

(No Model.)

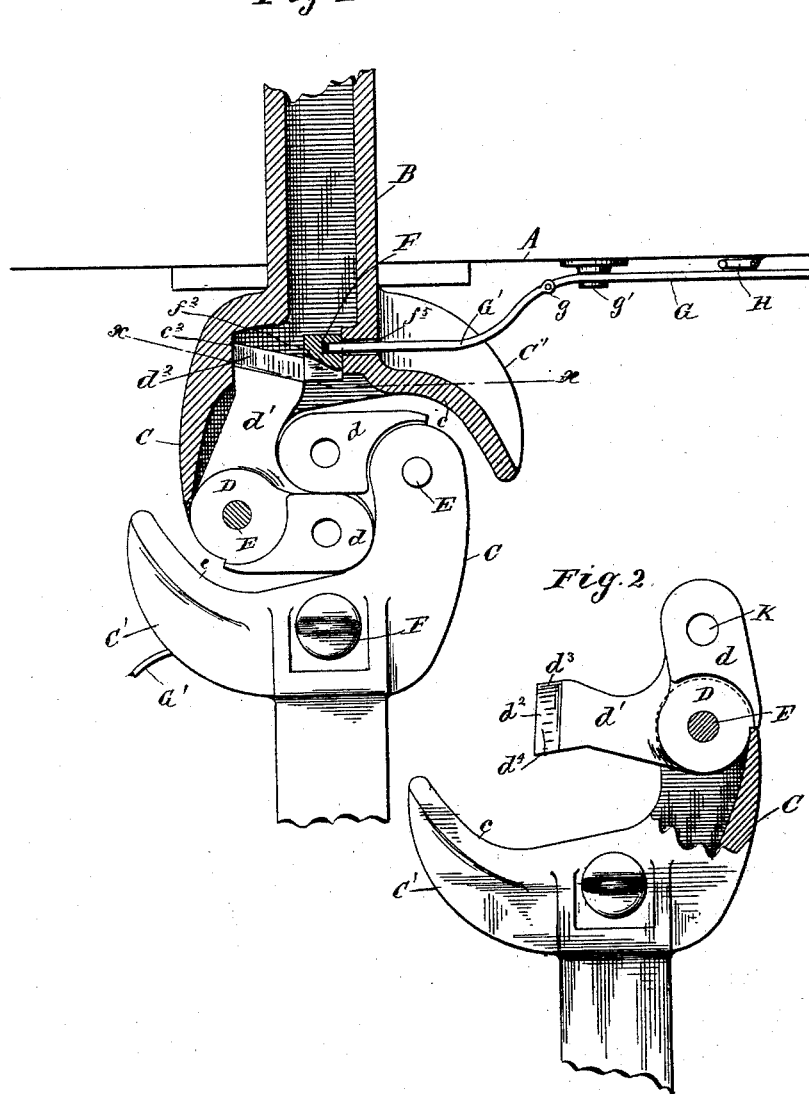
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L. GROFF.
CAR COUPLING.

No. 456,562.

Patented July 28, 1891.

Fig. 1



Witnesses.
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Stewellhuyn Groff
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 5. *Fig. 6.* *Fig. 4.*

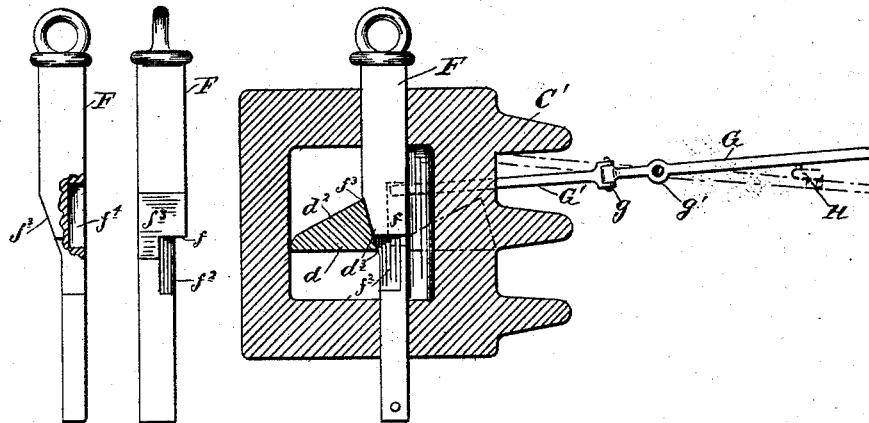
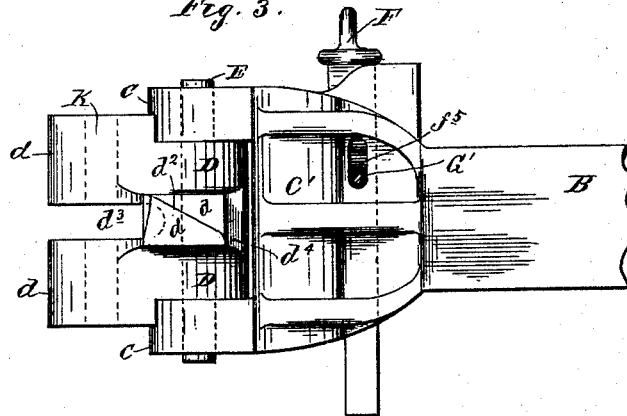


Fig. 3.



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UNITED STATES PATENT OFFICE.

LLEWELLYN GROFF, OF MINNEAPOLIS, MINNESOTA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 456,562, dated July 28, 1891.

