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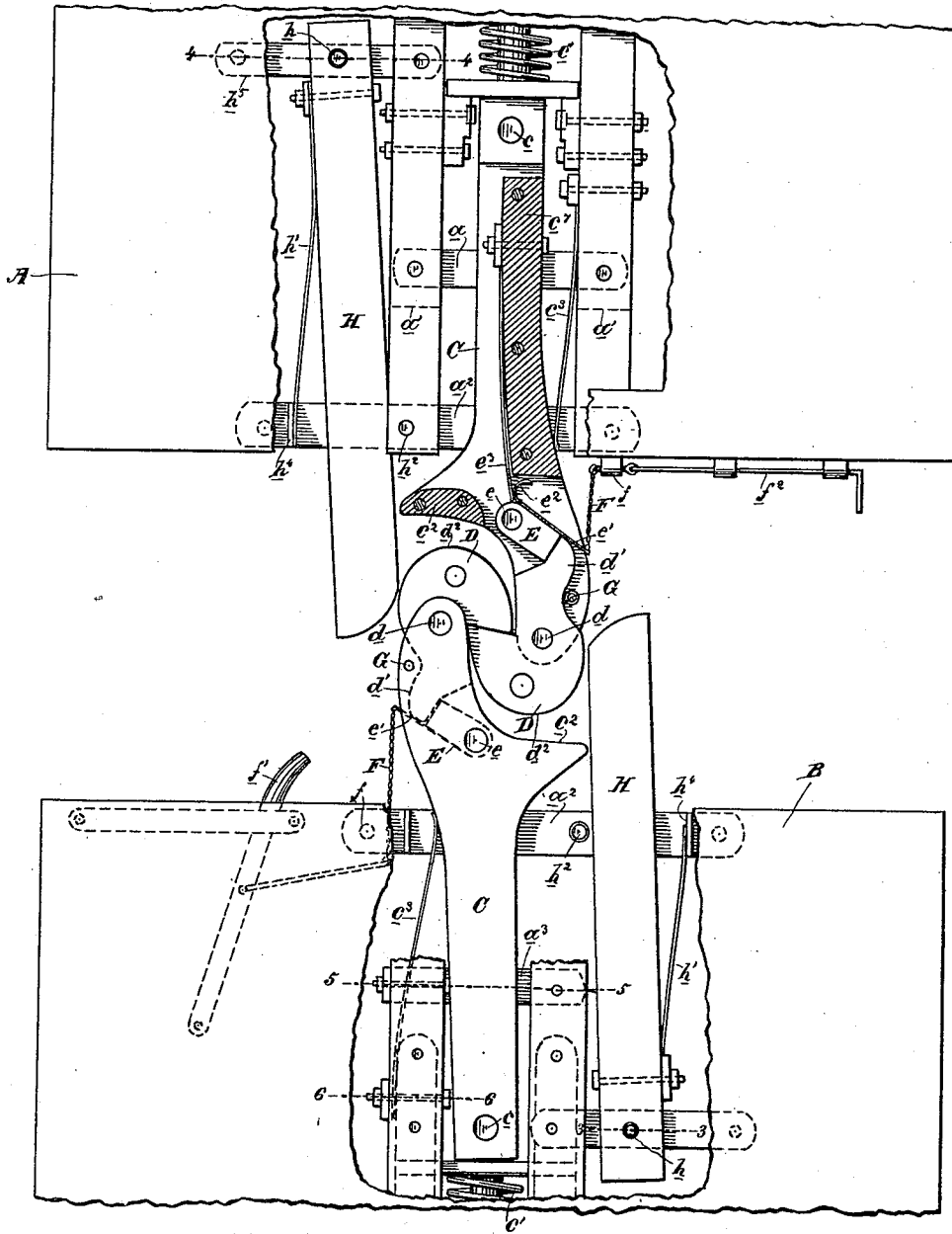
4 Sheets—Sheet 1.

J. C. LOOK.
CAR COUPLING.

No. 465,987.

Patented Dec. 29, 1891.

Fig. 1.



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Fig. 2.

