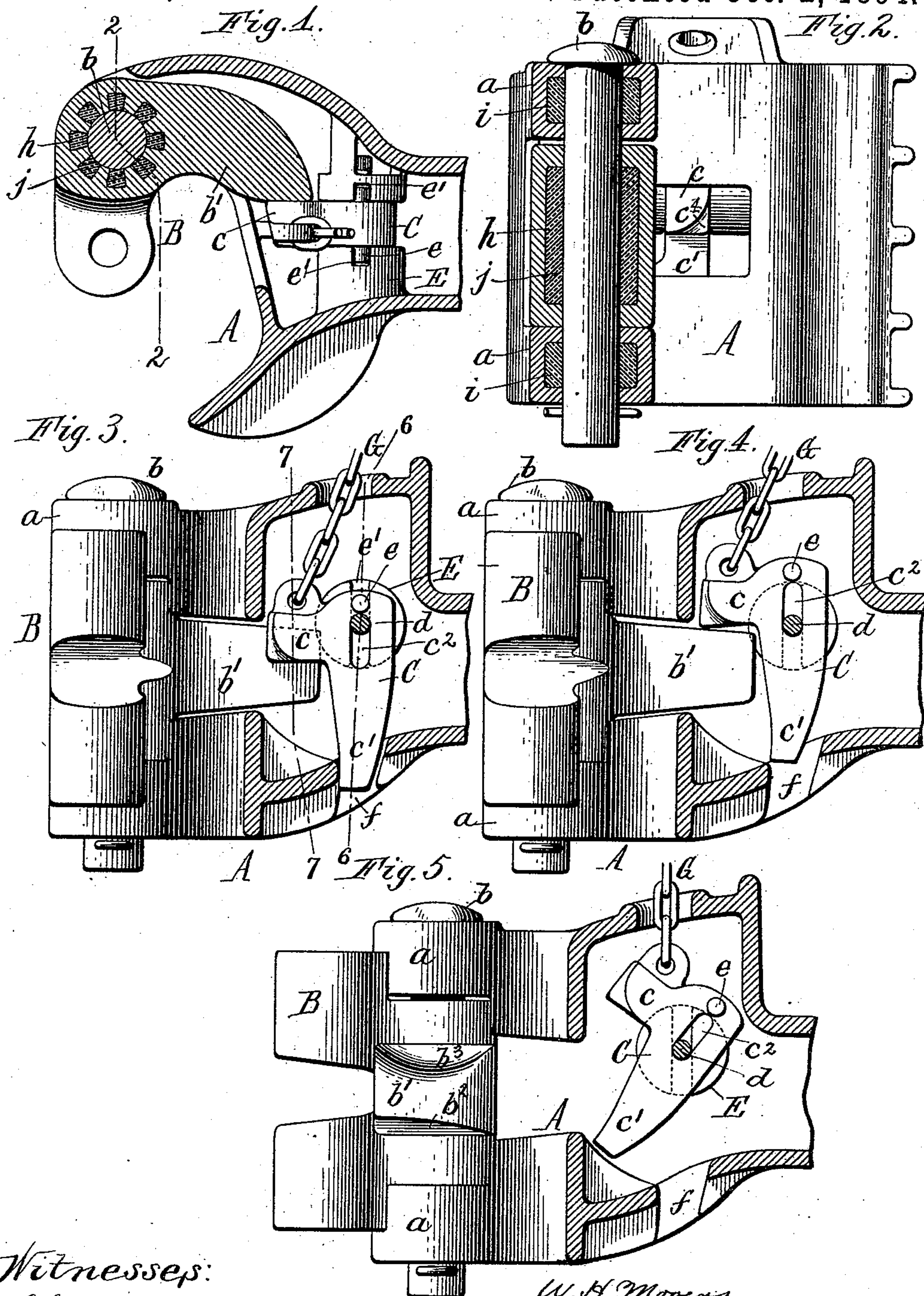
(No Model.)

2 Sheets—Sheet 1.

W. H. MOOERS & E. A. RICHELL.  
CAR COUPLING.

No. 526,840.

Patented Oct. 2, 1894.



Witnesses:

Chas. F. Burkhardt.

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(No Model.)

