(No Model.)

P. M. REAGAN.

CAR COUPLING.

No. 589,140. Patented Aug. 31, 1897.

Fig-1

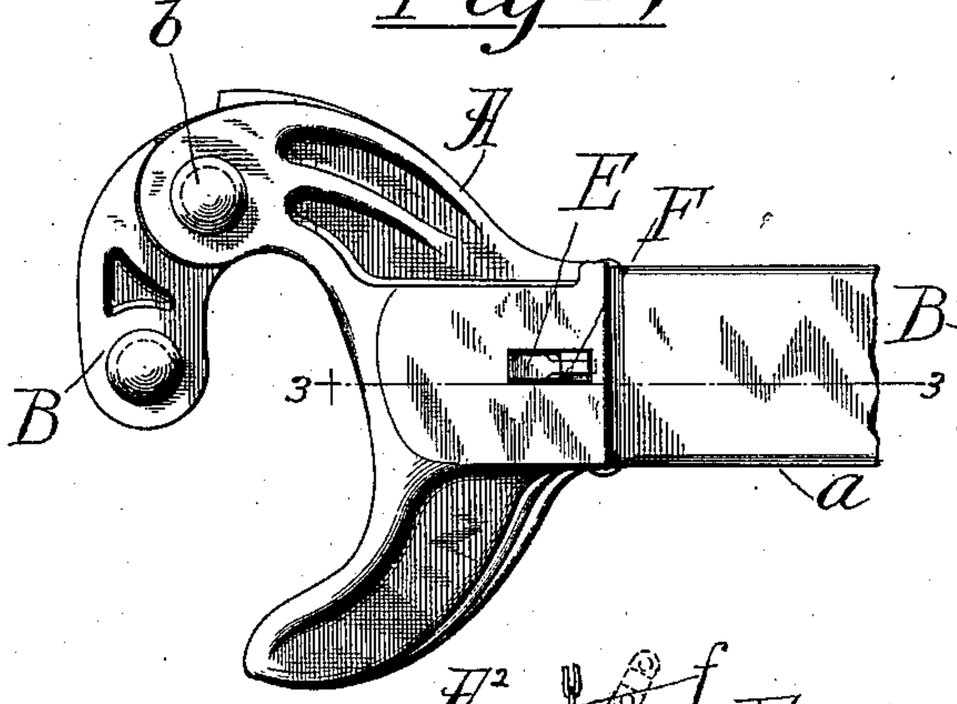


