(No Model.) 4 Sheets—Sheet 1.

R. E. ANDREWS.

CAR COUPLING.

No. 537,742. Patented Apr. 16, 1895.

Fig. 1.

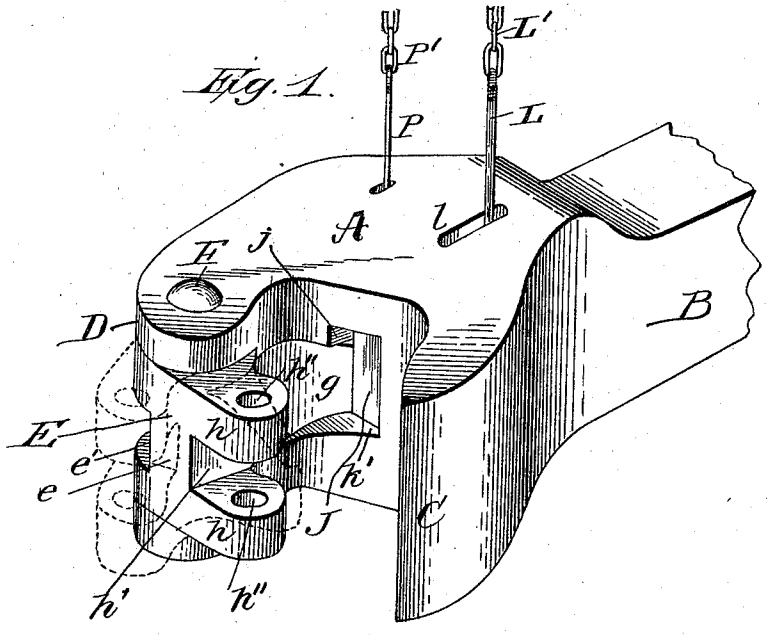


Fig. 2.

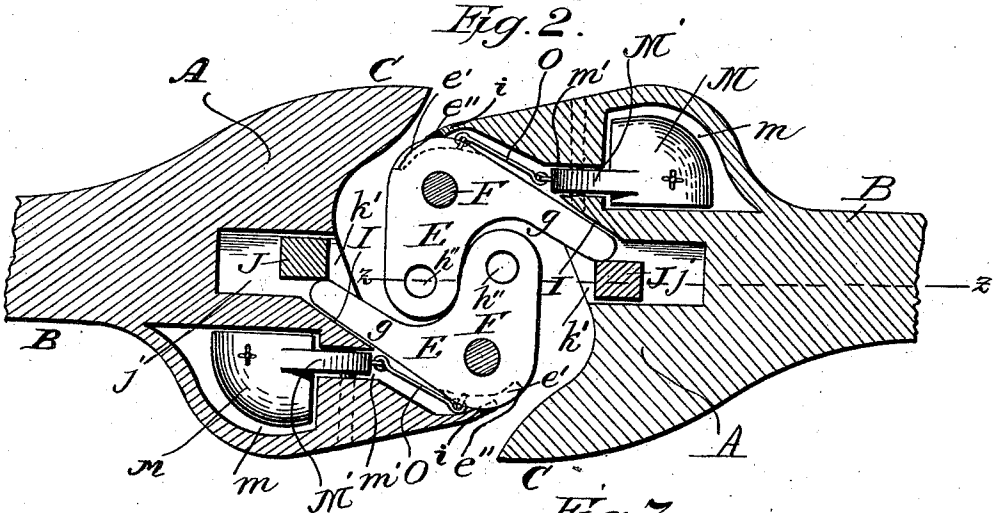
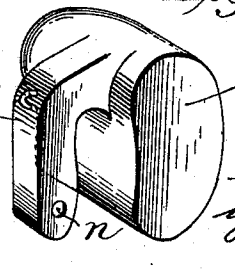


Fig. 7.



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(No Model.)

4 Sheets—Sheet 2.

R. E. ANDREWS.

CAR COUPLING.

No. 537,742. Patented Apr. 16, 1895.

