

(No Model.)

W. R. FINE.
CAR COUPLING.

2 Sheets—Sheet 1.

No. 552,608.

Patented Jan. 7, 1896.

Fig. 1.

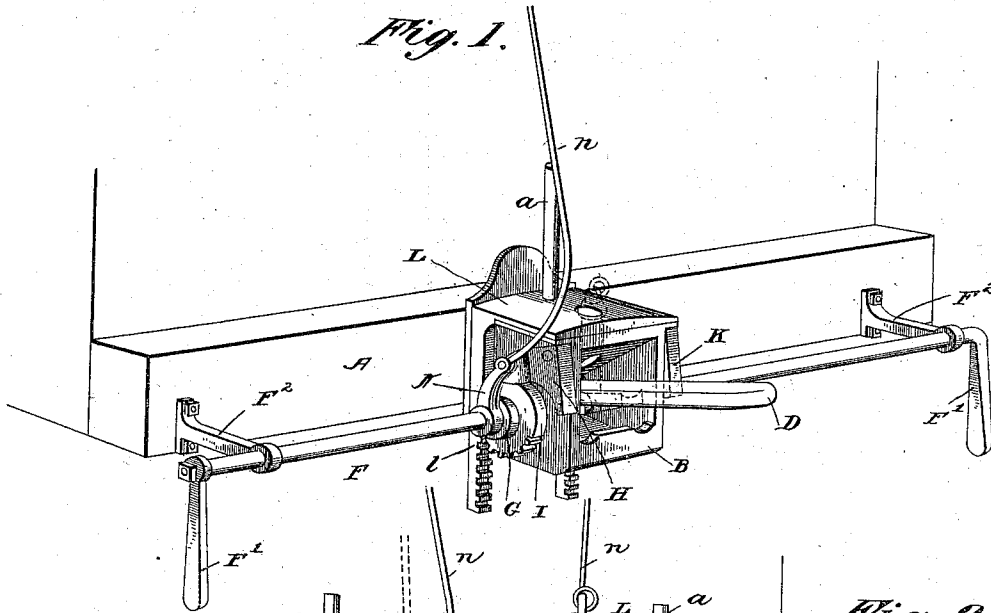


Fig. 2.

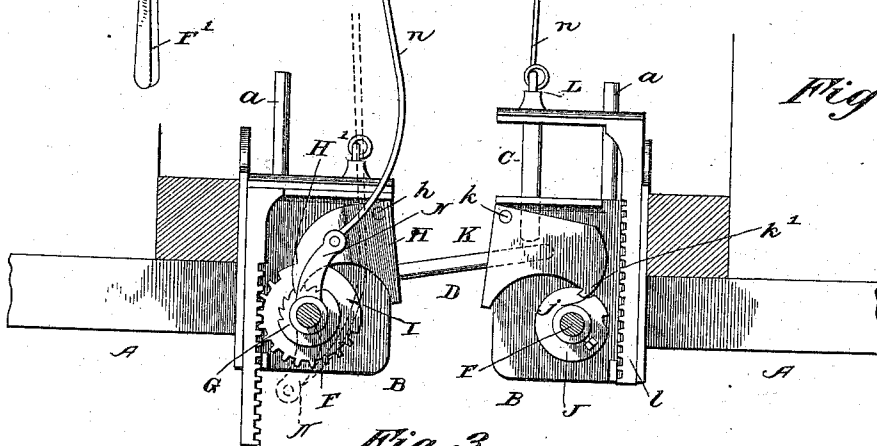
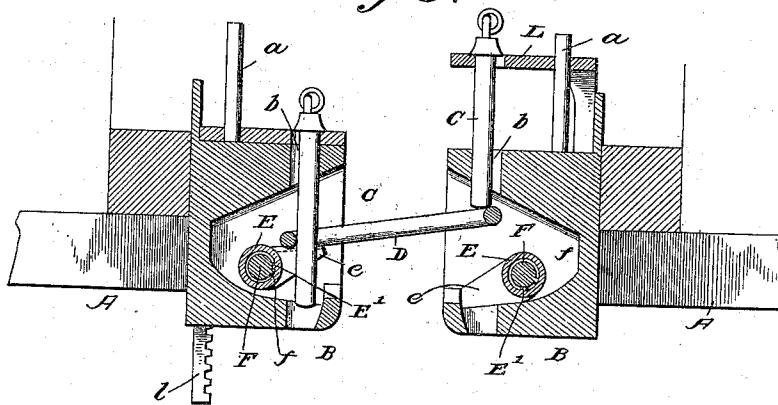


