(No Model.)

C. E. FRITTS.

CAR COUPLING.

No. 343,707. Patented June 15, 1886.

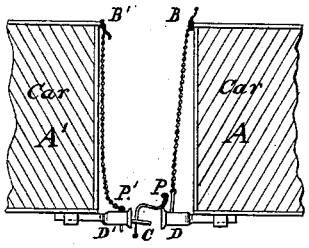

Fig. 1

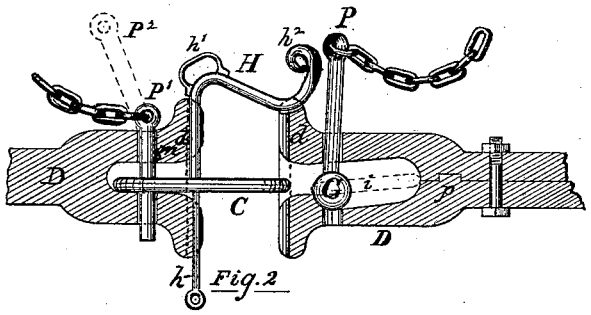

Fig. 2

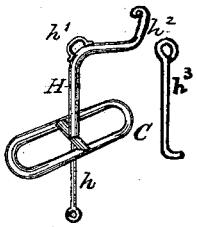

Fig. 3

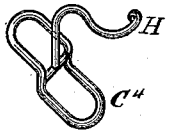

Fig. 7

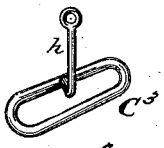

Fig. 6

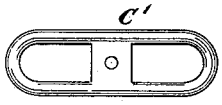

Fig. 4

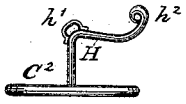

Fig. 5

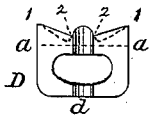

Fig. 8

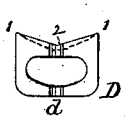

Fig. 9

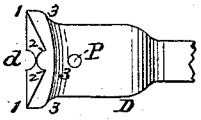

Fig. 10

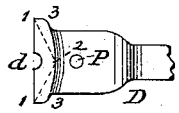

Fig. 11

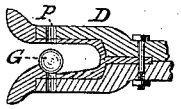

Fig. 12

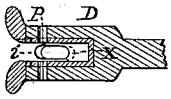

Fig. 13

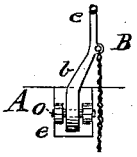

Fig. 14

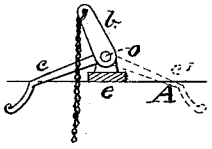

Fig. 16

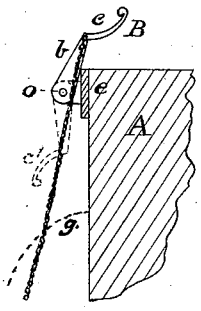

Fig. 15

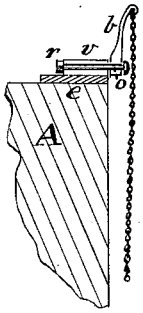

Fig. 17

Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES E. FRITTS, OF NEW YORK, N. Y.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 343,707, dated June 15, 1886.

Application filed February 3, 1882. Serial No. 51,740. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. FRITTS, a citizen of the United States, residing in the city of New York, county of New York, and State of New York, have invented a new and useful Improvement in Car-Couplings, of which the following is a specification.

The object of the invention is to produce a simple, strong, durable, inexpensive, safe, and reliable coupling device, by which the coupling of railway-cars or other objects can be effected either automatically or manually with safety to the operator, which can be operated or controlled both from the ground and from the top or outside of the cars, which can be readily and cheaply applied with but little change from the usual constructions, which will readily couple with other kinds of couplings, and, finally, which, even when broken or worn, is equally as good and serviceable as the ordinary couplings now in use.

The invention consists in the construction and arrangement of the draw-bars, coupling-link, chains, and means for working the pins and their connections and combinations into an operative coupling apparatus, as fully hereinafter set forth.