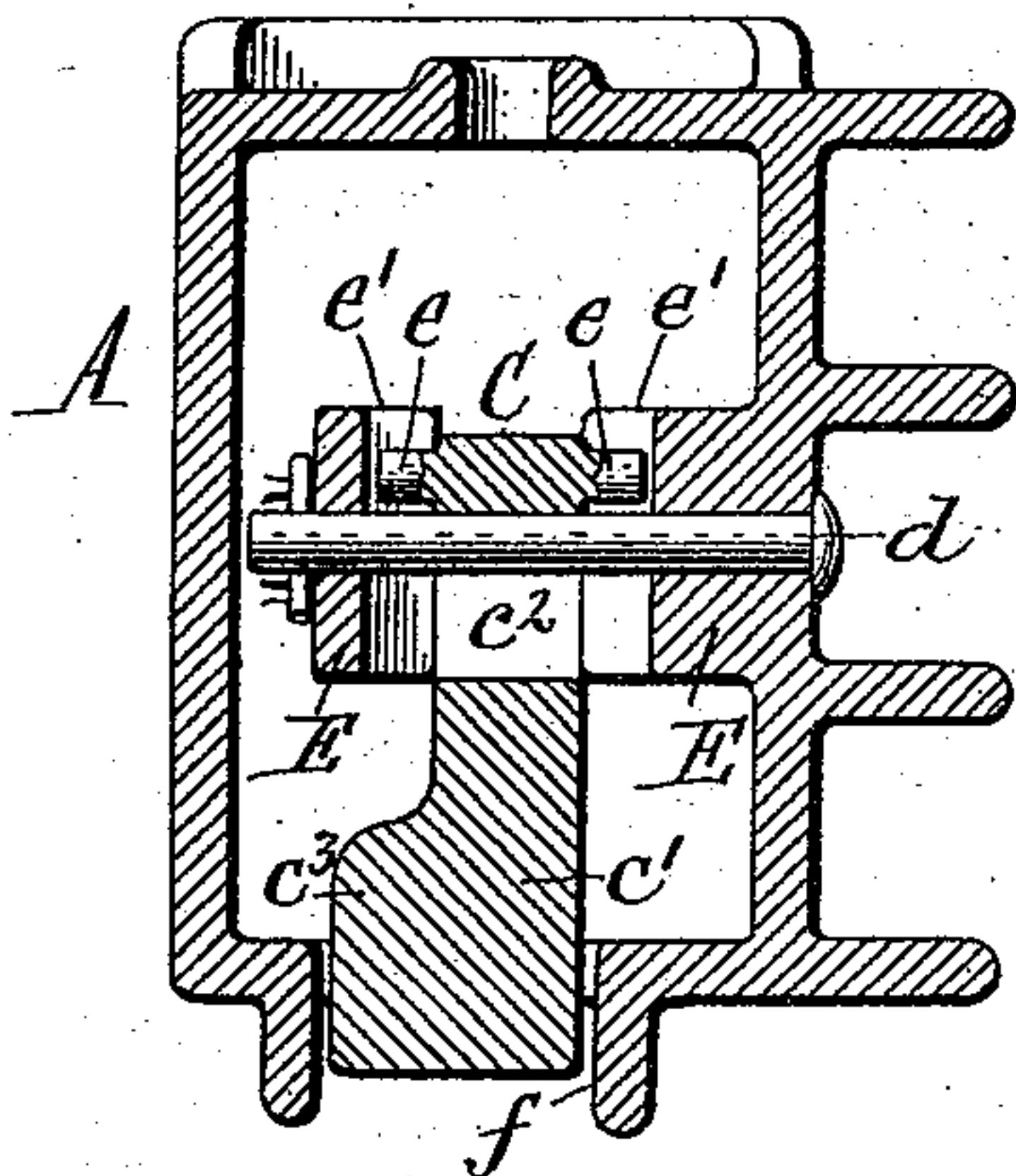
2 Sheets—Sheet 2.

