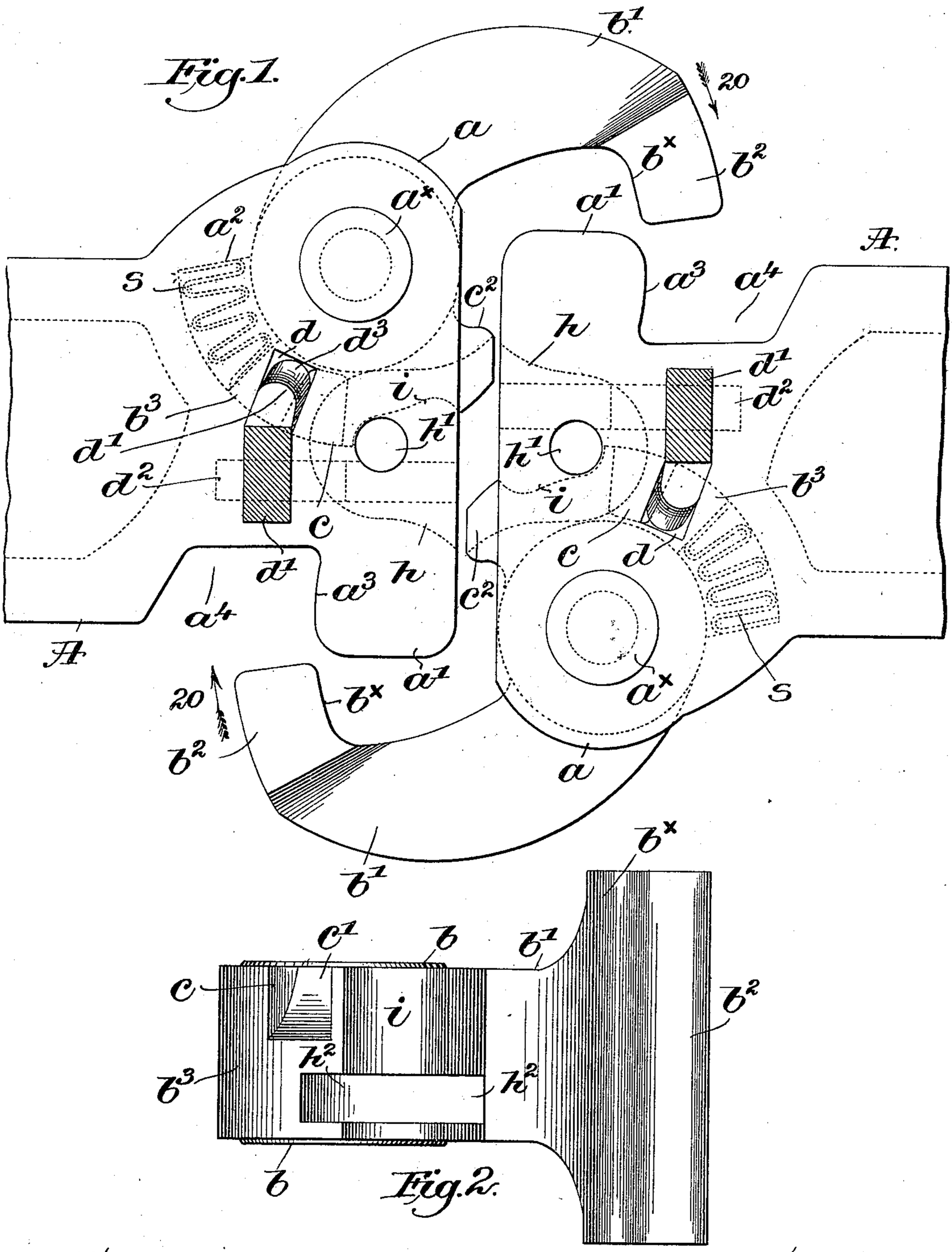
(No Model.) 2 Sheets—Sheet 1.

E. W. KELLEY.

CAR COUPLING.

No. 513,019. Patented Jan. 16, 1894.

Fig. 1.