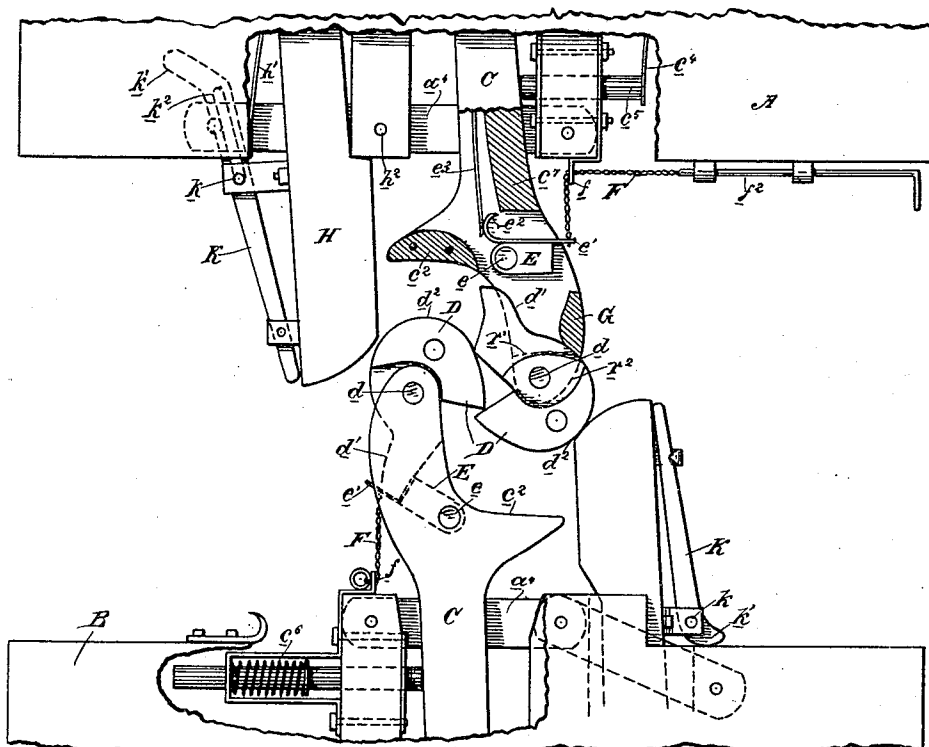
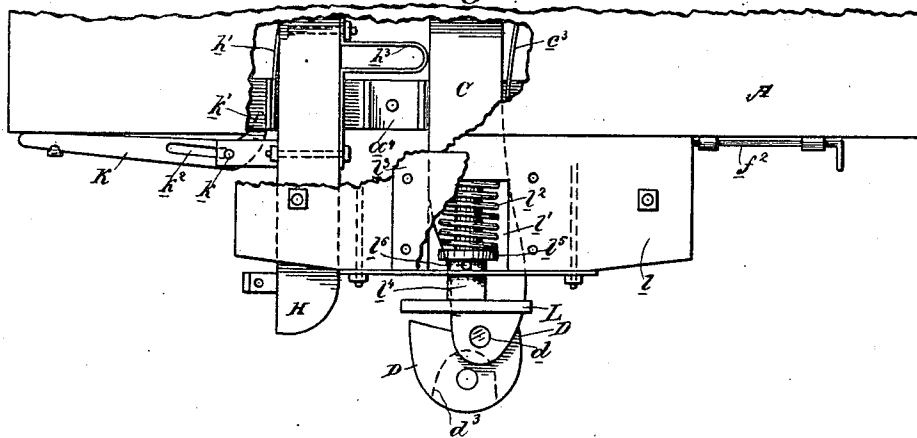


Fig. 3.



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Fig. 4.

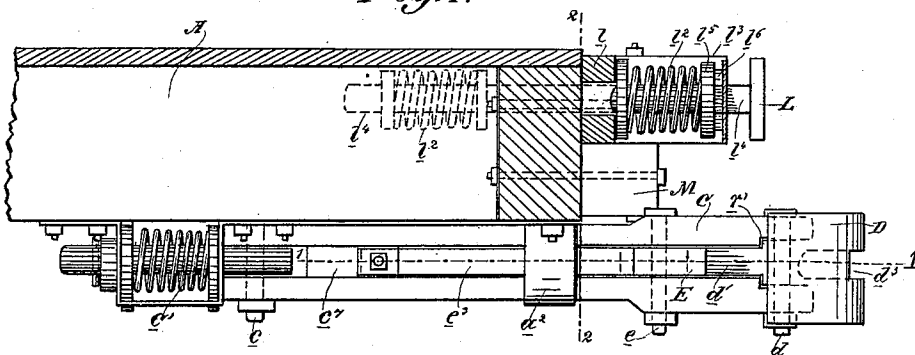


Fig. 5.