W. H. MOOERS & E. A. RICHELL.  
CAR COUPLING.

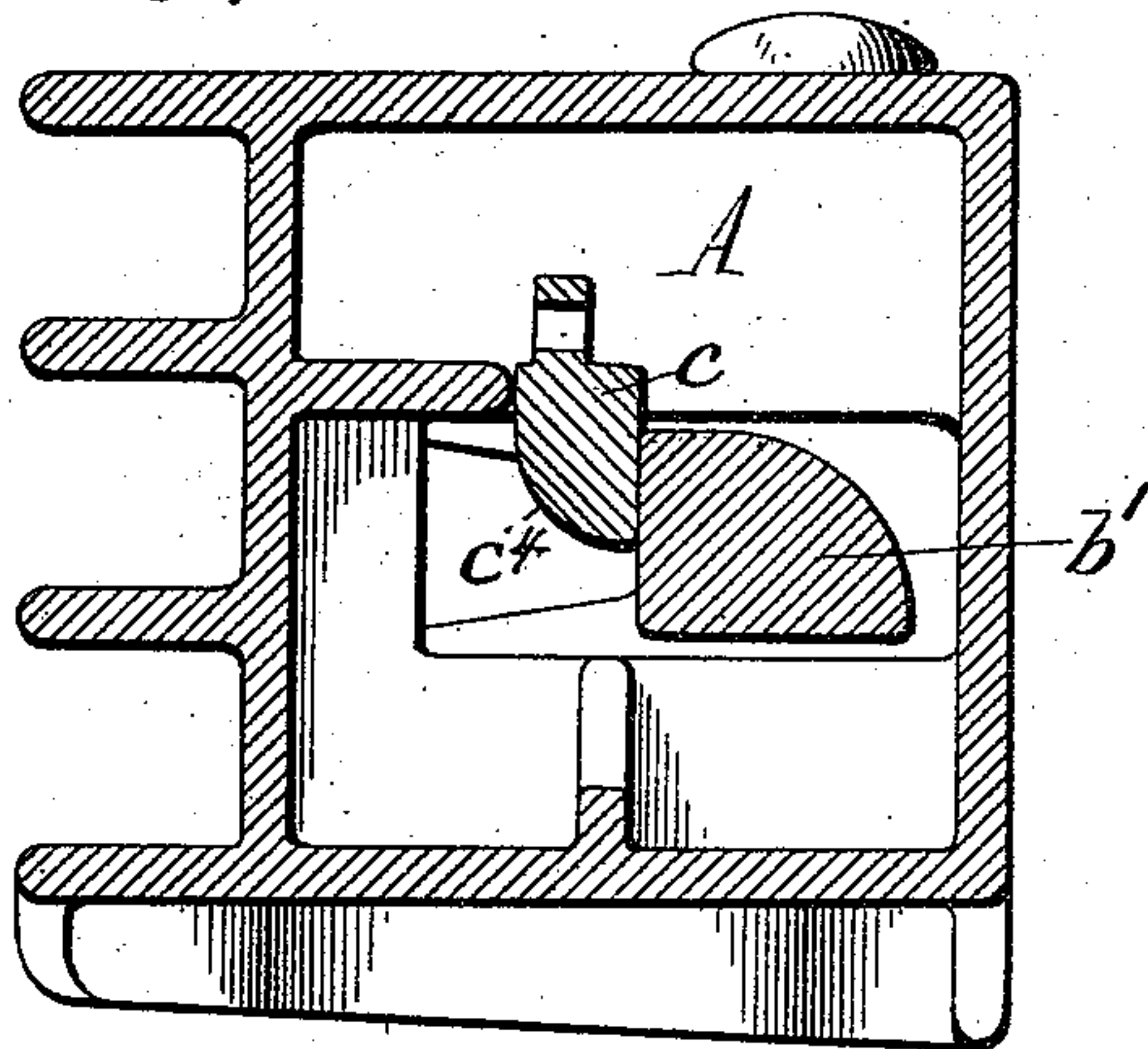
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