Fig. 3.

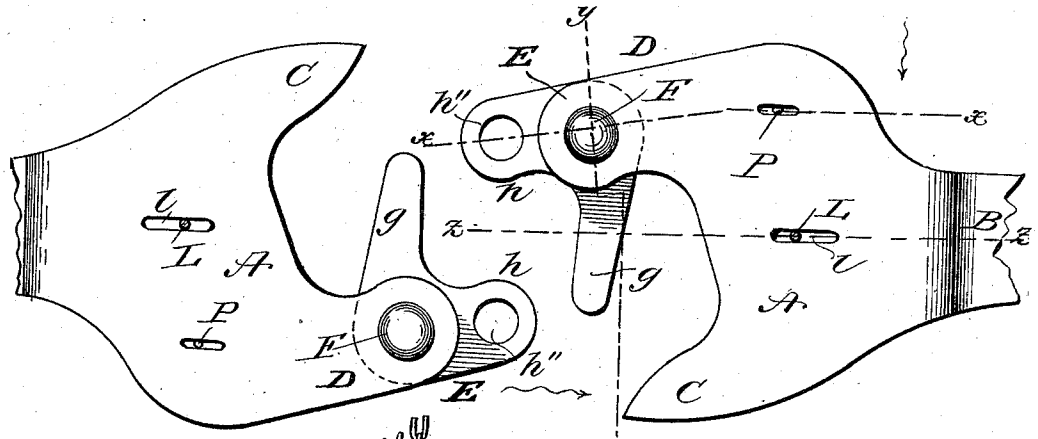


Fig. 4.

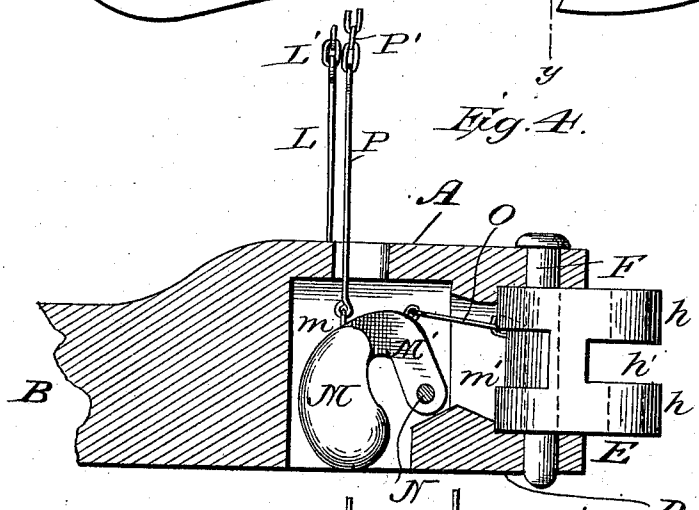
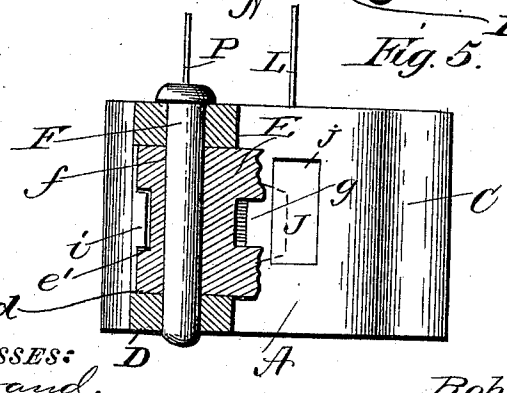


Fig. 5.



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4 Sheets—Sheet 3.

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CAR COUPLING.

No. 537,742. Patented Apr. 16, 1895.

Fig. 6.

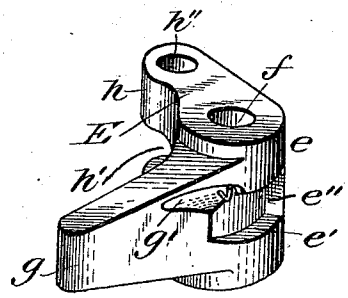


Fig. 8.