Fig-2

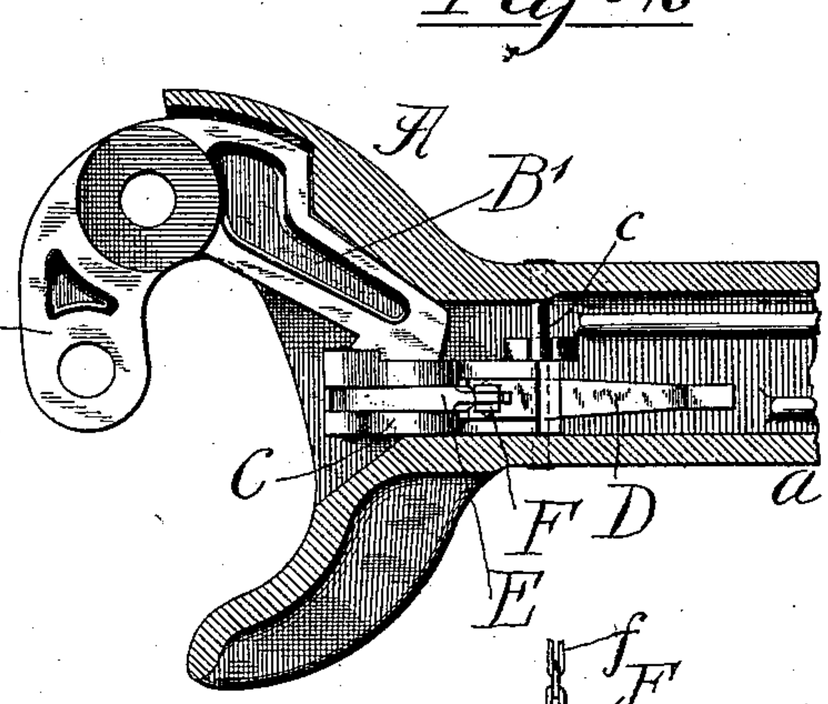


Fig-3

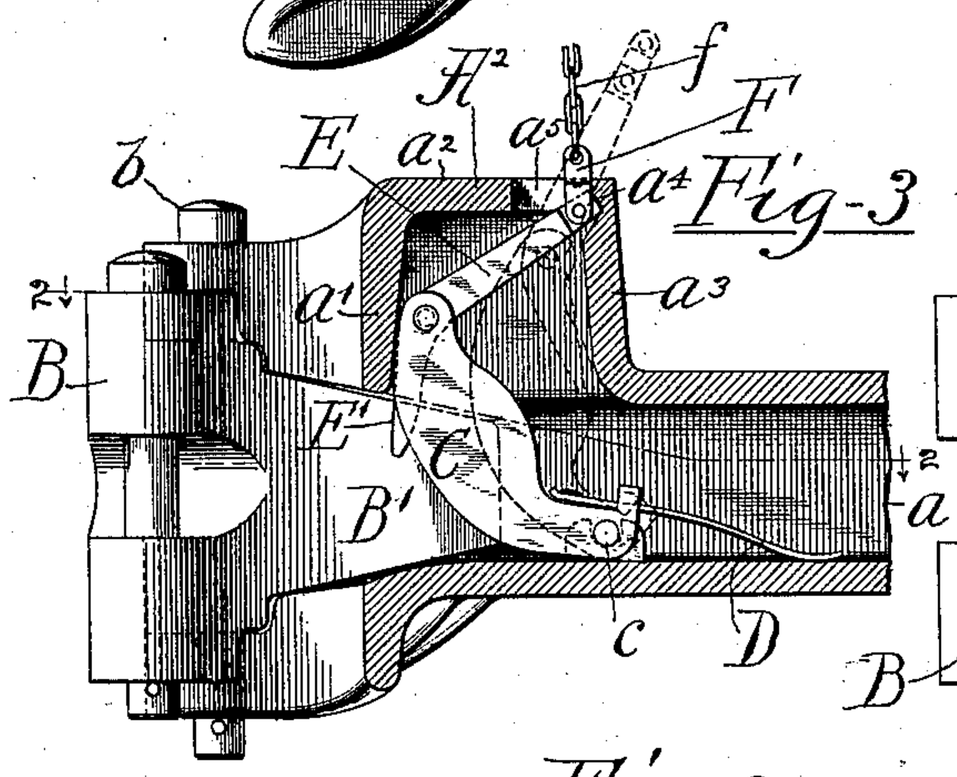


Fig-4.

