C. H. STARK.

CAR COUPLING.

APPLICATION FILED JAN. 27, 1911.

1,023,444.

Patented Apr. 16, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

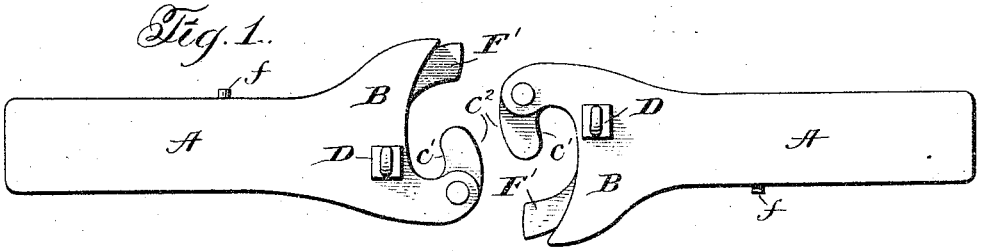


Fig. 2.

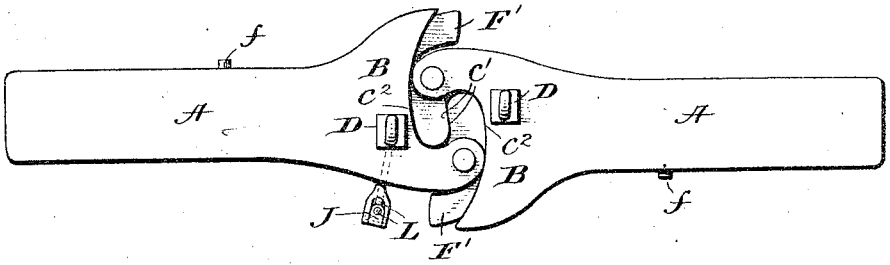


Fig. 3.

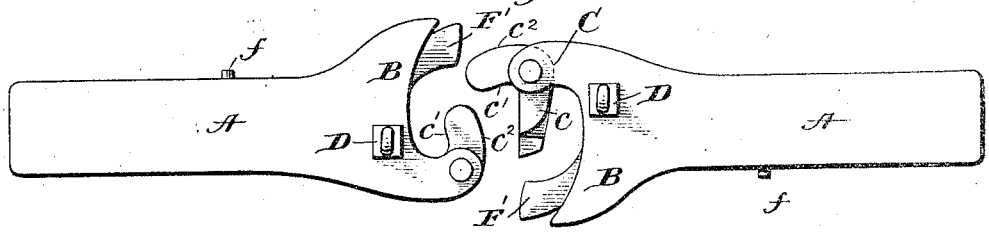
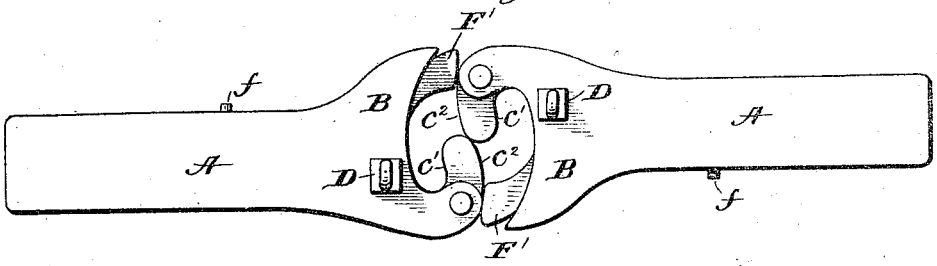


Fig. 4.



Witnesses:

Jas. E. Hutchinson.

Charles Thomas

Inventor:

Charles H. Stark,

by Macdonald & Macdonald Attorneys

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2 SHEETS—SHEET 2.

Fig. 5.