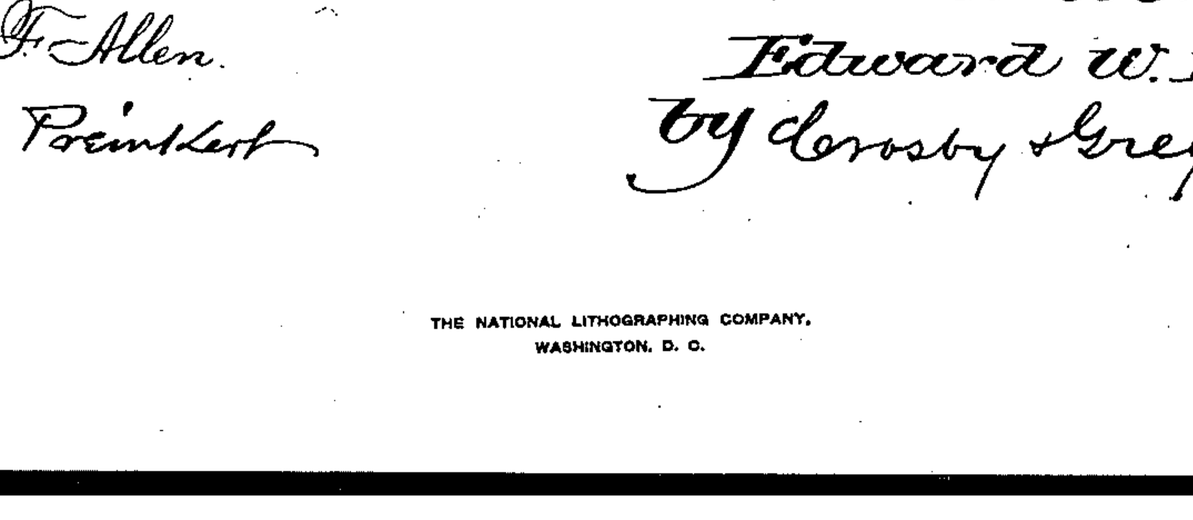


Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