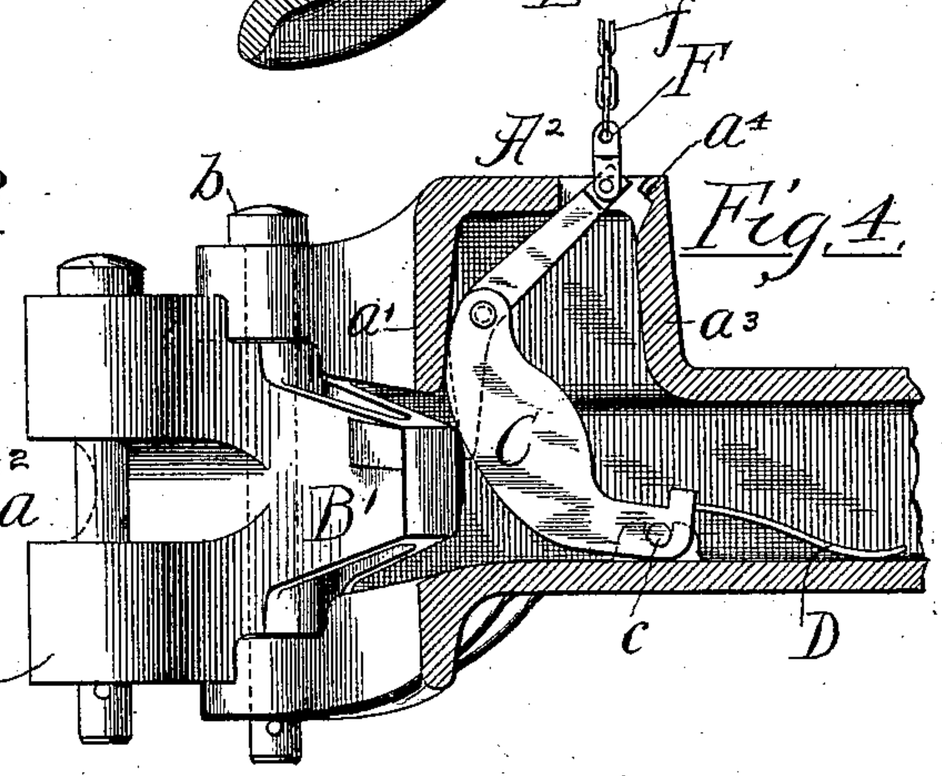


Fig-6

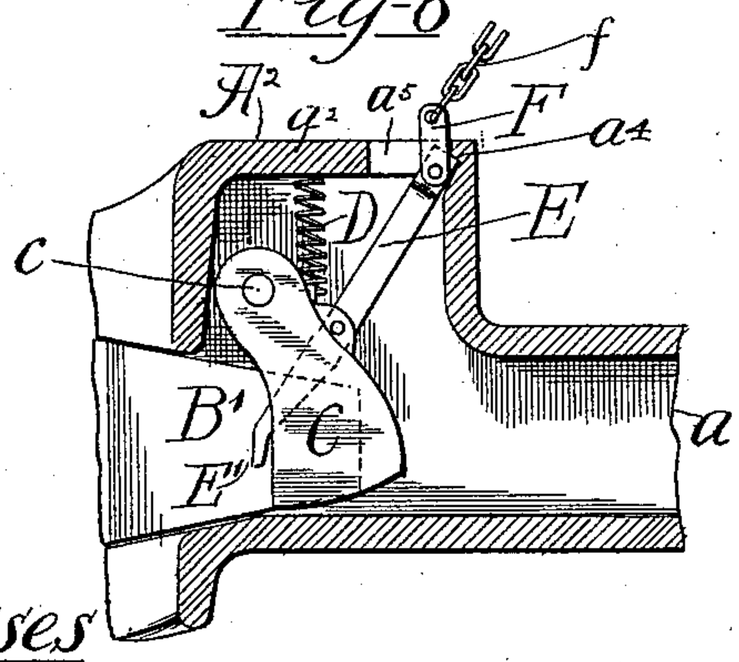
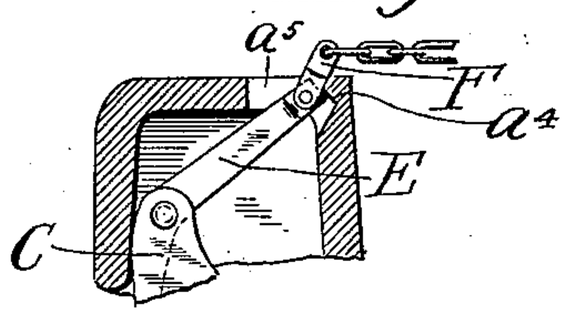


Fig-5



Witnesses

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William L. Hall.

Inventor

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UNITED STATES PATENT OFFICE.

PAUL M. REAGAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE HINSON MANUFACTURING COMPANY, OF SAME PLACE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 589,140, dated August 31, 1897.

Application filed January 11, 1897. Serial No. 618,771. (No model.)

To all whom it may concern:

Be it known that I, PAUL M. REAGAN, of Chicago, in the county of Cook and State of Illinois, 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 thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to car-couplings of that class in which pivoted interlocking knuckles are mounted on the draw-heads, which knuckles are provided with locking tongues or tails which are adapted to engage with locking-detents which are mounted in the draw-head and operate to hold the knuckles from outward movement when in their interlocked position.

In the use of couplings of the kind mentioned it is found that through the jarring of the parts while the knuckles are under strain the locking-detent is liable to "creep" or gradually shift its position until finally disengaged from the tail of the knuckle, with the result of releasing the coupling; and the object of my invention is to provide a secondary locking device by which the locking-detent will be positively locked and held from movement except at such time as the detent shall be moved by the action of the tail of the knuckle thereon in coupling or by the action of the hand in uncoupling.

The invention consists in the matters hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a plan view of a draw-head containing one practical form of my invention. Fig. 2 is a plan section thereof, taken on line 2 2 of Fig. 3. Fig. 3 is a vertical longitudinal section taken on line 3 3 of Fig. 1. Fig. 4 is a section similar to Fig. 3, showing the parts in changed position. Fig. 5 is a detail section also like Fig. 3, but showing still another position of the parts. Fig. 6 is a section showing a modified form of the main or locking detent.