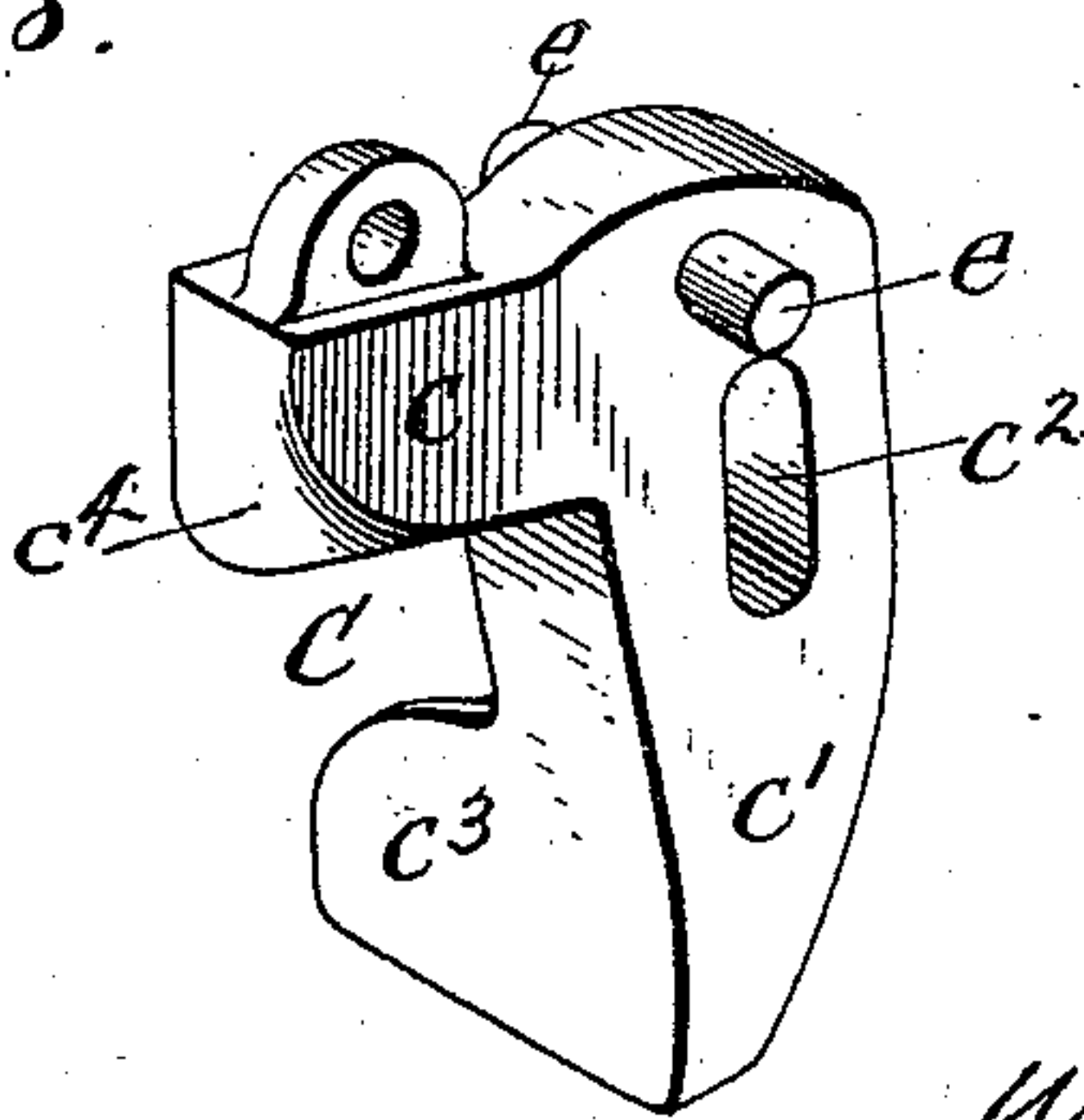
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