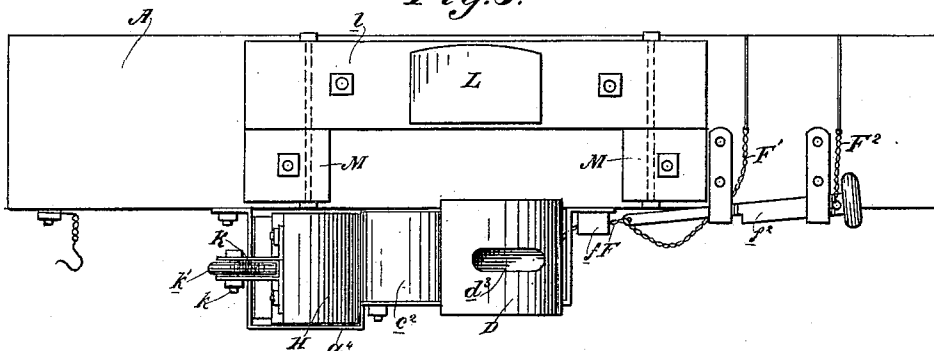


Fig. 6.

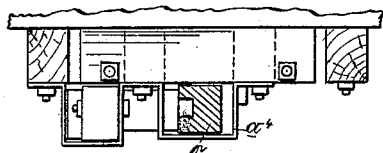


Fig. 7.

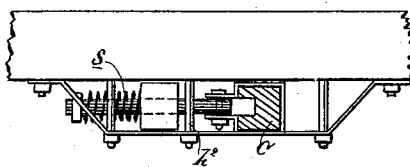


Fig. 8.

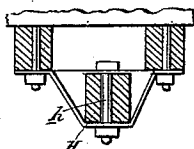


Fig. 9.

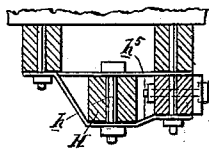


Fig. 10.

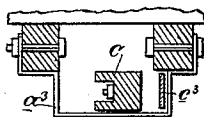
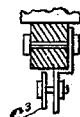


Fig. 11.



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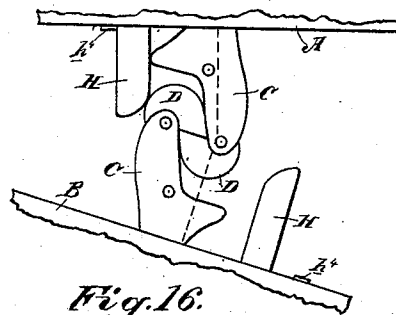
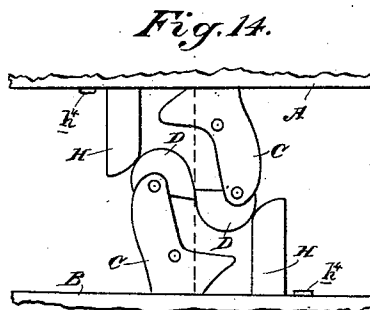
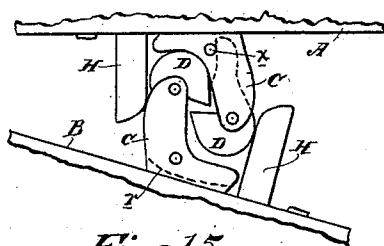
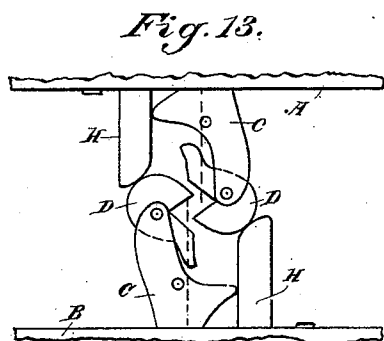
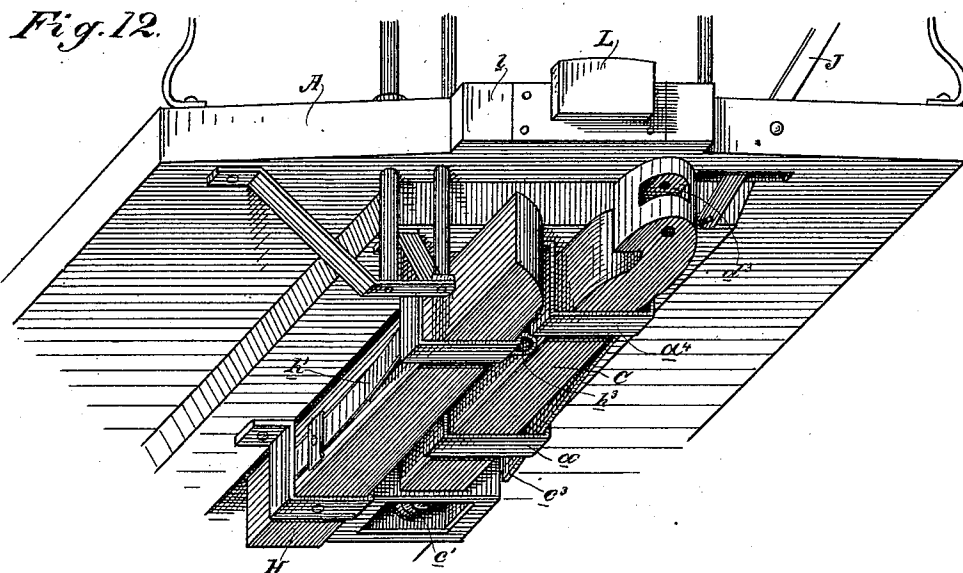
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UNITED STATES PATENT OFFICE.