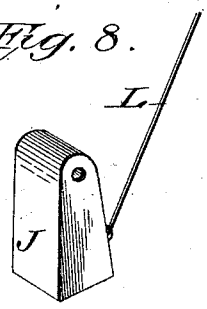
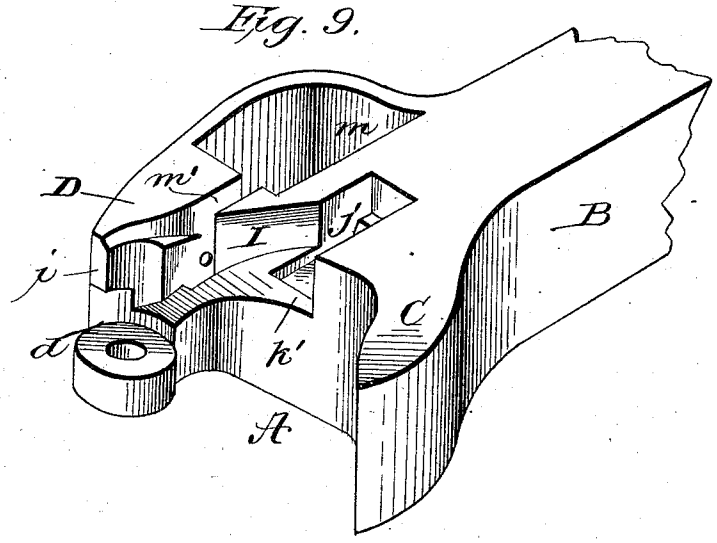


Fig. 9.



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(No Model.)

4 Sheets—Sheet 4.

R. E. ANDREWS.

CAR COUPLING.

No. 537,742. Patented Apr. 16, 1895.

Fig. 10.

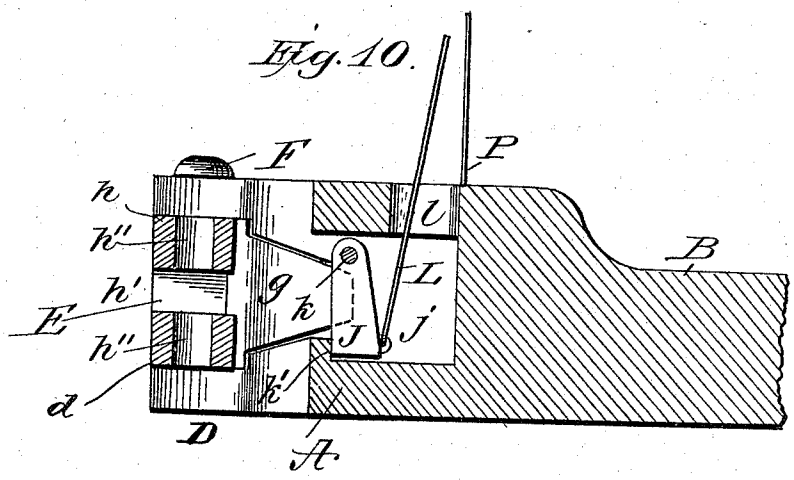
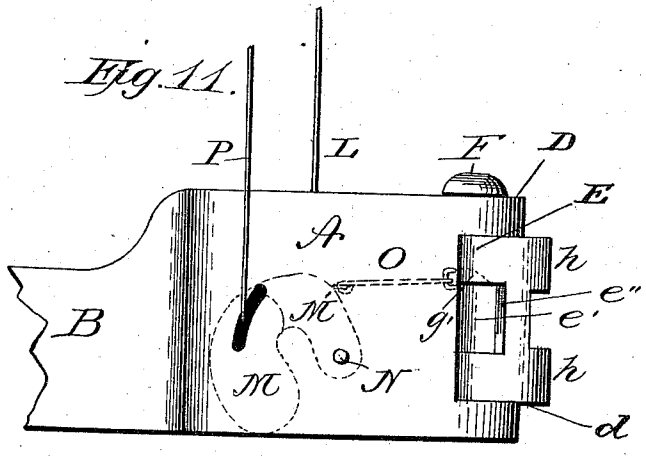


Fig. 11.