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# UNITED STATES PATENT OFFICE.

WILLIAM H. MOOERS AND ERNEST A. RICHELL, OF BUFFALO, NEW YORK.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 526,840, dated October 2, 1894.

Application filed March 31, 1894. Serial No. 505,851. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM H. MOOERS and ERNEST A. RICHELL, citizens of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Car-Couplings, of which the following is a specification.

This invention relates to the class of automatic car couplings having a horizontally swinging coupling jaw which is held in its closed or coupled position by a lock with which is combined a shifting device or "kicker," whereby the coupling jaw is thrown into its open position in the act of operating the lock for releasing the jaw.

Our invention has for its principal object to construct a reliable car coupling of this character which is free from parts that are liable to bind and interfere with the proper and easy operation of the coupler, and which can be manufactured at a minimum cost.

Another object of our invention is to strengthen the coupling jaw and the lugs of the drawhead to which it is pivoted.

In the accompanying drawings consisting of two sheets: Figure 1 is a horizontal section of our improved car coupling. Fig. 2 is a transverse vertical section thereof in line 2—2, Fig. 1. Fig. 3 is a vertical longitudinal section of the coupling, showing the coupling jaw in its locked position. Fig. 4 is a similar view showing the lock raised clear of the locking arm of the coupling jaw, preparatory to kicking the latter. Fig. 5 is a similar view, showing the position of the lock after having kicked the coupling jaw and before being released by its operating chain. Fig. 6 is a transverse section in line 6—6, Fig. 3, looking rearward. Fig. 7 is a similar section in line 7—7, Fig. 3, looking forward. Fig. 8 is a perspective view of the combined lock and kicker.

Like letters of reference refer to like parts in the several figures.

A is the chambered drawhead which is preferably constructed in accordance with the well known standard adopted by the Master Car Builders' Association.

B is the horizontally swinging jaw or knuckle pivoted by a vertical pin or bolt *b* to the perforated lugs *a* of the drawhead, and having the usual locking arm *b'*.

C is the lock which engages with the arm of the coupling jaw for holding the same in its closed or coupled position. This lock is arranged to move vertically in the drawhead and is also capable of swinging longitudinally therein, the same being mounted upon a transverse pivot pin *d* arranged in the rear portion of the drawhead. The lock is provided with a forwardly extending retaining arm *c* which is adapted to stand in front of the locking arm of the coupling jaw when the latter is closed, and with a depending shifting arm or kicker *c'* which is adapted to strike the locking arm of the jaw and throw the latter into its open position after the same is released by the retaining arm *c*. The lock is formed in its upper portion with an upright slot *c<sup>2</sup>*, through which the pivot pin *d* passes, and which permits a sufficient vertical movement of the lock to allow its retaining arm to clear the locking arm of the coupling jaw.

*e, e*, represent horizontal stop pins or projections formed on opposite sides of the lock, above the transverse pivot pin, and entering upright guide grooves *e'* formed in cylindrical bosses *E* which project inward from the side walls of the drawhead, as shown in Figs. 1 and 6. These stop pins are so arranged relatively to the upper sides of the bosses *E* that when the lock is in its normal depressed position, the pins are located in the guide grooves and prevent the lock from swinging forward or backward, while when the lock is raised sufficiently to release the coupling jaw the stop pins are outside of the guide grooves and permit the lock to swing on its transverse pivot pin without restraint.

*f* is an opening formed in the bottom of the drawhead for receiving the lower end of the shifting arm *c'* when the lock is in its normal position, as shown Figs. 3 and 6. The lower portion of this shifting arm is widened or formed with a lateral extension *c<sup>3</sup>* which is adapted to bear against the rear end of the locking arm of the coupling jaw in kicking the latter. The rear end of the locking arm is curved or beveled on its rear side, as shown at *b<sup>2</sup>*, in Fig. 5, so that the forward movement of the shifting arm *c'* causes said locking arm to swing in the same direction and open the coupling jaw. In order to cause



the lock to be raised by the locking arm of the coupling jaw when the latter is moved from its open to its locked position, the lower forward edge of the retaining arm of the lock is inclined or beveled, as shown at  $c^4$  in Figs. 2 and 8, and the contiguous rear side of the arm of the coupling jaw is correspondingly beveled, as shown at  $b^3$ .

G is the customary chain, whereby the lock is operated, and which is connected at its upper end to the usual actuating shaft journaled at the end of the car, which shaft is not shown in the drawings. This operating chain passes through an opening in the top of the drawhead and is attached at its lower end to a perforated ear formed on the retaining arm of the lock.

When the coupling jaw is in its locked position, the lock is in its lower position and its retaining arm  $c$  projects horizontally in front of the locking arm of the coupling jaw, as shown in Fig. 3, while the shifting arm or kicker  $c'$  hangs vertically and projects with its lower portion into the opening  $f$  in the bottom of the drawhead. The lock is supported in this position by the upper end of its vertical slot resting upon the transverse pivot pin  $d$ , and the lock is prevented from swinging forward or backward by the shifting arm  $c'$  and also by the stop pins  $e, e$ , engaging with the guide grooves  $e'$ . The lock is thus held in its normal position with sufficient security to prevent its swinging out of that position from the jolting of the car.