JOHN C. LOOK, OF SAN JOSÉ, CALIFORNIA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 465,987, dated December 29, 1891.

Application filed August 24, 1891. Serial No. 403,601. (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 that class of car-couplings in which the draw-bar is provided

10 with a swinging hook-head and is opposed by a guard-bar.

My invention consists in the novel construction, arrangement, and combination of parts hereinafter fully described, and specifically

15 pointed out in the claims. The object of my invention is to provide a simple and effective automatic coupling of this class.

Referring to the accompanying drawings 20 for a more complete explanation of my invention, Figure 1 is a plan of two cars coupled, the draw-bar being in section on line 1 1 of Fig. 4. Fig. 2 is a top view showing the act of coupling or uncoupling. Fig. 3 is a top view of a platform-buffer, a section being broken out. Fig. 4 is a side view of my coupling with platform-buffer in section. Fig. 5 is a front view of same. Fig. 6 is a view showing the stirrup to be used in platform-couplings, taken on line 2 2 of Fig. 4. Fig. 7 is a view showing the draw-bar and guard-bar when connected by a spring, taken on line 2 2 of Fig. 4. Fig. 8 shows the pivot connection at the rear of the guard-bar on the line 3 3 of Fig. 1. Fig. 9 shows the same on the line 4, of Fig. 1. Fig. 10 shows the inner stirrup of platform-couplings on line 5 5 of Fig. 1. Fig. 11 is a view showing the attachment of spring 30 c^3 on the line 6 6 of Fig. 1. Fig. 12 is a perspective view of my coupling with a solid or fixed hook-head and platform attachment. Figs 13 and 14 are views showing the act of coupling. Fig. 15 is a view showing the cars buffing. Fig. 16 is a view showing the coupling drawing on a curve.

Referring now to Fig. 1, A is one car, and B is another. C are the draw-bars. These are pivoted at c at their inner ends and have the cushion-springs c' . The forward end of the draw-bar has a laterally-extending piece, which forms the buffer-arm c^2 . In the forward end of each draw-bar is pivoted at d the

hook-head D, the inner end of which is formed with a lever-arm d' for the engagement of a pawl E, pivoted at e and having an arm e' , to which the chain F is connected, said chain 55 thence extending backwardly to a guide f , about which it turns and is secured to a lever of suitable description, as represented by f' on car B, or to a slide-bar f^2 on car A.

G is a fixed stop in the draw-bar to limit the outward swing of the hook-head.

To the pawl E is secured an arm e^2 , against which a spring e^3 (see car A) bears to return and hold the pawl in position. A spring c^3 65 bears on the draw-bar to hold it to position.