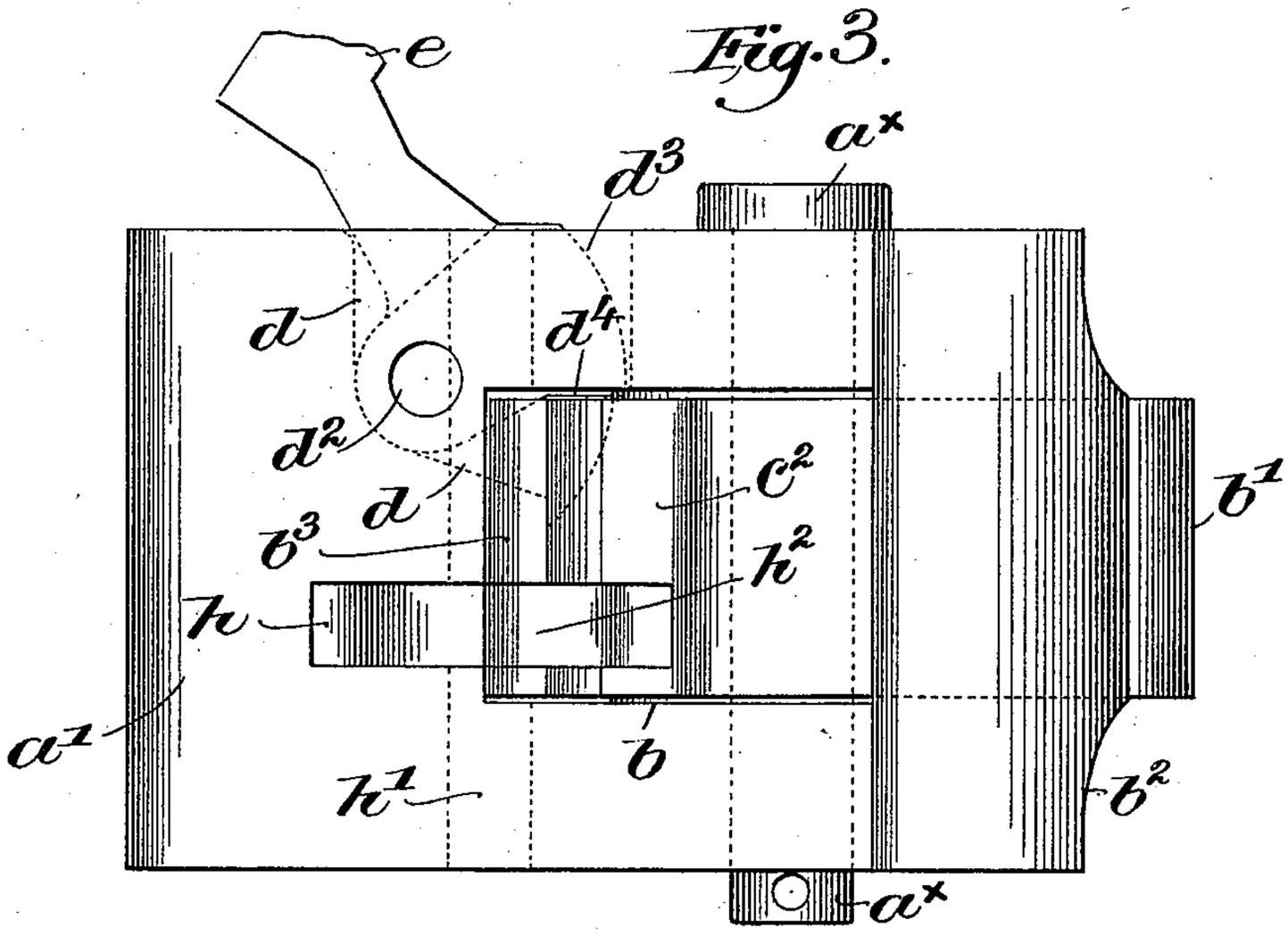
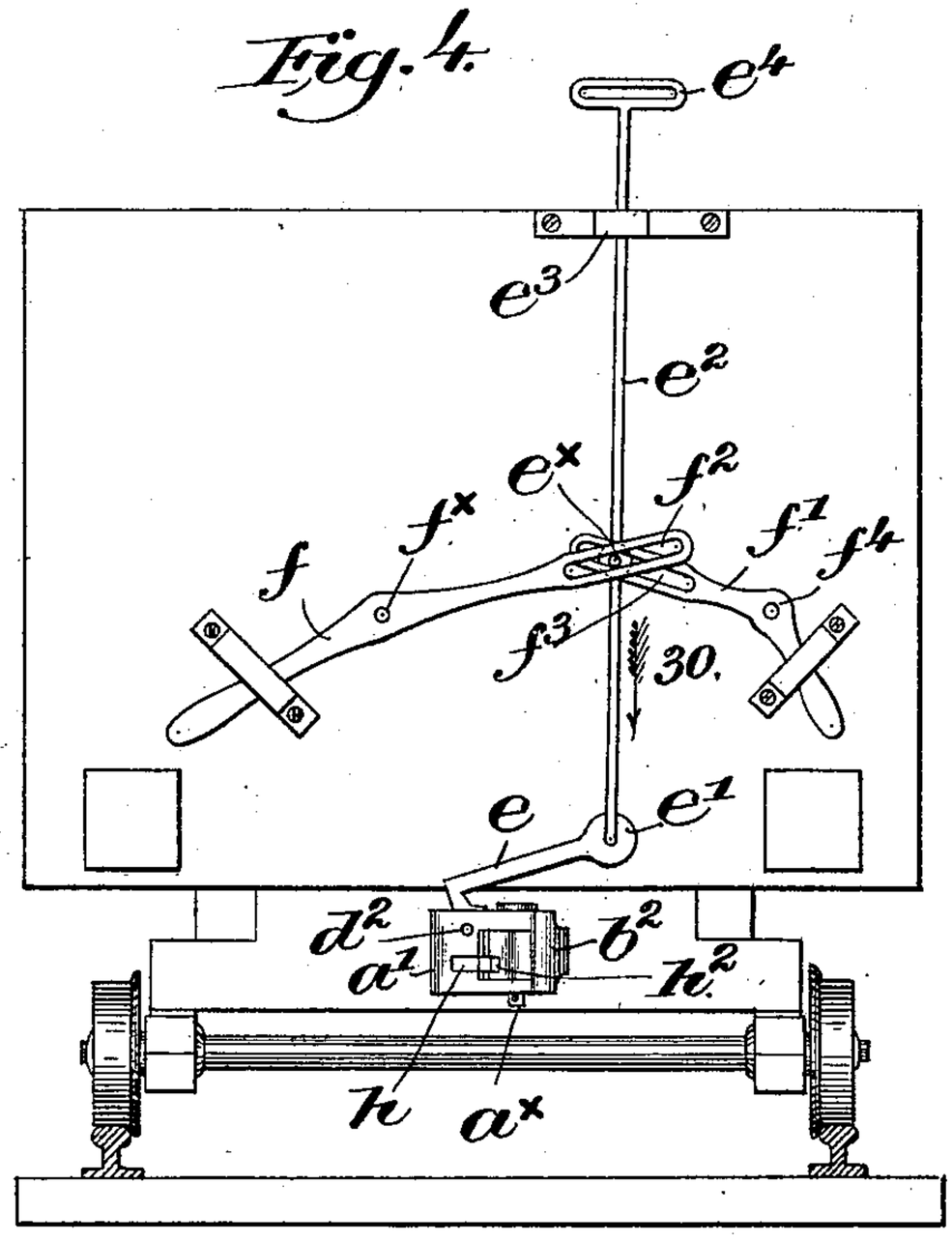