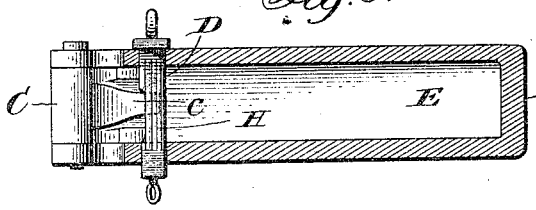


Fig. 9

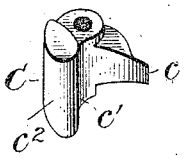


Fig. 10.

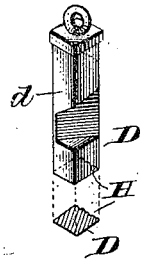


Fig. 6

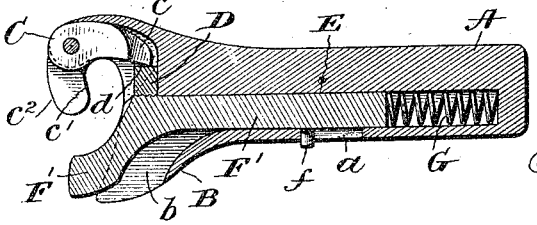


Fig. 8.

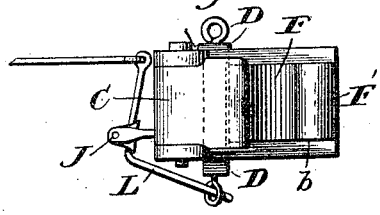
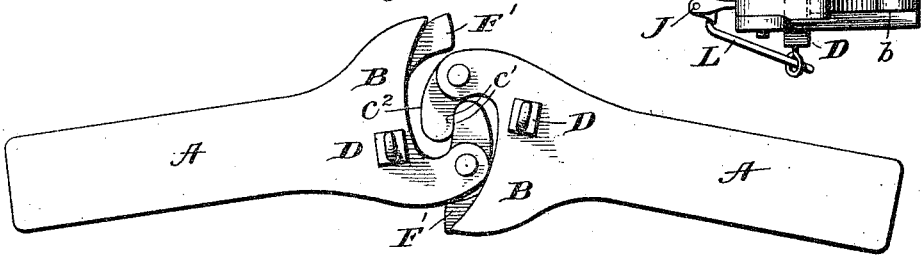


Fig. 7.



Inventor:

Witnesses:

Jas. E. Hutchinson.

Charles Thomas.

Charles H. Stark,

by Macdonald & Evans Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES H. STARK, OF STRASBURG, VIRGINIA.

CAR-COUPLING.

1,023,444. Specification of Letters Patent. Patented Apr. 16, 1912.

Application filed January 27, 1911. Serial No. 604,939.

To all whom it may concern:

Be it known that I, CHARLES H. STARK, a citizen of the United States, residing at Strasburg, in the county of Shenandoah and State of Virginia, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in car couplers and has for its primary object the provision of a coupler which will be to the greatest possible extent automatic in its operation, thereby to eliminate those dangers of personal injury always inherent in any necessity requiring manual manipulation of coupling members between adjoining cars.

I am aware that heretofore, particularly in the Janney type of couplers, practical success has been obtained to a large extent by reason of provisions for automatic coupling, but it is quite frequent that even with the commonly approved or standard type of such coupler the members of approaching cars have to be manually alined to bring them into proper registration for the automatic coupling referred to. Difficulty has been experienced in obtaining automatic coupling of adjoining cars fitted with standard couplers unless one of the knuckles is in open position. To overcome these difficulties it has previously been suggested that couplers of what might be said to be unique or distinct type possessing complicated parts, or delicate mechanism, or excessive use of loose or pivoted members and springs, might be employed, but such suggestions I believe have neither been carried into effect or regarded as practical. In this art it is well recognized that the component parts of railway equipment have become standardized, that is in keeping with the approval of the Master Car Builders' Association to insure maximum safety, and to facilitate the coöperation of specifically different devices.