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UNITED STATES PATENT OFFICE.

ROBERT EDWARD ANDREWS, OF PITTSBURG, PENNSYLVANIA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 537,742, dated April 16, 1895.

Application filed August 25, 1894. Serial No. 521,301. (No model.)

To all whom it may concern:

Be it known that I, ROBERT EDWARD ANDREWS, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Car-Couplings; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of my automatic, self-acting car coupling. Fig. 2 is a sectional view, on a horizontal plane, of two couplings in their coupled or connected position. Fig. 3 is a top view, or plan, of two couplings adjusted ready for coupling. Fig. 4 is a longitudinal sectional view through one of the draw-heads, on the vertical plane indicated by the broken line marked *x*—*x* in Fig. 3. Fig. 5 is a transverse sectional view through the knuckle and knuckle-recess on the vertical plane indicated by the broken line marked *y*—*y* in Fig. 3. Fig. 6 is a perspective detail view of the knuckle, removed from the draw-head. Fig. 7 is a perspective view of the pivoted weight or counterpoise for automatically "setting" the knuckle for coupling. Fig. 8 is a perspective view of the pivoted gravity-latch, which locks the knuckle in its coupled position. Fig. 9 is a perspective view of the interior of the lower half part of the draw-head, showing the knuckle-recess, latch-recess, and chamber for the pivoted counterpoise. Fig. 10 is a longitudinal sectional view through one of the draw-heads, on the vertical plane indicated by the broken line marked *z*—*z* in Figs. 2 and 3; and Fig. 11 is a sectional detail view, showing the pivoted counterpoise in dotted lines, and rod for operating the same.

Like letters of reference designate corresponding parts in all the figures.

My invention relates to automatic car couplings of the type known generically as "knuckle couplings," and has for its object to construct an automatic self-setting coupling, which will operate with absolute certainty under all conditions and circumstances, and which, by the avoidance of springs in any form, will effectually do away with the well understood drawbacks incident to the use of springs in this connection.

With this object in view, my improvement consists in the combination, with the draw-head and with one another, of a peculiarly constructed knuckle, a gravity-latch for locking and holding the knuckle in its locked or coupled position, and a pivoted counterpoise for automatically operating the knuckle and adjusting it for coupling; substantially as will be hereinafter more fully described and claimed.

On the accompanying four sheets of drawings, the reference letter A denotes the draw-head, and B the draw-bar of my improved coupling. The former is cast with the usual lip, C, on one side, and on the opposite side with a projection, D, the chamber or recess, *d*, within which forms the seat for the pivoted knuckle, E. This knuckle, illustrated in detail in Figs. 2 and 6, comprises a solid body, *e*, bored through vertically, at *f*, for the insertion of the fulcrum-pin, F; a lip, *g*, projecting at one side therefrom, and another frontal projection or head, *h*, having a horizontal slot or recess, *h'*, for the insertion of an ordinary coupling-link, when it is desired to use the draw-head as an ordinary pin-and-link coupling, and two registering apertures, *h'' h''*, intersecting the link-recess, *h'*, at right angles, for the insertion of the coupling-pin to be used with the link. On one side of the body, *e*, is a recess, *e'*, sloping into the projecting lip, *g*, on one side, while at the other end said recess, *e'*, terminates in an abrupt offset or shoulder, *e''*.