In the drawings, wherein similar letters of reference indicate corresponding parts, Figure 1 is a general view of my coupling attached to two cars and "set," so that it cannot couple, however often the cars may come together. Fig. 2 is a vertical longitudinal sectional view of a device embodying my invention in the act of coupling automatically, omitting the chains and tripping-levers. Fig. 3 is a perspective view of my coupling-link. Fig. 4 shows at C′ a substitute for the ordinary coupling-link, which may have my handle attached in the same way. C^2, Fig. 5, is a view of my link with the handle for manual coupling broken off. C^3, Fig. 6, shows a link having only the handle for manual coupling, and that turned upward. C^4, Fig. 7, is a crooked link with a handle for automatic coupling attached to it. Fig. 8 is an end view of my draw-head, and Fig. 10 a top view of the same. Fig. 9 is a modification for narrow draw-heads, and Fig. 11 a top view thereof. Fig. 12 shows the method of altering over an ordinary form of draw-head for use with my ball arrangement; and Fig. 13 shows a draw-head lined and fitted with my automatic flange or mouth for coupling with a pin in the usual way. Figs. 14, 15, 16, 17 show the tripping-lever and connections.

The principal feature of the invention is the construction or providing of the link with handles, and of the draw-head with grooves and inclines to receive and co-operate with said handles, as set forth.

In Fig. 2, C is a coupling-link of the usual form, provided with a handle, H, for automatic coupling, and the handle *h* for manual coupling. D D are the two draw-bar heads, and P P′ are the ordinary coupling-pins. The draw-bars may be secured to the cars in any well known or suitable manner. The link is shown attached to the left-hand draw-head, and its free end naturally drops down, as seen in Fig. 1. As the opposite draw-head approaches, the handle H strikes it and rides upon its top, being gradually lifted up thereby, which also lifts the free end of the link C and guides it into the open mouth.

In the case shown in Fig. 2 the link advances till it hits the ball G, which it pushes back before it, thereby letting the pin P fall into the link and effect the coupling. If the link were attached to the right-hand draw-head, the handle H would be pointed to the left, and the pin P′ would be raised to the position shown by the dotted lines P^2, with its end resting in the notch *m*. When the draw-heads clash together, the head of the pin is jarred forward, causing it to drop through the link. The action of the handle H also insures the pin dropping, as presently to be described. Both draw-heads have a vertical groove in their faces. (Shown at *d* in Figs. 8, 9, 10, and 11, and indicated by the dotted line *d* in Fig. 2.) These grooves receive the handles H and *h* and prevent them being jammed when the draw-heads come together.

Fig. 8 is an end view of the draw-head, showing the cavity for the link, with flaring mouth, as usual, and having a groove, *d*, in its face. When the handle H strikes, it rides up on it, and is caused by the inclines upon its top, as 1 2 2 1, to slide down to their lowest points, (marked 2 2,) thus guiding the link into the mouth of the cavity. The points 2 2 not being in the center, however, the handle H does not point to the center of the draw-head, but a

little on one side, which causes it to avoid hitting the pin P (see Fig. 2) till the link has fully entered the cavity and the draw-heads meet. The handle is then entirely clear of the top of the flange of the draw-head, owing to the height of the bend at h', and the link then rests in the cavity precisely as if no handle were attached to it. The bottom of the cavi y is formed concave or sloping inward, which causes the link to move to the center. This brings the handle H against pin P^2, huddling around it in such a manner as to get its lower end out of the notch m and cause it to drop, if it has not already dropped.

The draw-head face may be of any ordinary form below the line $a\ a$, Fig. 8, but above that the face is sloped backward to the top, as seen in Fig. 10, where the slope reaches farthest back at the points 2 2. At 1^a the face is vertical. The whole face may be vertical; but it is better to be sloped, as described. This slope, together with the fact that the vertical height of the flange is also lowest at the points 2 2, as seen in Fig. 8, insures the guiding of the handle H easily and instantly to those points.

The line 3 3 3 indicates the back of the flange or flaring mouth, and the straight line 1 1 corresponds to the line $a\ a$ in Fig. 8. In some cases, as when the draw-head is very narrow, one incline, as 1 2 1 in Fig. 9, and one slope, as 1 2 1 in Fig. 11, may be used instead of two.

In forming my draw-head I prefer to make it in two parts, as shown in Fig. 2, whereby each half of the cavity is easily shaped, and the two parts are then bolted or fastened together, and prevented from shifting on each other in any convenient or well-known manner, as by the offset p and its seat. The inclination of the cavity need only be slight to cause the heavy ball G rolling down to the mouth whenever free to do so, and the lip at the mouth should arrest it directly under the coupling-pin or its hole. The mouth is of course too small to allow the ball to escape from the cavity.

The dotted lines i show a slot or opening through the side of the draw-head, through which the ball G can be reached and liberated or moved in case of being frozen fast, or the like.