Having all of the foregoing considerations in mind it has been my aim to provide a car coupler strictly in keeping with the standard type or style, specifically in this instance the Janney type of coupler, which will possess improved characteristics enabling the automatic coupling of the opposite members of the coupler irrespective of the relative positions of the knuckles of said members, so that they may be brought into mutual coöperating or interlocking engagement even when both knuckles are closed at the time they approach each other in the coupling operation; also to enable my improved coupler to operatively coöperate with any other standard coupler of the style named now in use; also to enable the couplings to engage within a wider range or greater disalinement than heretofore.

The preferred embodiment of my invention possesses many improved features so far as detail arrangements are concerned which might be here broadly defined, but these will be more readily understood from the specific description thereof hereinafter contained when read in connection with the accompanying drawings forming part hereof and wherein such embodiment of the invention is illustrated.

In the drawings: Figure 1 is a plan view of my improved coupler in uncoupled condition, Fig. 2 is a similar view of the same in coupled condition, Fig. 3 is a similar view showing the manner of coupling the coupling members when one knuckle is open and the other closed, Fig. 4 is a similar view showing the manner of coupling said members when both knuckles are closed, parts being broken away to show the interior construction, Fig. 5 is a longitudinal vertical sectional view through one of the coupling members, Fig. 6 is a similar horizontal section, Fig. 7 illustrates how the parts engage when the coupling members are shifted laterally one relative to the other to prevent separation thereof, Fig. 8 is an end view of one of the coupling members, and Figs. 9 and 10 are respectively, detail perspective views of one of the knuckles and the locking pin.

Referring more specifically to the drawings wherein like reference characters designate corresponding parts in the several views, A represents the usual draw-bar mounted in any convenient or approved manner upon the car structure not necessary to be herein illustrated, B the usual recessed draw head and C the pivoted knuckle, all of general construction and arrangement familiar in this art. The knuckle has the customary inner beveled extension *c* adapted to coöperate with a correspondingly beveled locking pin D provided with the usual locking shoulder *d* adapted to lie in front of the

knuckle extension when the knuckle is in closed position. When the knuckle is moved to its closed position the pin D falls by action of gravity, following its elevation by the co-action of the beveled surfaces on the pin and knuckle during the closing of the knuckle.

At one side of the longitudinal center of the draw bar A, I provide an elongated pocket or way E closed at its rear end. The pocket or way is of angular cross section and is designed to constitute a guide and holder for a correspondingly angular plunger or stem F adapted to slide therein against the pressure of an outwardly thrusting spring G inserted in the pocket, abutting at one end against the end wall of the pocket and at its opposite end against the end of the plunger. A removable pin *f* engaging the stem or plunger and working in an elongated slot *a* in the side of the draw bar prevents excessive outward movement of the plunger.

The draw head B is recessed, as at *b*, for the accommodation of a plunger head F', this head curving inwardly on its exposed surface as illustrated, toward the curved edge *b* of the draw head, and at its end extending outwardly to approximately the plane of the outer surface c^2 of the knuckle. This surface of the knuckle is rounded inwardly to a substantial extent so as to guide the corresponding knuckle engaging therewith thereover and inwardly toward the projecting end of the plunger head, as illustrated in Fig. 4. The knuckles are also formed to project bodily inwardly, as at *c'*, to constitute substantial hooks as distinguished from the usual flat inside surfaces, so that when the couplers are engaged it will be impossible to turn them into any position to permit said hooks to accidentally separate, as clearly shown in Fig. 8, where it will be seen that when the coupling members are relatively shifted the hook portions of the knuckles contact at opposite contact points between the curved end of one of the draw heads and the pivot end of the other knuckle.

By reference to Fig. 4, it will be seen that the coupling members approaching, whether in exact alinement or not, will in their advancing movement ride over the rounded surfaces of the knuckles, and the knuckles becoming centered between the ends thereof and the ends of the spring pressed plungers, the continued advancing movement will force the plungers to recede when the pivot ends of the draw heads will engage the curved inner edges of the opposite draw heads and cause the same to mutually ride downwardly and inwardly until the knuckles are hooked together, when the plungers will be thrust outwardly and constitute an effective barrier against excessive relative lateral movement of the coupling members, it being observed that the inner surfaces of the plunger heads approximate a position somewhat parallel to the longitudinal axes of the draw-bars so that the pressure of the couplers thereagainst is at approximately right angles to the direction of movement of the plungers, thus preventing the knuckles from accidentally forcing back the plungers.