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD W. KELLEY, OF LOWELL, MASSACHUSETTS.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 513,019, dated January 16, 1894.

Application filed March 22, 1893. Serial No. 467,211. (No model.)

To all whom it may concern:

Be it known that I, EDWARD W. KELLEY, of Lowell, county of Middlesex, State of Massachusetts, have invented an Improvement in Car-Couplings, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of an automatic car coupler possessing great strength and durability, impact of the draw-heads of the cars to be coupled positively moving the swinging hooks into closed or coupled position, means being provided for automatically locking the hooks when so closed.

Devices accessible from the top or sides of the car are provided for releasing the locking means, to thereby permit the swinging hooks to resume their normal or open position, thereby automatically uncoupling the cars.

In accordance therewith, my invention consists in the combination with a draw-head having an external shoulder, of a swinging coupling hook positively moved by the draw-head of another car into engagement with a shoulder thereon, and an automatic locking device to directly co-operate with and retain said hook in closed position in engagement with the shoulder of the other draw-head, substantially as will be described; also, the combination with a draw-head having an external shoulder, of a swinging coupling hook positively moved by the draw-head of another car into engagement with a shoulder thereon, and an automatic locking device to directly co-operate with and retain said hook in closed position in engagement with the shoulder of the other draw-head, and a cushion for said hook, substantially as will be described.

Other features of my invention will be hereinafter described and particularly pointed out in the claims.

Figure 1 is a top view of two draw-heads with my invention applied thereto, about to be coupled. Fig. 2 is an inner side elevation of one of the coupling hooks detached. Fig. 3 is a front view of one of the draw-heads shown in Fig. 1, and Fig. 4 is an end view of a car with my invention applied thereto.

I have herein shown the head of the draw bar A as provided with a lateral enlargement *a* having a seat therein to receive the hub *b* of a coupling hook, a pin or bolt $a^{\times}$ retaining the hook in place and forming a pivot on which it swings, said hook having a shank *b'* and a transversely extended head b^2, the inner face $b^{\times}$ of the head being slightly concaved, as shown. The hub *b* of the hook has a shoulder b^3, see Figs. 2 and 3, and dotted lines Fig. 1, radially recessed at its top and periphery at *c*, said recess having a curved inner wall *c'*, for a purpose to be described, the forward end c^2 of the shoulder adjacent the base of the shank projecting beyond the face of the draw-head, as in Fig. 1.

A spring *s*, see dotted lines Fig. 1, preferably a flat corrugated strip of spring metal, is retained in the seat in the enlargement *a* of the draw-head, between its end wall a^2 and the rear end of the shoulder b^3, the expansive force of the spring keeping the hook normally in the open position shown in Fig. 1, ready to be coupled. The opposite side of the draw-head is provided with a shoulder *a'* having a convex rear face a^3, adjacent to a recessed portion a^4.