I am aware that a ball has before been used to support a coupling-pin, and I do not claim that, except as connected with the other features of my draw-head.

It is obvious that my improved flange, with grooves, slopes, and inclines, may be applied to draw-bars of other forms by properly forming their flanges or mouths, as is seen in Fig. 2, where the left-hand draw-head is of the common style provided with my flanged mouth, and with the notch m cut into the front side of the coupling-pin hole, so as to support the pin when it leans backward, but in no other position.

Whenever it is desirable to retain draw-bars that are already made or in use by reason of any peculiar mode of attachment to the cars or arrangement of springs, &c., or for any other reason, I arrange my flange and other devices separately and attach them to the draw-heads which are to be altered over. The flange, with its grooves, slopes, and inclines, may be secured directly upon the face of the old draw-head after properly dressing the latter off and preparing it to receive and support its new face. This is easily done by grinding or cutting the old mouth down to a flat bearing-surface, then bolting the new flange upon it through ears at the sides, or in any other suitable way which will readily occur to any competent and skilled mechanic. In this way old, worn out, or useless draw-bars may be quickly and cheaply changed to my improved coupling. The method of doing this is seen in Figs. 12 and 13, which also represent an extension of this method by continuing the flange as a sleeve or lining to be inserted in the cavity of the old draw-head.

Fig. 12 shows the sleeve fitted with my ball arrangement and the whole secured by a bolt through a tongue upon the sleeve, instead of bolting the flange itself to the draw-head.

The particular method of securing the flange on the draw-head is not material. Even if the flange is held in position by the sleeve, that need not be thick or heavy, as all of the strain and wear come on the flange or on the old draw-head. The ball G is slipped through an opening in the sleeve before inserting the latter into the draw-head.

When the cavity is not deep enough for the ball arrangement, it may be fitted for operating the coupling-pin in the usual way, as shown in Fig. 13. In such case I allow the sleeve a little play endwise, instead of making it fast, as before described. When moved outward a little, it sets partly over the conpling-pin hole and holds the pin up till the draw-heads clash together, when it is shoved back to its place, opening the way for the pin and letting it drop through the link.

The ovals i represent slots through the draw-head and the lining. When the lining or sleeve is pushed outward, the two slots coincide. When pushed back, its slot takes the position shown by the smaller oval and the dotted curve x, which indicates the end of the small or right-hand oval.

In order to move or pry the lining outward, a rod is inserted through the hole and the handle carried toward the left.

The movement of the sleeve may be limited by any convenient or well-known means, as by a headed bolt through its rear into the draw-bar, by a stud in the draw-head projecting into a slot in the sleeve, or otherwise. The best way is to limit its outward movement by contact with the flange, which is fixed fast over the draw-head mouth, and let it be moved back by the end of the entering link hitting the rear of its cavity; or a slide may be arranged over the cavity, projecting out through the flange, and be forced back by contact with the opposite draw-head, and so

open the coupling-pin hole, as before described. If preferred, the lining is made fast, as first mentioned, and a notch, *m*, is cut into the front wall of the coupling-pin hole, as in Fig. 2.

Fig. 2 gives a side view and Fig. 3 a perspective of my coupling-link. H is the handle for automatic coupling, which rises from the center of the link to a height sufficient to clear the top of the draw-head flange, and is then bent toward the end of the link, first downward and then upward. The exact length and curvature of this part are not material, as the longer it is the more gradually it is raised by the flange; but it is also heavier. The essential point is that when one end of the link hangs down the handle at h^2 shall be long and high enough to be certain of overtopping the flange of the approaching draw-head, and its curvature shall be such as to bring the free end of the link up level with the lower lip of the flange before coming within reach of it, the lowest point of the curve being low enough to carry the link properly into the mouth of the draw-head, as seen in Fig. 2, which will serve as a guide or pattern. As there is nothing particular or difficult about this, the handle can easily be shaped by the eye alone; or the proper shapes and distances may be fixed by a measurement of a draw-head, which the workman can then use as a standard for the shape of the handles. The faces of draw-heads should be as nearly as possible of the same size, as that will admit of the handle H being made very short. The ring at h^2 is provided for convenience of holding up the free end of the link by hand or by a rod through it when the approaching draw-head has no flange for automatic coupling and there is not time to attach the link to that and couple automatically into its own draw-head. The strap h' is for a like purpose, and is safer to hold up by the hand. The bend of the handle H might be extended up high enough at h' to answer the same purpose, but would be a waste of material, as the strap h' need only be a thin strip welded on H.