H is the guard-bar. This is pivoted at h , and its forward end extends out past the buffer-arm c^2 of the draw-bar and about even with the end of said draw-bar. This guard-bar 70 is controlled by a spring h' , and its inward movement is limited by a stop h^2 , while its outward movement is limited by a stop h^4 .

The general operation of the coupling is plainly shown in Fig. 1. The two hook-heads 75 coming together force the draw-bars apart until the said heads pass and interlock. In this movement the guard-bars follow the draw-bars and guide the hook-heads. When the heads engage, they are held in a locked position by the pawls E. In this position they can turn freely with the swing of the cars, but are held together by the guard-bars. To unlock them the pawls are, or either of them is, released by the chains F.

A more detailed description of the several parts and their connections and surroundings will now be given.

The draw-bar C is formed at its outer end with separated jaws, as shown in Fig. 4, to receive the hook-head, and said bar, if made of wrought-iron, is composed of two separated plates, Fig. 4, between which are pieces of cast metal $c^1 c^2$, riveted therein. This leaves working places inside for the mechanism. 95 The shank of the draw-bar may be of any suitable length. The buffer-arm c^2 is of the same thickness as the shank out to the dotted line r , Fig. 15. The plates of the arm may be enlarged from here out to the end to give 100 greater strength, as rivets and studs cannot be placed in that part. The stop G is placed where shown to limit the turning of the hook-head. In cast-metal draw-bars that stop can

be made larger, as shown in Fig. 2, on car A. The pivot-pin d of the hook-head should be a collar and bolt, and also the pivot-bolt e for the locking-pawl. Being thus made, the bar is very firm and strong. The buffer-arm c^2 may be left out in platform-buffers, as shown in Fig. 3, and its place taken by a brace h^3 , extending inwardly from the guard-bar, which serves to maintain the relative positions of guard-bar and draw-bar. The locking-lever arm d' of the hook-head is of such a thickness as to work between the plates of the draw-bar, as shown in Fig. 4; but is enlarged as it nears the pivot-pin d to give greater depth around the pivot, and the plates are cut away inside to correspond to this offset. (See r' , Figs. 2 and 4.) The draw-head is enlarged again at line r^2 , Fig. 2, that being the end of the plates. When the hook-head is turned out, as in Fig. 2, the inner enlargement comes against the inner offset in the plates, and the outer enlargement comes against the end of the plates. From the line r^2 out to the end the hook-head is made any depth suitable. The back part of the hook-head is about straight out with the draw-bar so that either the head or the bar can work against the guard-bar, as seen in Fig. 15. The outer end of the hook-head is made rounding or double beveled; but the farthest point, or buffing-point d^2 , Fig. 1, falls inside the pivot-pin d toward the point of the hook. This is to release the lever-arm d' from the pawl E when buffing, so that it may be uncoupled. The hole and slot d^3 in the front of the hook-head are made to couple with the ordinary link and pin.

Space is left between the face of the hook-head and the buffer-arm c^2 for the easy working of the opposite head on curves. This space can be made to correspond to the head of another well-known coupling, known as the "Miller coupling," with which it works without any change of parts in either. The locking-lever arm d' on the hook-head extends back even with the draw-bar as far as shown, and there slants off to the locking end, making a cam-like projection, which, when the hook is turned out, comes close against the opposite hook, as seen in Figs. 2 and 13, and should be of such a length that the point of the opposite hook cannot get behind it. (See Figs. 13 and 15.)

The lever-arm d' is locked by the pawl E, which works between the plates. The pivot-bolt e passes through one end of the pawl, and the other end of the pawl is against the lever-arm d' , thus holding said lever-arm between the pawl and the stop G. The short arm e' extends out from the end of the pawl, to which is fastened the chain F, that goes to the side of the car. This short arm e' also stops the pawl from going in too far. On the inner end of the pawl is the arm e^2 , against which the spring e^3 acts to keep the pawl E in its locking place. This is a flat spring, the other end being fastened to the draw-bar.

By this arrangement the mechanism is placed inside, where it cannot be injured. Other devices may also be used. A hole x , Fig. 15, may be made through the plates in front of the lever-arm d' and a pin dropped in.

The draw-bar is secured to the car in any of the usual ways. If placed between the draft-timbers, they must be arranged to give the draw-bar the lateral play required, and if in a stirrup beneath, it should be of the requisite width. The shank of the draw-bar is made fast to the tail-bolt that goes through the spring-box by the pivot-pin c .