An irregular recess or seat *d* is formed in the top of the draw-head, see Figs. 1 and 3, to receive a locking dog *d'*, pivotally supported on a pin d^2, inserted through a hole $d^{\times}$, best shown by dotted lines, Fig. 1, drilled in the draw-head from its face. The front portion of said dog is inclined with relation to its pivot d^2, and is substantially radial to the pivot of the swinging hook, in order that said dog will readily drop into the recess *c* of the shoulder b^3 when the hook is moved into position to couple. It will be remembered that the inner wall *c'* of said recess is curved, as best shown in Fig. 2, and the outer end d^3 of the dog is correspondingly curved, both curves having the pivot d^2 as their center, so that the dog will freely enter and leave the locking recess *c*. The under face d^4 of said dog, see Fig. 3, rests on the top of the shoulder b^3 when the hook is in its normal open position, but when the draw-heads of the two cars come together the projecting end c^2 of the shoulder b^3 of each hook is pushed in by the opposite draw-head, turning the hooks in the direction of the arrows 20, Fig. 1, until the heads b^2 enter the recesses a^4, the inner faces $b^{\times}$ of the heads wiping over the faces a^3 of the shoulders

a'. At the same time such movement of the shoulders b^3 has brought the recesses c below the locking dogs d', and the latter fall into place, locking the hooks in closed position.

It will be noticed that the strain upon the coupling is exerted along lines extended through the hook pivots $a^\times$ and the shoulders a' of the draw-heads, and that the strain exerted upon the locking dog of each coupler is consequently only that due to the force of the spring s, the only function of the dog being to lock the hooks in closed position against the force of said springs. The draw-heads are held together on both sides of their center, as is evident, and the recesses a^4 give sufficient play of the parts in rounding curves, &c. Impact of the draw-heads moves the hooks positively and automatically into coupling position, and they are also automatically locked therein, the springs acting as cushions for the hooks, and preventing rebound thereof from the opposite draw-head.

To uncouple the cars the dogs are withdrawn from the recesses c by mechanism to be described, and the expansive force of the spring s causes the hook, so released, to quickly swing outward and from engagement with the shoulder a' of the opposite draw-head, and each dog must be withdrawn before the cars are completely uncoupled. Each dog is provided with an over-hanging arm e, preferably weighted at its outer end, as at e', see Fig. 4, to increase the rapidity of movement of the dog into the locking recess c, and a rod e^2 is pivoted to said arm and extended upwardly toward the top of the car, being retained in position by a suitable guide e^3. When the cars are brought together the hooks are swung inwardly, as described, and the dogs drop into the recesses c, the rod moving longitudinally in the direction of the arrow 30, Fig. 4. The upper end of the rod is provided with a suitable handle e^4, and the cars may be uncoupled when the brakeman is on the top thereof by raising the handle, lifting the dog from the recess and releasing its hook.

In order to uncouple from the side of the car I have provided levers f, f', pivoted at $f^\times$, $f'^\times$, near opposite sides of the car, the inner ends of said levers being herein shown as provided with slots f^2, f^3, to be entered by a pin or stud $e^\times$, on the rod e^2. When the cars are coupled the handles of said levers will be moved outward, and movement of either handle into the position shown in Fig. 4 will elevate the rod e^2 and thereby withdraw the dog.

From the foregoing it will be seen that the cars couple automatically, by mere impact of the draw-heads, that they are then automatically locked, and that the manual release of the locking mechanism effects the uncoupling automatically, said manual release being controlled from the top or side of the car, so that the presence of a brakeman or the operator between the cars to couple or uncouple is entirely unnecessary.

To provide means for using my improved coupling as an ordinary link and pin coupling I have recessed the draw-head rearwardly from its face, as at h, see full lines Figs. 3 and 4, and dotted lines Fig. 1, to receive a link of usual construction, said link being retained in place by a bolt or pin dropped into a vertical hole h' therefor, intersecting the recess h. As best shown in Fig. 1, the holes h' are substantially in the central line of the draw-heads, such location being preferable on account of the central position of a link as held in an ordinary coupler, and also avoiding a lateral strain upon the said link.