When it is desired to kick the coupling jaw to its open position, the lock is raised by means of its operating chain to the extremity of its upward movement. During the first portion of this movement, the lock rises until the retaining arm  $c$  releases the coupling jaw and the lower end of its slot comes in contact with the transverse pivot pin  $d$ , when the continued upward pull on the retaining arm causes the latter to swing upwardly and rearwardly and the shifting arm to swing forwardly, as shown in Fig. 5, thereby causing the shifting arm to strike the locking arm of the coupling jaw and swinging the latter to its open position.

The slot of the lock is made so long that its lower end does not arrest the upward movement of the lock until the retaining arm has fully cleared the locking arm of the coupling jaw, while the shifting arm is made of such a length that its lower end is withdrawn from the bottom opening of the drawhead by the time that the lower end of the slot in the lock comes in contact with the transverse pivot pin. In kicking the coupling jaw, the lock swings upon the lower end of its slot as a fulcrum, and the forwardly-projecting retaining arm of the lock serves, in addition to its function as a locking device, as an operating arm for the lock.

During the upward movement of the lock, its stop pins  $e, e$ , tend to bind against the rear

walls of the guide grooves  $e'$ , owing to the tendency of the retaining arm  $c$  to swing upward, but as the lower front side of the shifting arm  $c'$  bears against the front wall of the opening in the bottom of the drawhead during the vertical movement of the lock, the stop pins are prevented from restraining the movement of the lock. The bottom opening of the drawhead, while serving as a stop or abutment for the shifting arm, also provides an outlet for any water, cinders, or dirt that may enter the drawhead.

When the coupling jaw is moved from its open to its closed position, the beveled rear end of its locking arm, striking the corresponding face of the retaining arm of the lock, lifts the latter until it has passed it, when the lock descends to its normal position by gravity and automatically locks the coupling jaw.

The construction of the locking and kicking devices of our improved coupler is such that the same can be conveniently molded and cast without requiring subsequent fitting. No inclines are employed for opening the coupling jaw and moving the lock into engagement with the jaw, and the binding of the parts liable to occur when such inclines are used, is therefore obviated.

In order to strengthen the hub of the coupling jaw and the perforated lugs of the drawhead through which its pivot pin passes, the bore of said hub is formed with radial recesses or cavities  $h$  which open into the bore, and the openings in the lugs of the drawhead are provided with similar recesses  $i$ . By thus recessing these parts the metal left between the recesses is comparatively thin, enabling it to be thoroughly annealed and rendering the wearing faces of the jaw and the perforated lugs of the drawhead stronger and more durable. The wearing faces of the parts are also reduced in area by this construction, thus lessening the friction. If desired, the recesses or cavities may be filled with plumbago or similar material  $j$  for lubricating the parts and facilitating the movements of the coupling jaw.

We claim as our invention—

1. The combination with the drawhead and the swinging coupling jaw, of a vertically movable lock having a slot, a retaining arm adapted to engage with the coupling jaw and a shifting arm adapted to strike the coupling jaw for opening it, a pivot pin passing through said slot, and a stop whereby the lock is held from swinging on said pivot pin during its vertical movement, substantially as set forth.

2. The combination with the drawhead having an upright guide, and the coupling jaw, of a depending lock having a vertical slot, a forwardly extending actuating and retaining arm and a depending shifting arm adapted to strike the coupling jaw for opening it, a transverse pivot pin passing through the slot of the lock, and a stop pin or projection ar-



ranged on the lock and sliding in the upright guide of the drawhead, substantially as set forth.

3. The combination with the drawhead having internal cylindrical bosses provided with upright guide grooves, and a stop arranged in the bottom of the drawhead, of the coupling jaw, and a pivoted depending lock capable of moving vertically in the drawhead and having pins or projections arranged to slide in the grooves of said bosses, a retaining arm adapted to engage with the coupling jaw, and a depending shifting arm adapted to bear against the stop in the bottom of the drawhead during the vertical movement of the lock, substantially as set forth.

4. The combination with the drawhead hav-

ing upright guide-grooves in its sides and an opening in its bottom, of a coupling jaw, a pivoted, depending lock capable of vertical movement in the drawhead and having a retaining arm adapted to interlock with the coupling jaw, a depending shifting arm adapted to engage with the bottom opening of the drawhead, and lateral stop pins arranged in said guide grooves, substantially as set forth.

Witness our hands this 26th day of March, 1894.

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ERNEST A. RICHELL.

Witnesses:

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ELLA R. DEAN.