Fig. 3 shows the ordinary coupling-link with a stout cross-bar welded at its center and the handles H and *h* welded to that. The handle H need not be more than one half the size of the link, and the handle *h* may be smaller yet. The handle *h* prevents the link hanging too low by resting against its groove *d*.

In Fig. 4, C′ is a substitute for the usual link, being punched or formed out of a solid block, to which the handles may be secured by welding or in any suitable manner.

C^2, Fig. 5, shows my link with the handle *h* broken off, and C^4, Fig. 7, shows a crooked link in the same condition. It will be seen that the link can still be used for automatic coupling, and by means of h^2 or h' for manual coupling. On the other hand, if the handle H were broken off, the link could still be used for safe manual coupling by means of the handle *h*. This is made long enough to reach outside of the draw-heads far enough to permit of the operator holding it in his hand without the slightest danger, as the hand does not go near the draw-heads or bunters, and could not be injured if he did not let go of it at all while coupling. The link can be thus held up either from above or below the draw-heads by turning the handle up or down, as preferred, and can be held up while standing outside of the cars by reaching a rod in through the ring on the handle. Even the cross-bar can be dispensed with if something very cheap is desired, although it adds to the strength of the link. C^3, Fig. 6, shows such a link, the handle being a metal bar or strap welded directly to it, curving thence to the center of the link and upward to the desired distance for safety, and can be used the same as described for h'. Of course the automatic handle H can be welded on in the same way; or the link and handle can be made of one piece by bending properly and welding at the junction. In the same way the link and cross bar may be made of one piece by welding at both junctions of the cross-bar. Finally, it will be observed that, even if my link is disabled by the loss of both handles H and *h*, my coupling device is not useless, but is still as serviceable and as strong in every way as the ordinary couplings now in use, and at any time, whether sound or disabled, it will couple into any other form of coupling that the ordinary link can. When such a link and cross-bar has lost both handles, it can still be held up by hand by means of a portable handle, like *h*, having one inch of its lower end bent at a right angle to form a hook, as shown at h^3 in Fig. 3. This is hooked under the cross-bar and rests in the groove *d* of the draw-head, being used as before described for manual coupling. When the draw-heads meet and the coupling is effected, the handle *h* is turned a little to free the hook from the cross-bar, and then lifted out through the groove *d*. When it is only required to use the handle *h*, in order to enable the coupling to be performed manually with safety to the operator, a special form of draw-head is not needed; but the vertical groove *d* can be cut into any draw-head face, by an emery-wheel or otherwise, deep enough to protect the handle from injury. Two handles H could be used, if desired, one pointing each way; but it is useless, as the link can easily be turned in either direction.

In order to set the coupling so that it cannot couple, the pin P, Fig. 1, is held up by turning up the tripping-lever B connected to the chain, as shown in Fig. 15. In this position it holds the pin above the reach of the link, and the cars can come together, but cannot couple.

Fig. 15 is a side view, and Fig. 14 a front view, of the tripping-lever fastened to the end of the car-body A. The chain is fastened to the branch *b*, which turns on a pivot, as *o*, supported in any suitable manner, as by the ears upon the base-plate *e*. The branch *c* is for convenience in the manipulation either by the hand or the foot. When the lever *b c* is

pushed over, it falls down into the position shown by the dotted lines c'. If this is done slowly, it leaves the coupling-pin in the position P^2 in Fig. 2, ready for coupling; but if done suddenly, as by kicking it over quickly, a flirt is given to the chain, which causes the pin to drop into place, as at P' in Figs. 1 and 2.

In order to uncouple from the top of the car, the operator reaches his foot under the arm c', Fig. 15, and lifts the pin, afterward either letting it back into the position of P or P^2 in Figs. 1 and 2 or throwing the tripping lever B over into the position in Figs. 1 and 15. In that position the chain passes over the center and gets behind the pivot or fulcrum, so that its own weight causes it to hold the lever where it is placed until purposely changed, thus making a self-acting catch without springs, pawls, or mechanism of any kind. It will be seen, by noting the position of lever B and its chain in Fig. 1, that the lever may be adjusted to serve the function of the ball G or notch m, if desired, as follows: When the pin P is out of its hole and the chain hangs straight down at the end of the car, the chain is so far behind the fulcrum of B that it cannot jar over; but when the pin is in its hole and the chain is pulled forward, as shown, it comes more nearly in line with the fulcrum of B. By appropriate construction of B the chain can be made to hang so closely to the line of the fulcrum that when the cars bump together in coupling they will jar the lever B over, and thus automatically drop the pin through the link and complete the coupling. The lever B can be easily operated from the ground and thrown into either position. When it is in the position shown in Figs. 1 and 15, the brakeman takes the pin in his hand and gives the chain a flirt downward in the direction of the curve g, whereby he throws the lever down to the position c'. By flirting it upward in the curve g he can throw the lever up, as seen in Figs. 1 and 15.