The knuckle-recess or seat, *d*, within the forward part of the draw-head, is shaped to fit the knuckle-body, *e*, and is bored through at its top and bottom to receive the knuckle-pin, F. On one side of the recess is a projection, *i*, adapted to fit into the recess, *e'*, on the adjacent side of the knuckle-body, in such a manner that, when the coupling-head, *h*, is adjusted or swung back in its position ready for coupling (shown in full line in Fig. 3, and in dotted lines in Fig. 1), said projection, *i*, by striking against the shoulder or abutment, *e''*, will form a positive stop for the knuckle, preventing further movement of the project-

ing coupling-head, *h*, in that direction. Similarly, the inward motion of the knuckle-head or coupling-head, *h*, is limited by the lip, *g*, striking against the oblique side or wall, I, of the latch-recess, *j*, within which plays the gravity locking-latch, J. This latch consists of a wedge-shaped block of iron or steel, bored through transversely at its upper or narrow end for the insertion of the pin, *k*, upon which it swings in a vertical plane. When in its down or locking position, its broad lower end abuts with its front side against a ledge or shoulder, *k'*, formed by deepening the bottom of the latch-chamber or recess, *j*, at its forward end, so as to relieve the latch-pin, *k*, from excessive strain when the draw-heads are coupled together. Articulated to the back of latch, J, near its lower end, is a rod, L, which projects up through a slot, *l*, in the roof of the latch-recess, and is connected to a chain, L', reaching to the platform or roof of the car, as the case may be, by means of which the brakeman may raise the latch and thus effect the instantaneous uncoupling of the cars by releasing the knuckle-lip, *g*, which, when the draw-heads are in their coupled position, is locked in place within the latch-recess, *j*, by the latch, J.

Back of the knuckle-recess, *d*, and on the same side of the draw-head, is another chamber or recess, *m*, within which works the pivoted weight or counterpoise, M, the chief function of which is to automatically adjust or "set" the knuckle and knuckle-head for coupling. This counterpoise, illustrated in detail in Figs. 4 and 7, consists of a solid pear-shaped body, M, and a laterally projecting stem, M', which is bent or deflected in a downward direction and provided with an aperture, *n*, at its lower end for the insertion of a fulcrum-pin, N, which takes its bearings in the outside wall of the draw-head on one side, and the sloping partition, I, between the latch-recess, *j*, and the weight-recess, *m*, on the other or inner side. A narrow slot, *m'*, connects the weight-recess, *m*, with the knuckle-recess, *d*, and affords room for the pivoted weight-stem M'. This narrow slot, *m'*, also forms a duct or opening for a connecting-rod, O, one end of which is articulated to the counterpoise stem, M', near its upper end; while the other end of rod, O, after passing through the vertical slot or opening, *m'*, is articulated to the rounded back of the knuckle-body, *e*, above its shouldered recess, *e'*. To make room for this rod, O, and permit of some play in operating the knuckle, the back part of the knuckle-body, as well as the adjacent part of the contiguous side of the lip, *g*, are cut away to form a narrow recess, *g'*, to receive or make room for rod, O.

To the body of the counterpoise, M, is hinged a rod, P, which may either project up through a slot in the roof of the recess, *m*, within which the counterpoise works, as shown in Fig. 4; or it may be bent to one side and carried up along the outside of the draw-head through a slot on one side thereof, as illustrated in Fig. 11. In either case, the weight-rod, P, has a chain, P', attached to its upper end, which, like chain, L', appertaining to the latch, extends up to the platform or roof of the car, so as to be at all times within easy and convenient reach of the brakeman. The object of this rod, and chain attached to it, is to enable the counterpoise to be lifted, or raised within its recess, if, for any reason or at any time, it is desired to adjust the knuckle to its position after coupling (illustrated in full line in Fig. 1), yet without bringing the cars together for coupling. It will be seen that by pulling upon this rod, P, and thus tilting the counterpoise, M, upward and forwardly upon its fulcrum, it will push upon rod, O, which connects it with the knuckle, and thus throw the knuckle-head or coupling-head, *h*, back from the open position ready for coupling (as shown by the dotted lines in Fig. 1) into the closed position illustrated in full line in the same figure, which can be done by the brakeman from the platform or roof of the car, and without the necessity of going between the cars or even approaching them.