First referring to the construction shown in Figs. 1 to 5 of the drawings, A indicates the draw-head, and *a* the draw-bar, the same being of the usual form.

B indicates the knuckle, which is pivoted to the draw-head by a pivot-pin *b* and is provided with a locking tongue or tail B′, which is arranged generally at right angles with the main or interlocking part of the knuckle and is adapted to swing rearwardly into the cavity of the draw-head when the knuckle is in its holding or interlocking position, as usual in such couplings.

C indicates the main or primary locking-detent, which is adapted to be moved automatically out of the path of the tail of the knuckle by contact of said tail therewith as the latter is moving rearwardly or inwardly and which falls in front of the said tail when the latter reaches its rearward position and thereby locks and holds the tail and knuckle from movement. Said detent C is shown as mounted to swing in a vertical plane about a horizontal transverse pivot *c*, located at the rear lower part of the draw-head, the detent extending in an upward and forward inclination to a point above the open end of the draw-head and standing normally in an inclined position across the path of the tail of the knuckle, so that when said tail is swung rearwardly it will encounter the lower or outer surface of the detent and by its action thereon will lift the free or outer end of the detent, so as to pass beneath the same. At the termination of its rearward movement the tail of the knuckle will stand at one side of the detent, which will fall into or across the path of the tail and thereby lock the same and the knuckle from movement until the detent is moved or lifted by hand to release the knuckle.

The rear end of the detent is shown as located just above the floor or bottom of the cavity of the draw-head and the pivot-pin *c* as extending through the side walls of the cavity and across the latter. The upper or outer end of the detent is shown as located within a hollow upward extension or box A^2, preferably cast on the upper part of the draw-head, the downward movement of the detent being limited by contact with the front wall *a′* of the said box, while its upward or backward movement carries it into the upper and rear part of the box and adjacent to the top wall a^2 and rear wall a^3 thereof.

A spring D is applied to throw or hold the

detent normally into its locked position, said spring being herein shown as made of leaf form and attached rigidly to the rear end of the detent, so as to bear at its free end against the floor of the draw-head cavity.

E indicates an auxiliary locking-arm which is pivoted to the detent by a pivot-pin *e* and is adapted to engage with an abutment or shoulder a^4 on the draw-head in such manner as to lock or hold the detent from movement when the latter is in its locked position, said locking-arm serving both as a means of so locking the detent and as a means through which hand-power is applied to the detent for the purpose of operating the same in uncoupling. The locking-arm extends rearwardly from its point of connection with the detent and is so disposed with relation to the locking-shoulder that by the lifting of the rear end of the arm the latter will be released from the shoulder.

Attached to the forward or pivoted end of the locking-arm E is a depending trip-arm E′, which extends forward of the outer or working face of the detent and in the path of the tail of the knuckle, so that as said tail moves rearwardly it will encounter and move said trip-arm, and thereby lift the rear end of the locking-arm free from the shoulder a^4 before the detent itself is struck by said tail. Provision is thereby made for the automatic release of the detent in the act of coupling.

In connection with the locking-arm E, arranged as described, actuating connections are employed, embracing a link F, which is pivoted to the arm near its rear end and to which is attached a chain *f*, by which the link may be connected with an actuating rock-shaft or other part adapted to be operated by the hand in the act of uncoupling. The locking-arm being arranged to extend rearwardly from its pivotal point, it follows that when its rear end is pulled upwardly it will be released from the locking-shoulder and the detent itself will be drawn upwardly or rearwardly, so that by pulling on the chain *f* not only may the arm be released, but the detent itself be drawn out of the path of the tail of the knuckle, with the effect of releasing the latter.

A hole a^5 for the passage of the locking-arm is made in the top wall a^2 just forward of the shoulder a^4, which latter is made close to the said top wall, so that the arm E will pass freely through said hole when released from the shoulder and drawn upward for the purpose of releasing the locking-detent. In connection with the locking-shoulder thus arranged the link F is pivoted to the arm E at a point near its end and below the upper edge of the shoulder. It follows from this construction that if the link be drawn rearwardly at its upper end its middle part will act on the edge of the shoulder, as on a fulcrum, with the result of throwing the end of the arm E forwardly and upwardly until free from the locking-shoulder. The operation of the link F in such case is clearly shown in Fig. 5, in which the chain *f* is shown as drawn horizontally backward. The bringing of a tension on the chain in this direction is only likely to occur in case of the breakage of a draw-bar or the attachments which secure the same to the car; but the arrangement of the parts described is of utility in such event, for the reason that the rearward draft on the chain (which will be attached to the car) as the draw-head is carried forward on the breaking of the draw-bar will have the effect of disconnecting the coupling and releasing the loosened draw-bar, so as to prevent it from being released and dropped on the track.

