

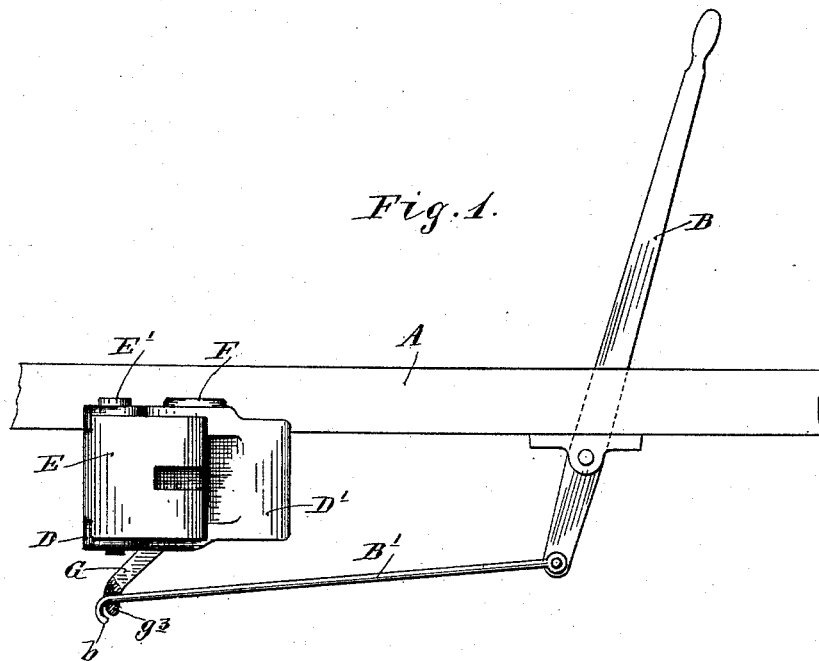
(No Model.)

2 Sheets—Sheet 1.

A. C. McCORD.  
CAR COUPLING.

No. 489,977.

Patented Jan. 17, 1893.



Witnesses.

A. H. Opsahl.  
E. F. Elmore.

Inventor.

Alvin C. McCord

By his Attorney.

Jas. F. Williamson

A. C. McCORD.  
CAR COUPLING.

No. 489,977.

Patented Jan. 17, 1893.

Fig. 2.

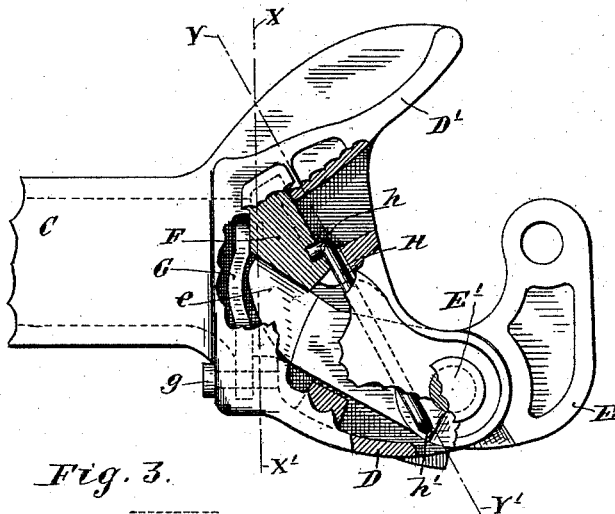


Fig. 3.

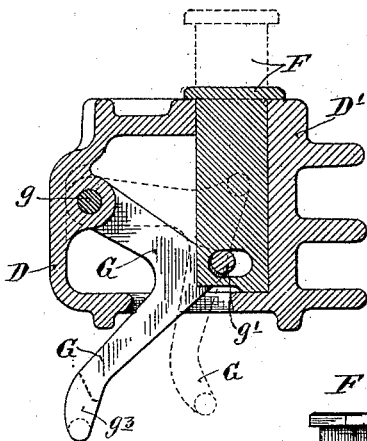


Fig. 4.

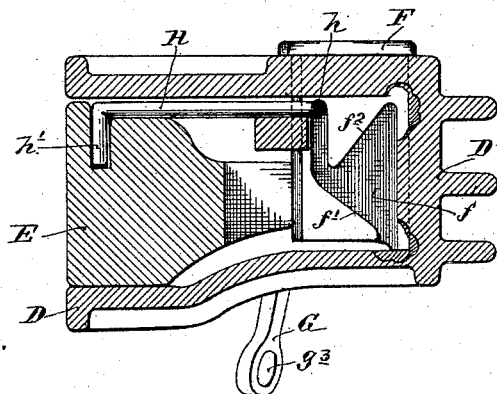


Fig. 6.

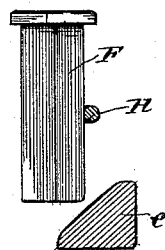
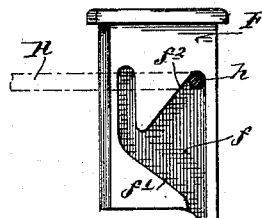


Fig. 5.



Witnesses.