Application filed November 10, 1890. Serial No. 370,925. (No model.)

To all whom it may concern:

Be it known that I, LLEWELLYN GROFF, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Automatic 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 that class of automatic car-couplers known as "twin jaws," all the parts of which are right and left duplicates of each other, and has for its object to provide an improved construction.

A car-coupler embodying my invention is illustrated in the accompanying drawings.

Therein, like letters referring to like parts throughout, Figure 1 is a view, partly in plan and partly in section, showing the jaws in their coupled position. Fig. 2 is a plan view of one of the jaws in its uncoupled position, some of the parts being broken away and the coupling-hook opened upward to its limit. Fig. 3 is a right side elevation of the parts shown in Fig. 1, detached from the car. Fig. 4 is a vertical cross-section on the line X X' of Fig. 1, looking toward the car. Fig. 5 is a front view of the locking-pin detached, with a part broken away; and Fig. 6 is a left side view of the same.

A represents part of the car-frame.

B is the draw-bar, and C C' are the jaws constituting the coupling-head having the curved buffer-surface *c*.

D is the coupling-hook, having the nose-piece *d* and the tail-piece *d'*.

E is the pivot-pin or journal securing the coupling-hook to the jaws C.

F is the locking-pin.

The parts so far described are all of a common and well-known construction.

I will now describe my improvements.

The tail-piece *d'* of the coupling-hook is provided with the wedge-shaped surface *d''* on its top face, as is best shown in Fig. 4. The outer vertical face of this tail-piece is also inclined or wedge-shaped, as shown at *d'''*, in Fig. 4.

The locking-pin is provided with a square shoulder *f* on its front face, with which the

wedge-surface *d''* on the tail-piece co-operates to lift the pin in the coupling movement. The locking-pin is also cut away on its face at an angle from the right to the left side, as shown at *f''*, for the passage or clearance of the tail-piece. The left side face of the locking-pin is also provided with an inclined surface *f'''* for co-operation with the inclined surface *d'''* on the heel-piece. The right side face of the locking-pin is provided with a vertical slot, as shown at *f''*. The jaw C is also provided with a corresponding slot *f'''*.

G G' is a sectional lifting-lever, the two parts of which are united by a clevis-like joint *g*. The outer arm or section G of this lever is pivoted to the frame A by horizontal pivot-pin *g'*. The end of the inner arm of the lifting-lever passes through the slot *f'''* in the jaw C' and works freely in the slot *f''* in the locking-pin. It will be seen that this lifting-lever is pivoted to swing in the vertical plane on the pivot-pin *g'*, while the inner section G' is permitted a pivotal motion with reference to the outer section G lengthwise of the car.

H is a crank-shaped latch attached to the frame A for holding the inner end of the lever G G' in its uppermost position. It should be further noted that the tail-piece *d'* of the coupling-hook has a vertical surface *d''* on its back, which bears against a corresponding vertical face *e''* on the inside of the jaw C.

The operation and advantages of these special features are as follows: The shoulder on the locking-pin being square and the top surface on the heel-piece wedge-shaped will render the cam-like action of the coupling-hook effective to lift the pin without any jar and with the minimum of friction and power. Hitherto the shoulder on the locking-pin has been reversely inclined to correspond with the inclined surface on the heel-piece. Hence in the coupling action the two parts were thrown together with a slam, with resulting jar and great wear and tear, also involving an element of uncertainty as to whether or not the pin would be lifted. The advantage of the inclined surface *f'''* on the left side face in co-operation with the inclined surface *d'''* on the heel-piece is that it enables the locking-pin to take up all the clearance and lost motion between the locking-pin and the inner

face of the jaw C, thus keeping the heel-piece in a constant position, avoiding play and the wear and tear which would otherwise result from the wobbling motion of the tail-piece.

5 These two inclined surfaces also give another advantage—viz., that the locking-pin can be lifted, if so desired, when the tail-piece is under strain; in other words, when the car is in motion. The relation of the slots f^4 and

10 f^3 enables the lifting-lever to limit the downward motion of the locking-pin, holding the same in the proper position for the coupling action. The advantage of pivoting this lifting-lever in the vertical plane is that all danger to the operator is thereby avoided. There

15 is no angular projection from the ends of the car. The advantage of the sectional construction and the clevis-joint is that it permits the lever to adapt itself to the in-and-

20 out motion of the draw-bar. Of course it is obvious that when the locking-pin has been raised to its uppermost position it may be held at that point by throwing the latch over the outer arm of the lifting-lever.

25 The general operation of the coupling-hooks is obvious and well understood. The two hooks will close together in any and all positions in which they may happen to be left,

excepting one—viz., when the heel-pieces should both be locked in their innermost positions. 30

For the use of this coupler with the ordinary link and pin each coupler-hook is provided with a perforation K in its nose d for the application of an ordinary coupling-pin. 35

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

1. The combination, with the locking-pin, of the hand-lever for lifting the same, pivoted to swing in the vertical plane and constructed in two sections united between the pivot and the locking-pin by a joint permitting a pivotal motion of the inner section lengthwise of the car. 40

2. The combination, with the locking-pin having a vertical slot, of the coupler-head having a corresponding slot, and a pivoted lever having its inner end working in said slots for lifting the pin and limiting its downward movement, substantially as described. 50

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

LLEWELLYN GROFF.

Witnesses:

JAS. F. WILLIAMSON,
FRANK D. MERCHANT.