From the foregoing description, taken in connection with the drawings, the operation of my improved automatic and self-setting coupling will readily be understood. Normally, the weight of counterpoise, M, as it swings by gravity on its fulcrum, N, will pull upon the connecting-rod, O, so as to push the knuckle-head or coupling-head, *h*, outwardly, in approximate alignment with the adjacent side of the draw-head, until, by the shoulder, *e''*, striking against the stop, *i*, and thus preventing further motion, it assumes the position shown in full lines in Fig. 3, and in dotted lines in Fig. 2, in which position the lateral lip, *g*, projects out in front of and covering the opening into the latch-recess, *j*, within which latch, J, is in its normal or depending position, with its heavy lower end impinging against the stop or shoulder, *k'*, in the bottom of the latch-recess. As the cars come together, the forwardly projecting knuckle-head of one draw-head, striking against the lip, *g*, appertaining to the knuckle of the opposite draw-head, will force this back until its free end reaches and strikes the depending gravity-latch, J, with the result that this is swung back on its fulcrum-pin, *k*, so as to admit the free or outer end of the lip into the latch-recess, back of the latch, which then, by its own gravity, instantly drops down again in front of, or, rather, to one side of, the lip, *g*, thus preventing this from slipping out of the recess. As the knuckle-head, or coupling-head, *h*, is in one piece with lip, *g*, and integral therewith, this will be thrown into the closed or coupled position shown in full line in Fig. 2 and in dotted lines in Fig. 3, causing the two coupling-heads or knuckle-heads to interlock and thus effecting the coupling of the draw-heads and cars appertaining to them. When the several

parts are thus juxtaposed, the free end of the knuckle-lip, *g*, will be confined between the oblique wall or partition, I, on one side, and the adjacent side of the depending gravity-latch, J, on the opposite side.

To uncouple the cars, the brakeman pulls upon chain, L′, which lifts latch, J, up against the roof of the recess, which is deepened or recessed to make room for it; thus opening the inlet to the latch-recess, *j*, and permitting the knuckle-lip, *g*, to pass by it and swing out of the recess. At the same time, and by the same operation, the coupling-head, *h*, is swung out into the position for coupling by the operation of the counterpoise, M; thus releasing the knuckle-head of the opposite draw-head and instantly and automatically uncoupling the cars.

It will be seen that, normally, the knuckle-head, *h*, will always, and of itself, be in the open or projecting position ready for coupling, due to the operation of the counterpoise, M, the weight of which, by pulling upon the connecting-rod, O, also pulls upon that side of the knuckle to which said rod is articulated, so as to project the coupling-head, *h*, from the body of the draw-head ready for coupling. It is this feature which makes my improved draw-head distinctively a "self-setting" coupling, in contradistinction from other couplings of the same type, which, while effecting the act of coupling automatically, yet require the coupling to be "set" or adjusted by hand prior to the act of coupling, in order to enable the two knuckle-heads or coupling-heads to engage and interlock with each other.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a car coupling of the type described, the combination with the drawhead and pivoted knuckle, of the counterpoise M M′ and connecting-rod O, whereby the knuckle is normally and automatically "set" or adjusted ready for coupling; substantially as set forth.

2. In a car coupling of the type described, the combination with the recessed or chamfered drawhead of the pivoted knuckle, the pivoted weight or counterpoise, the rod connecting the knuckle to the counterpoise, and the gravity-latch; constructed and combined to operate automatically in the manner and for the purpose shown and set forth.

3. In a car coupling, the combination of the following elements, viz: the recessed drawhead of the configuration described; the pivoted knuckle having a laterally projecting lip adapted to fit with its free end within the latch-recess in the draw-head; the gravity-latch working in said recess and provided with means for lifting or disengaging it from the knuckle-lip; and the weight or counterpoise connected to the knuckle so as to normally "set" or adjust the coupling-head of the same in its position for coupling; substantially as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

ROBERT EDWARD ANDREWS.

Witnesses:

BENNETT S. JONES,

M. S. DUCKETT.