A. H. Opsahl.  
E. F. Elmore.

Inventor.  
Alvin C. McCord  
By his Attorney.  
Jas. F. Williamson

# UNITED STATES PATENT OFFICE.

ALVIN CARR McCORD, OF CHICAGO, ILLINOIS.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 489,977, dated January 17, 1893.

Application filed September 26, 1892. Serial No. 446,909. (No model.)

*To all whom it may concern:*

Be it known that I, ALVIN CARR McCORD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Couplers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to automatic car-couplers; and is in the nature of an improvement in that form of coupler shown and described in my pending application, filed of date June 6, 1892, under Serial No. 435,672. In common with said pending case, I employ, in the coupler herein shown, a sliding lock, which is preferably mounted for a vertical straight line drawing movement, and the lower end of which is engagable with the tail of the coupling hook to lock the hook in its closed position. As in the former case also, the lock is provided with a cam surface co-operating with an intermediate rod or link to open the hook, the parts being so related that the initial movement of the lock will release or unlock the hook and that a continued pull on the lock will, through said cam surface and link, force the hook into its open position. In the former case, the lower end of the lock and the tail of the coupling hook were shown as provided with inclined cam surfaces, by the camming action of which, on the closing of the hook, the lock was lifted to permit the tail of the hook to pass behind the same into its closed and locked position. This construction was in some respects objectionable and unsatisfactory; and one feature of my invention consists of an improved construction for automatically lifting the lock, to permit the passage of the tail of the coupling hook, in the coupling action. To this end, I provide an intermediate device, operating under the closing movement of the coupling hook, to lift the lock without direct contact or engagement between the lock and the hook.

Another object of my invention is to provide an improved hand device for drawing the lock to release the coupling hook. To this end, I provide a bell crank lever pivoted to the coupler head, at its upper end, engagable with the lock, at its angle, and connected at

its lower end to a hand lever, in such a way that it may be drawn by the hand lever, but may also be moved independent of the same, to permit the automatic lift above provided for. The relation of the bell crank lever to the lock is such as to apply the pull or lift directly in the line of the lock's movement. Both of these features of invention will be hereinafter fully described and be defined in the claims.

The accompanying drawings show a coupler embodying the preferred forms of my improvements. Therein like letters referring to like parts throughout the several views,— Figure 1 is a front elevation, showing the coupler, as applied for service on a passenger coach. Fig. 2 is a plan view of the coupler shown in Fig. 1, some parts of the same being broken away. Fig. 3 is a vertical section, taken on the line X X' of Fig. 2, looking toward the rear. Fig. 4 is also a vertical section, looking toward the rear, taken on the line Y Y' of Fig. 2. Fig. 5 is a detail of the lock, removed, part of the intermediate device being shown in section and in dotted lines. Fig. 6 is a detail, partly in elevation and partly in section, showing the relative positions of the lock and the tail piece of the coupling hook, during the closing action of the hook.

A represents the outline of the platform of a passenger coach, and B a hand lever pivoted thereto, preferably of the class used in connection with the well-known Miller platform.

C is the draw-bar, and D D' the coupler-head, of the well-known standard twin-jaw type.

E is the coupling hook pivoted to the part D of the coupler head, by the fulcrum or pivot pin E'. This coupling hook E is also of the standard type, in its general construction, and is otherwise known as the "pivoted beak" or as "the knuckle." The extended tail-piece of the coupling hook E is, as shown, inclined on its rear upper face, only for the purpose of clearance with respect to the lock, as shown in Fig. 6 of the drawings.

F is the lock or pin, seated in the coupler head for a sliding movement, preferably vertical; and adapted, when the coupling-hook is in its closed position, to fall in front of the

tail-piece *e*, and lock the hook in its closed position. The lock *F* is raised, to release the coupling hook, by the hand-lever *B*, on the car platform, through my improved connections, which will now be described.

*G* is a bell-crank lever, pivoted at one end, as shown, at *g*, within the coupler head, having its angle or elbow connected to the lock *F*, by a slot and pin engagement, as shown at *g'*, and having its free end projecting downward through a slot *d* in the bottom of the coupler-head to the exterior of the same, and connected by means of a link or rod *B'*, with the hand lever *B*. The rod *B'* works through an eye *g*<sup>3</sup> on the lower arm of the lever *G* and is provided with a hook *b*, or other enlargement. Hence, the rod will draw but not push the lever *G*. It is evident, that the slot and pin engagement of the lever *G* and the lock *F*, permits the pivotal or rocking motion of the lever and the straight line movement of the lock; and also serves to prevent the said lock from being moved beyond its proper extreme position. This bell crank lever *G*, with its connections, as described, constitutes a simple, reliable and durable lock-lifting or releasing device.

Turning now to the other feature of my invention, the lock is provided, on its face, with a vertical recess or slot *f*, constructed to form two cam surfaces *f'* and *f*<sup>2</sup>.