The draw-bar is held against the guard-bar by a spring. This spring is shown in several different ways. Where the draw-bar is placed between the timbers, as in car A, Fig. 1, the springs c^3 can also be placed between the timbers and fastened, as shown; but should that not be convenient, another way is shown in car A, Fig. 2, in which the spring c^4 is placed outside of the draft-timbers and presses on a plunger c^5 , which passes through the timber. This pin may also be worked by a coil-spring c^6 , as shown in car B, Fig. 2. In car A, Fig. 1, the inner carry-iron a connects the draft-timbers and the timber ends at the dotted lines a' a' . The outer stirrup a^2 is a modification of those shown in Figs. 6 and 7, the same as that in Fig. 5. Where the draw-bar is held in a stirrup beneath the timbers, other styles of spring may be used. In car B, Fig. 1, a long flat spring c^3 is shown, the inner end of which is made fast to the car-timbers in a well-known way, as shown in Fig. 11, and is held in place longitudinally with the draw-bar by the stirrup a^3 . (Shown in Fig. 10.) The stirrup a^4 (shown in Fig. 3 and Fig. 6) is to be used only in platform-buffers, as in Fig. 12. That shown in Fig. 7 can be used with or without a platform-buffer. In this case the guard-bar and draw-bar are held together by a spring s . The stirrups can be modified, parts of one and part of another. In the stirrups care must be taken to have them wide enough on the draw-bar side to allow the point of the hook to be pressed out beyond the center line of the car, as shown in Fig. 14, and on the other side wide enough to allow the draw-bar to follow the guard-bar to its outward stop, as shown in Fig. 16, to prevent slipping of draw-faces or uncoupling. The guard-bar H extends out from the car opposite the hook. This guard is pivoted at its inner end, as shown at h in Fig. 1. Its outer end is left free to have a lateral movement. This guard is for the purpose of guiding the opposite coupling into the hook and then preventing it from rocking out laterally. On the outside of the guard-bar is the spring h' , which is for the purpose of keeping the guard pressed inward. When uncoupled, it keeps the coupling in its proper position, and when in action it governs the movement of the couplings when they act on that side, as seen in Fig. 16, and in coupling and uncoupling it yields to let in and out the opposite

coupling-head. The spring h' on the guard-bar acts in opposition to the spring c^3 on the draw-bar, and must be of greater strength than said spring c^3 to keep the coupling in the center of the car when uncoupled. This guard-bar can be made of wood faced with iron, or of light hollow iron.

An inside stop h^2 is provided for the guard-bar to rest against, and this stop, combined with the buffer-arm c^2 or brace h^3 of Fig. 3, keeps the coupling-bar in its central location, which is necessary to have the middle of the inner draw-face of the hook-head about in the center line of the car. An outside stop h^4 is also provided. This is placed out far enough to let the guard-bar be pressed out to admit of the coupling, as shown in Fig. 14; but must not be placed beyond where the coupling-bar cannot follow the guard-bar, as seen in Fig. 16. In Fig. 7 the inner stop h^2 could be taken out and then the coupling-bar and the guard-bar could follow each other to any extent desired; but such an arrangement would not keep the coupling in the middle of the car when uncoupled. The inner end of the guard-bar is pivoted, as shown in Figs. 8 and 9, being made fast to the sills underneath. In Fig. 9 an upper iron h^5 runs through between the sill and the draft-timber or down around the draft-timber. (See dotted lines.)

For operating the pawl E, a chain F is attached to the pawl to pull it out of the locking-place. The arm e' on the end of the pawl may be slotted to let the chain slide along and have a better accommodation, which may be seen in Fig. 2, car B. This chain goes back to the car or under it, where is fastened an eye or guide f , through which it passes, and to the side of the car, as shown. Any form of pull and catch may be used. The one shown in Fig. 5 is quite convenient. The chain F should be adjusted to only one catch, as shown, for the reason that the chain goes directly back and lateral movement affects it but very little; but longitudinal movement affects it to the full amount. Should the coupling be greatly compressed and the chain drawn out too far and the compression released, the chain would be under tension. It should be adjusted to unlock the pawl when the coupling is at rest in its normal position. The chain F' of Fig. 5 is to pull the lever out into the catch from the top of the car. It should run through an eye, as shown. Chain F² is to lift it out of the catch from the top of the car to set it to couple. In Fig. 12 is another form of lever (marked J) for use on platforms.