In order that coupling pins may be carried in the holes h', without interfering with the swinging hooks, I have recessed the shoulder b^3 thereof from top to bottom, as at i, thereby permitting the shoulder to move freely past the pin. The shoulder is also slotted transversely at h^2, below the locking recess c, see Fig. 2, the slot h^2 being a continuation of the slot h in the draw-head, as shown in Figs. 3 and 4, to provide room for the insertion of a link when necessary. The heads b^2 of the hooks are of sufficient length from top to bottom to accommodate cars of different heights.

This invention is not restricted to the exact shape and arrangement of parts as herein shown and described, as the same may be modified or changed without departing from the spirit and scope of my invention.

I claim—

1. The combination with a draw-head having an external shoulder, of a swinging coupling hook positively moved by the draw-head of another car into engagement with a shoulder thereon, and an automatic locking device to directly co-operate with and retain said hook in closed position in engagement with the shoulder of the other draw-head, substantially as described.

2. The combination with a draw-head having an external shoulder, of a swinging coupling hook positively moved by the draw-head of another car into engagement with a shoulder thereon, and an automatic locking device to directly co-operate with and retain said hook in closed position in engagement with the shoulder of the other draw-head, and a cushion for said hook, substantially as described.

3. The combination with a draw-head having a fixed shoulder, of a swinging coupling hook pivoted to said draw-head and adapted to positively engage the shoulder of another draw-head, a recess in said hook, and a swinging locking dog pivoted to the draw-head to enter said recess when the hook is in closed position and retain it in such position, substantially as described.

4. The combination with a draw-head having a shoulder upon one side thereof, a laterally swinging radially recessed coupling hook adapted to engage a similar shoulder on the draw-head of another car, and a pivotally supported automatic locking dog to co-operate

with said recess, of manually operated means to turn upon its pivot and withdraw said dog and thereby release the hook, substantially as described.

5. The combination with the recessed draw-head, a swinging coupling hook having a radial recess, and a spring to act directly upon and normally maintain said hook open, of an automatic locking dog pivoted in the recess in the draw-head and to co-operate with the radial recess when the hook is closed against the action of the spring, strain upon the dog being due only to said spring, substantially as described.

6. The combination with a draw-head having a shoulder upon one side thereof, of a normally inoperative coupling hook pivoted at its opposite side, a projecting actuating portion of the base of the hook normally extending beyond the face of the draw-head, pressure thereon positively moving the hook into operative position to engage the similar shoulder of another draw-head, means to automatically lock the hook in such position, and a spring to turn the hook when unlocked, substantially as described.

7. In an automatic car coupling, a draw-head having a shoulder, a spring controlled swinging coupling hook adapted to engage the shoulder of an opposite draw-head, and means for positively moving said hook by the opposite drawhead into coupling position and against the action of and to be cushioned by said spring, combined with a locking device for retaining said hook in engagement with the shoulder, substantially as described.

8. In an automatic car coupling, the combination with a draw-head, of a swinging coupling hook pivoted thereto, means to normally maintain said hook open, an automatic locking device to engage and retain said hook closed when moved into coupling position, and means to disengage said locking device manually and thereby permit the hook to swing out to uncouple the cars, substantially as described.

9. In an automatic car coupling, a draw-head, a swinging coupling hook at one side thereof, and a shoulder at the other side, combined with a radial recess in said shoulder, a locking dog to automatically enter said recess and hold said hook in closed position, said draw-head having a link recess therein between the hook and shoulder, and a pin hole, substantially as described.

10. A draw-head having a recess, a swinging coupling hook pivoted in said recess and provided with a shoulder, and a co-operating locking dog and recess to hold the hook in closed position, combined with a spring in the recess of the draw-head between its end and the rear end of the shoulder, substantially as described.

11. A draw-head, a swinging coupling hook provided with a recess, and a locking dog adapted to enter said recess when the hook is closed, combined with an actuating arm for said dog, and connections between it and the top or sides of the car, to manually remove said dog from the recess, to release the hook, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD W. KELLEY.

Witnesses:
JAMES F. OWENS,
JAMES A. SULLIVAN.