While the foregoing constitutes an efficient coupler, I provide other instrumentalities which are largely a precautionary means to meet any exigency that might arise, for example, the breaking of one of the plunger heads. Said means comprises an engagement between the inner face of each of the plungers and the adjacent face of the coupling pins, represented at H and consisting in forming undulatory or roughened portions on those members adapted to engage when the couplers are under pulling strains which latter pull outwardly the outer ends of the knuckles to the greatest extent, rocking the inner extensions of the knuckles on the pivots and forcing said extensions in engagement with the locking pins, which being loose or having usual play in their recesses will be correspondingly bodily forced over into engagement with the adjacent faces of the plungers, thus securing the interlocking between the pins and the plungers and preventing any rearward movement of the latter. It will be understood that when the pulling strain is released and the coupling members uncoupled the pins may slip away from the plungers and permit the action of the latter.

Any convenient means may be provided for the purpose of raising the coupling pins to release the knuckles when it is desired to uncouple the cars, one such means comprising a fulcrum J on the draw head and a bell crank lever L pivoted thereto, having its horizontal arm extending inwardly through an eye on the lower end of the pin and the vertical arm extending upwardly for connection with suitable link or other operating connecting devices extending outwardly in convenient access for an operator at the side of the car.

While I have herein referred to the curved edges of the draw head as the means for guiding the knuckles inwardly toward each other to insure the coupling operation, it is obvious that the plungers being thrust outwardly by their springs as soon as the knuckles have passed each other in the coupling operation, will also materially facilitate the approaching of the knuckles toward and behind each other.

For the sake of imparting a clear and full understanding of the invention, I have herein disclosed the preferred embodiment of the same. It will, however, be clear to those skilled in the art that many changes and

alterations may be made in the structure as thus shown and described without departing from the spirit of the invention, but rather constituting other embodiments of the same.

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

1. A car coupler of the character described comprising a draw bar and a recessed head, a pivoted knuckle in said head, a yieldable plunger adjacent to and opposite the knuckle adapted to move longitudinally of the draw bar and projecting beyond the complementary knuckle when coupled, and a coupling pin for holding the knuckle in coupled position, said coupling pin and plunger being provided with portions adapted to interengage to prevent longitudinal movement of the plunger.

2. A coupler of the character described comprising a draw bar and recessed head, a knuckle pivoted to said head, a yieldable plunger mounted on the draw bar and arranged opposite to said pivoted knuckle, a pin arranged to lie in the path of a portion of said knuckle to hold the same in closed position, and interengaging portions between the pin and plunger for locking the plunger against longitudinal movement.

3. A car coupler of the Janney type comprising a draw bar, a pivoted knuckle, a longitudinally yieldable plunger opposite the knuckle adapted to recede to permit entering of a complementary coupling member, a locking pin positioned along side of said yieldable plunger and movable to a position to lie in the path of the tail of the knuckle to hold the knuckle in closed position, said locking pin having a lateral play whereby as the knuckle is placed under strain the locking pin will be moved into engagement with said yieldable plunger to prevent longitudinal movement thereof.

4. A car coupler of the Janney type comprising a draw bar, a pivoted knuckle, a longitudinally yieldable plunger opposite the knuckle adapted to recede to permit entry of a complementary coupling member, a locking pin positioned along side of said yieldable plunger and movable to a position to lie in the path of the tail of the knuckle to hold the knuckle in closed position, said locking pin having a lateral play and the adjacent portion of said locking pin and plunger being provided with complementary portions adapted to interfit with each other when the knuckle is placed under strain to hold said plunger against longitudinal movement.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. STARK.

Witnesses:
Jos. H. Milans,
L. B. Winsboro.