Figs. 16 and 17 show the device arranged to swing transversely to the car instead of longitudinally of it, which may sometimes be more convenient. In this case the pivot may be a shouldered bolt held by the nut r in the offset v on the base e. The previous explanations apply to this, as it is operated precisely as before stated. When the arm b is up, the chain has passed over behind the fulcrum o. The arm c rests on the car-top A or any suitable support with its spur projecting over the car-edge. When the arm or branch b is pushed slightly to the right, it falls and hangs directly downward from the pivot, and the arm c takes the position shown by the dotted line c', with its spur convenient for being lifted either by the hand or the foot. The length of the chain is to be adjusted with the lever-arm b upward to raise the coupling-pin out of the way of the link, but not out of its hole. Its length when the lever is down is not material, provided only it is long enough. Ordinarily the tripping-levers hang downward, and the brakeman, by looking along the tops of the cars to see if any of the levers are sticking up, can at once tell whether any are set so as not to couple. If desired, the lever may be placed higher or elsewhere, or arranged to be conveniently operated by the hand instead of by the foot.

I do not confine myself to the precise forms and constructions described, for obviously many other forms may be adopted which will answer as well and without departing from the spirit of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a car-coupling, a link provided with a handle for engaging with the front of the approaching draw-head and automatically guiding the free end of the link into the draw-head.

2. A coupling-link provided with a handle adapted both for engaging with the front end of the draw-head and automatically effecting the coupling, and for being safely held up by the hand while coupling manually.

3. A coupling-link with a handle adapted for automatic coupling when one side is upward and for safely coupling manually when the other side is up.

4. In a car-coupling, a draw-head provided with a concave projecting flange upon its upper side for lifting and guiding the handle of the link, substantially as set forth.

5. A draw-head having both a vertical groove in its face for receiving the handle of the link and a projecting flange for lifting and guiding the said handle during the automatic coupling, substantially as set forth.

6. The combination of a draw-head and a flange or bearing-face having a vertical groove in it, removably attached to the draw-head, substantially as set forth.

7. The combination, with a draw-head, of a projecting flange or bearing-face for automatically lifting and guiding the link during the coupling, removably attached thereto, substantially as set forth.

8. The combination of a draw-head having a vertical groove in its face and a link having a handle for guiding the link while automatically coupling, the said handle being received in said groove, and thereby protected from being jammed.

9. The combination of a link having a handle or horn for automatic coupling, and a draw-head provided with a flange to engage with said handle and automatically guide the free end of the link while coupling.

10. The combination of a link having a handle for automatic coupling with a draw-head having a vertical groove in its face, and a flange for co-operating with the handle of the link in effecting the automatic coupling, and a pin or fastening for securing the link to the draw-head.

11. The combination of a link having a han-

dle for automatic coupling with a draw-head having a vertical groove in its face, and a flange for co-operating with the handle of the link in effecting the automatic coupling, a pin or fastening for securing the link to the draw-head, and a ball or means for holding up said pin or fastening while the coupling is being effected.

12. In an automatic coupling device, the combination, substantially as described, of a draw-head, a link adapted for automatic coupling, a pin or fastening for connecting said link to the draw-head, an opposing draw-head adapted for automatically coupling with said link, a pin or fastening for securing said link to the draw-head, and a ball or support for the pin while coupling.

13. An oblong coupling-link with an upright handle for automatic coupling, formed from one rod or piece with a single weld.

14. The combination of a draw-head, a pin or connection for securing a link to the draw-head, a pivoted tripping-lever attached to the body or box of the car, and a chain or connection between said pin and lever, substantially as set forth.

15. A tripping-lever, combined with a chain or connection reaching to the coupling-pin and adapted to be held in its tripping position by its own weight and that of the chain pulling behind the fulcrum of the lever, substantially as set forth.

16. A pivoted tripping-lever provided with an arm or branch for operating it and adapted to retain either of its positions by gravity, substantially as set forth.

CHARLES E. FRITTS.

Witnesses:
L. FRITTS,
J. H. FRITTS.