It will often be necessary to couple this coupling to other couplings by the link and pin. For this the aperture d^3 is left in the center of the hook-head. This aperture not being in the center of the car, a device shown in Figs. 2 and 3 is for the purpose of bringing the draw-head to the center to make couplings with other draw-heads that are already

in the center. This device consists of the lever K, placed on the outside of the guard-bar and pivoted at k to the guard-bar H and provided with a cam projection k' . When not in use, the lever lies along the side of the guard-bar H. Now, when a link-coupling is to be made, this lever is swung around across the end of the car, the cam k' strikes the outside of the stirrup, which brings the guard-bar out, and the coupling-bar follows, bringing the draw-head to the center of the car, as seen in Fig. 3. This lever may have a slot k^2 , whereby it can be telescoped underneath the car and pulled out when needed. Greater length of lever can thus be had.

A platform-buffer L is shown in Figs. 3, 4, and 5. This buffer is placed over the coupling on the end of the car outside of the head-stock. The novel construction here shown is to make it applicable to this coupling, and to secure the entire width of the head-stock and sills to absorb the buffing blow. A timber l is bolted to the head-stock, and may extend the full width of the car or, as here shown, only a portion of the way. The center l' , Fig. 3, is cut out in which to place the buffer-spring l^2 . An iron plate l^3 is bolted over this. The shank l^4 of the buffer passes through the plate, and a spring-plate l^5 and the spring and into the wood. A pin l^6 is placed through the shank to keep it from dropping out and to press on the spring-plate. The shank from the pin out to the buffer-head is made square. A plate should be placed over the spring to keep out the rubbish. The buffer-head extends laterally on each side of the spring-box, so that the dead-shock will be taken up by the timber on each side of the spring. The shank l^4 of the buffer may be made to extend through the head-stock and the buffer-spring placed back between the car-sills. (See dotted lines, Fig. 4.) Underneath are two other timbers or blocks M, bolted to the head-stock and also bolted vertically to the upper timber. These blocks do not extend across the center of the car under the buffer, their limit being the inside of the guard-bar H when it is pressed to its outward stop. These blocks leave a pocket under the buffer for the opposite draw-head should it be higher. These blocks do not extend out as far as the upper timber. The point of the guard-bar, Fig. 3, goes under the opposite buffer as far as said blocks. With this arrangement of buffer and a buffer-arm on the draw-bar, two springs may be utilized, and by making the upper spring the shorter the dead-shock is on a line with the sills of the car. This buffer can be made compressed in passenger-cars, but should have a little slack in freight-cars, to give greater ease in uncoupling. The arrangement of this coupling is such that it can be applied to all kinds of cars. When the buffer is on the platform the buffer-arm c^2 may or may not be used, as one with a buffer-arm and one without works equally well; but two cars cannot be used

without buffer-arms unless both have platform-buffers. A good arrangement for freight-cars would be to have a dead-block platform to meet just before the draw-bar buffer-springs are taken up. That would prevent telescoping. This coupling is a buffer at all times with one of its own kind, and need never be attended to except to set the lever to stay uncoupled or to couple. Any snow or other matter gathering in it is pushed out by the working of the mechanism. The parts do not need nice adjustment, but can be roughly forged out of wrought-iron.

This coupling is not confined wholly to the spring-acting pivoted draw-head, in combination with the spring-acting guard-bar, but may be made with a solid hook-head coupling-bar, in combination with the spring-acting guard-bar. Then the brace h^3 , Fig. 3, is used to keep the draw-bar and guard apart, and a platform-buffer with a lever and chain to pull the hooks laterally out of each other in uncoupling. This form of coupling is shown in Fig. 12, and is more for a passenger-car coupling. To uncouple this form of coupling, the draw-bar on both cars must be pulled out until the hooks pass each other. This operation also presses out the guard-bar on the car opposite each lever.

To uncouple a solid hook-head from a pivoted hook-head, the operation is done wholly from the pivoted hook-head car. This is the case whether the pivoted hook-head has a platform or not. Should the coupling become detached at its rear end, the chain F and catch on the lever f^2 pulls the pawl out of its locking-place and thus uncouples the draw-bar while it is still in the car and not letting it fall on the track.