*H* is a rod or connecting link, seated in the coupler-head, having an angularly extended inner end *h*, working in the slot *f* and subject to the successive action of said cam surfaces *f'* and *f*<sup>2</sup>, and having an angular extension *h'*, at its outer end, pivotally connecting the link to the hub of the coupling hook. This rod *H* in co-operation with the cam surface *f'* constitutes the coupling-hook opening device; while in co-operation with the cam surface *f*<sup>2</sup>, it constitutes the intermediate device or connection for raising the lock under the closing action of the coupling hook.

The operation is as follows:—Under the action of raising the lock, as set forth, the lock will first be raised sufficiently far to release the coupling-hook, when a continued movement of the lock, will bring the cam surface *f'* into engagement with the end *h* of the rod *H* and, by a draw thereon, the continued upward movement of the lock will open the coupling hook. Upon releasing the lock, and allowing the same to fall, while the coupling hook is thus open, the end *h* of the link *H*, will fall behind the cam surface *f*<sup>2</sup>, as shown in Fig. 5. Hence, when the coupling-hook is closed, in the coupling action, or otherwise, the said end *h'* will be drawn across this cam surface *f*<sup>2</sup>, and will raise the lock out of the path of the tail-piece *e* of the coupling hook, and permit the same to pass behind the lock. In this action, the lock will, during the said closing movement, be held out of engagement with the said tail-piece, as shown in Fig. 6 of the drawings. When the coupling hook has reached the extreme of its closing movement,

the said end *h* of the rod *H*, will pass off from the said cam surface *f*<sup>2</sup>, and the lock will then be permitted to fall in front of the tail-piece of the coupling hook and lock the same in its closed position.

It should be here noted, that the connection of the link or rod *B'* to the free end of the bell-crank lever *G*, through the eye *g*<sup>3</sup>, is such, that only the drawing action thereon effects the movement of the same. Hence, the hand-lever *B* may be returned to its normal position, while the lock is held in its uppermost position, or vice versa, the lock may be raised while the hand-lever is held in its normal position. Hence, the action of the rod or link *H* on the lock, under the closing movement of the coupling hook cannot be intercepted or interfered with by any movement of the hand lever *B*.

It will, of course, be understood, that the cam surfaces *f'* might be dispensed with, in a construction, wherein it is not desired to open the coupling-hook automatically. So also the cam surface *f*<sup>2</sup> might be omitted, if an automatic lock is not desired.

It is also evident that various other alterations in the details of construction, might be made without departing from the principles of my invention.

What I claim and desire to secure by Letters Patent of the United States is as follows:—

1. In an automatic car-coupler, the combination with the coupler-head and the pivoted coupling-hook, of a lock, for securing and releasing the coupling-hook, and an intermediate lock-moving device, controllable from the coupling hook, and operating on said lock, under the closing movement of said coupling-hook, to move said lock out of the path of the lock-engaging portion of said coupling-hook, and to drop said lock when the coupling-hook has reached the extreme of its closing movement, thereby preventing frictional contact between the lock and the hook substantially as described and for the purpose set forth.

2. In an automatic car-coupler, the combination with the coupler-head and the pivoted coupling-hook, of a lock, for securing and releasing the coupling-hook, a cam surface carried by said lock, and a cam link or connection, connected to said pivoted coupling-hook, and engageable with said cam surface, to cam or move the said lock out of the path of the lock-engaging portion of the said coupling-hook, under the closing movement of the same, and to drop said lock when the coupling hook reaches the extreme of its closing movement, substantially as and for the purpose set forth.

3. In an automatic car-coupler, the combination with the coupler-head and the pivoted coupling-hook, of a lock, for securing and releasing the said coupling-hook, a pair of cam surfaces carried by said lock, and a cam link or connection, connected to said pivoted coupling-hook, and engageable, in succession, with

each of said pair of cam surfaces, one of said cam engagements being effected by a continuation of the unlocking or releasing movement of said lock and serving to open said coupling hook; and the other cam engagement being effected by the closing motion of the said coupling hook and serving to cam or move the said lock out of the path of the lock-engaging portion of said coupling hook, during the closing movement thereof, substantially as and for the purposes set forth.

4. In an automatic car coupler, of the class described, the combination with the lock seated for straight line movement in the coupler head, of the bell crank lever attached to the lock, by a slot and pin connection, having its upper end pivoted to the coupler and its lower end connected to a hand lever, substantially as described, whereby a pivotal movement of the bell crank lever will produce a straight line movement on the lock.

5. In a car coupler of the class described, the combination with the lock, the coupling hook, and the intermediate device operating to lift the lock on the closing movement of

the hook, of a lock lifting lever, and a hand device for operating the same, having a connection with said lever for permitting the said lever to move independent of the hand device, substantially as and for the purpose set forth.

6. In a car coupler of the class described, the combination with the coupling hook E, of the lock H having the cam surface  $f^2$ , the rod or link H, connected to the hook at one end and operating on said cam surface  $f^2$  at the other, for the purpose set forth, the bell crank G pivoted to the coupler and connected at its angle to the said lock, the hand lever B, and the link B' working through an eye on the lever G, so as to draw in one direction and slide in the other, substantially as and for the purpose set forth.

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

ALVIN CARR MCCORD.

Witnesses:

D. W. MCCORD,  
CHAS. H. KING.