In Fig. 6 I have shown a modified form of my invention which is in all respects like that before described, with the exception that the locking-detent C is in this instance pivoted at its upper end to the draw-head, so that its lower rear end (instead of its upper forward end) swings upwardly and backwardly to permit the passage of the tail of the knuckle in the act of coupling.

In the operation of couplings which are without auxiliary or safety locking devices for the primary locking device or detent C it is found that uncoupling will sometimes occur by the gradual movement or "creeping" of the said detent under the jarring of the parts and pressure of the tail of the knuckle. The liability of such occurrence will be better understood by consideration of the fact that a slight looseness of the knuckle on its pivot, combined with the vertical vibrations of the draw-heads, will produce vertical oscillations of the tail of the knuckle, and the latter being pressed against the detent and then held by the strain on the knuckle with such force as to hold the detent from slipping backward each time it may be moved by the oscillations of the tail it follows that if such oscillations happen to move the detent toward its unlocked position the uncoupling of the cars by the release of the knuckle is very likely to occur. Liability of such an occurrence is entirely obviated by the use of the secondary or auxiliary locking device described, which holds the detent positively from movement, except in the act of automatic coupling or of uncoupling by hand, the locking-arm of the auxiliary locking device in either of these cases being moved to release it from engagement with the draw-head and to thereby release the detent and leave the latter free to be moved before any movement of the detent itself takes place.

I claim as my invention—

1. The combination with a draw-head and pivoted knuckle, of a locking-detent for the knuckle and safety locking-arm pivotally connected with the detent and adapted to engage a shoulder on the draw-head and having a trip-arm which projects into the path of the tail of the knuckle, said locking and trip arms

being constructed to move in the same plane with the detent and connections for operating the detent by hand attached to said locking-arm in such position that strain on the said connections will move said arm to release the same before the detent itself is moved.

2. The combination with a draw-head and a pivoted knuckle, of a locking-detent for the knuckle and a safety locking-arm pivotally connected with the detent at a point remote from the pivot of the latter and adapted to be engaged with and disengaged from a shoulder on the draw-head by an oscillatory movement of its free end; said arm being provided with a part which projects into the path of the tail of the knuckle and means for moving said arm and detent by hand, attached to the arm near the free end of the latter and acting laterally on the same in a direction to disengage it from the shoulder.

3. The combination with a draw-head and pivoted knuckle, of a rearwardly-movable locking-detent for the knuckle, a safety locking-arm which is pivoted to the detent and extends rearwardly therefrom, said arm being adapted to engage a shoulder on the draw-head and being provided with a part which projects into the path of the tail of the knuckle and hand actuating connections so attached to the arm that an upward pull thereon will release the rear end of the arm and also actuate the detent.

4. The combination with a draw-head and pivoted knuckle, of a rearwardly-movable locking-detent for the knuckle, a safety locking-arm pivotally connected with the detent and extending rearwardly therefrom and a forwardly-facing abutment or shoulder on the draw-bar adapted to engage the rear end of the arm and from which the same may be disengaged by an upward pull.

5. The combination with a draw-head and a pivoted knuckle, of a locking-detent for the knuckle, a safety locking-arm pivoted to the detent and extending rearwardly therefrom, said arm being provided with a part which extends into the path of the tail of the knuckle, a forwardly-facing abutment or shoulder on the draw-head adapted to engage the rear end of the arm and connections for operating the detent by hand comprising a link which is pivoted to the locking-arm below the said shoulder or abutment and in such position that a rearward pull on the upper end of the link will force the end of the arm above the said shoulder.

6. The combination with a draw-head, and a pivoted knuckle, of a locking-detent for the knuckle arranged to swing upwardly and rearwardly, a safety locking-arm pivoted to the upper part of the said detent and extending rearwardly therefrom, said arm being provided with a depending, rigidly-attached trip-arm which extends at the front of the detent in the path of the tail of the knuckle, a shoulder on the draw-head adapted to engage the said locking-arm and connections for operating the detent by hand connected with said arm and adapted to release the same by an upward pull thereon.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 9th day of January, A. D. 1897.

PAUL M. REAGAN.

Witnesses:
C. CLARENCE POOLE,
CHARLES G. MASON.