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 laterally-movable draw-bar, a hook-head pivoted therein, a locking and releasing device for the hook-head, a laterally-swinging guard-bar independent of the draw-bar and opposing its hook-head, and springs acting on the draw-bar and on the guard-bar to force them toward each other and permit their separation sidewise, substantially as herein described.

2. In a car-coupling, the combination of a laterally-movable draw-bar having a side projecting buffer-arm, a swinging hook-head pivoted in said draw-bar, a locking and releasing device for the hook-head, a laterally-swinging guard-bar independent of the draw-bar and opposing its hook-head and buffer-arm, and springs acting on the draw-bar and on the guard-bar to hold them together and permit their separation sidewise, substantially as herein described.

3. In a car-coupling, the combination of a laterally-movable draw-bar, a swinging hook-head pivoted in said draw-bar and having a rearwardly-extending locking-lever arm,

against which the opposing hook-head impinges, a locking and releasing device for the hook-head, a laterally-swinging guard-bar independent of the draw-bar and opposing its hook-head, and springs acting on the draw-bar and on the guard-bar to hold them together and permit their separation sidewise, substantially as herein described.

4. In a car-coupling, the combination of a laterally-movable draw-bar having a side projecting buffer-arm, a swinging hook-head pivoted in said draw-bar and having a rearwardly-extending locking-lever arm, against which the opposing hook-head impinges, a locking and releasing device for the hook-head, a laterally-swinging guard-bar independent of the draw-bar and opposing its hook-head and buffer-arm, and springs for holding the bars together and permitting their separation sidewise, substantially as herein described.

5. In a car-coupling, the combination of a laterally-movable draw-bar, a hook-head pivoted thereto and having a rearwardly-extending locking-lever arm, a spring-controlled pawl engaging said lever-arm, connections for disengaging the pawl, a laterally-moving spring-controlled guard-bar independent of the draw-bar and opposing its hook-head, and springs for holding the bars together and permitting their separation sidewise, substantially as herein described.

6. In a car-coupling, the combination of a laterally-movable draw-bar having a side projecting buffer-arm, a swinging hook-head pivoted in said draw-bar and having a rearwardly-extending locking-lever arm, against which the opposing hook-head impinges, a spring-controlled pawl engaging said lever-arm, connections for disengaging the pawl, a laterally-moving guard-bar independent of the draw-bar and opposing its hook-head and buffer-arm, and springs for holding the bars together and permitting their separation sidewise, substantially as herein described.

7. In a car-coupling, the combination of the pivoted draw-bar having a hook-head, the independent pivoted guard-bar opposing said head and having a bearing against the draw-bar, the spring acting on the draw-bar to swing it laterally, the stronger spring acting on the guard-bar to force it over against its bearing on the draw-bar, and the inner stop h^2 of the guard-bar, whereby the hook-head is held in the middle of the car when coupled, substantially as herein described.

8. In a car-coupling, the combination of a pivoted draw-bar with side spring and having a hook-head, the opposing pivoted guard-bar with side spring, and the outer stop h^1 , to limit the movement of the guard-bar at a point sufficient to allow the entrance of the opposing hook-head and beyond the point to which the draw-bar can follow it, substantially as herein described.

9. In a car-coupling, the combination of a spring-controlled swinging draw-bar with

hook-head, the independent spring-controlled swinging guard-bar, and an arm or brace extending between said bars to hold them the required distance apart, substantially as herein described.

10. In a car-coupling, the laterally-swinging spring-controlled draw-bar having the hook-head with aperture and slot for the reception of the ordinary link and pin and the opposing spring-controlled guard-bar, in combination with a lever, and connections with the guard-bar for swinging the draw-bar to carry and hold its apertured and slotted head in the middle of the car, substantially as herein described.

11. In a car-coupling, and in combination

with the projecting hook-head and guard-bar thereof, a platform-buffer, an upper block in which said buffer is contained, and the separated lower blocks leaving space between for the entrance of the opposing hook-head and set far enough back of the end of the upper block to provide room for the passage under said upper block of the guard-bar, substantially as herein described.

In witness whereof I have hereunto set my hand.

JOHN C. LOOK.

Witnesses:

S. H. NOURSE,

J. A. BAYLESS.