Fig. 3.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

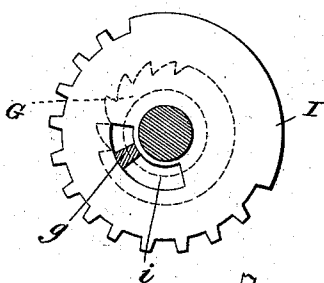


Fig. 5.

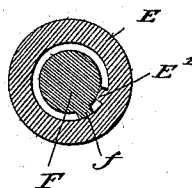


Fig. 6.

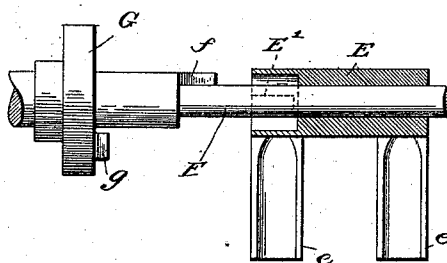
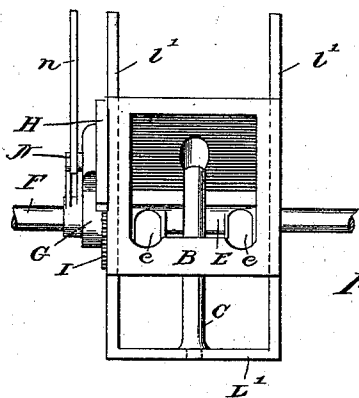


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM R. FINE, OF NEWPORT, TENNESSEE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 552,608, dated January 7, 1896.

Application filed April 9, 1895, Serial No. 545,049. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. FINE, a citizen of the United States, residing at Newport, in the county of Cocke and State of Tennessee, 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.

This invention relates to an improvement in car-couplers, the object being to simplify and perfect a coupling mechanism for cars and other vehicles so that space may be economized, cheapness insured, an automatic operation obtained and efficiency of action promoted; and the invention therefore consists essentially in the construction, arrangement and combination of parts, substantially as will be hereinafter described and claimed.

In the annexed drawings, illustrating my invention, Figure 1 is a perspective view of my improved car-coupler represented as practically applied to a car. Fig. 2 is a side elevation of the coupler applied to the two adjacent draw-heads of two cars and represents at the left hand the mechanism on one side of the draw-head and at the right hand the mechanism on the right-hand side of the draw-head, the pin in the left-hand draw-head being in engagement with the link and the pin in the right-hand draw-head being lifted to its upper position above the link. Fig. 3 is a central sectional elevation of the mechanism shown in Fig. 2. Fig. 4 is an enlarged detail view of the segment-gear and ratchet devices which are employed in connection with the pin-lifting and link-lifting mechanism. Fig. 5 is an enlarged cross-sectional view of the link-lifting sleeve and the shaft running through it. Fig. 6 is an enlarged detail sectional plan view of a portion of the link-lifting devices. Fig. 7 is a side elevation of a modified form of my improved coupler having the pin supported beneath the draw-head instead of being suspended above it as in the other figures and having the other parts reversely arranged to accommodate the new position of the pin-operating mechanism. Fig. 8 is a front elevation of a draw-head and the coupling mechanism ar-

anged therewith after the manner of the modification shown in Fig. 7.

Similar letters of reference designate corresponding parts throughout the different figures of the drawings.

A designates the end of a railway-car, and B the draw-head attached centrally thereto in the usual position, said draw-head being of any suitable size and shape and being hollow, as shown, and having the vertical slot B, wherein is accommodated the vertically-movable coupling-pin C. Said pin C is generally carried by the vertically-movable horizontal plate L, that rests normally upon the top side of the draw-head B and is provided with the downwardly-projecting arms *ll*, which lie on the opposite side of the draw-head and are made in the form of rack-bars, as shown, the pin C having a shoulder or head at the upper end thereof so that it can thereby be supported or hung in a perforation in the plate L.

On the upper side of the draw-head B is a rigid upwardly-extending pin or rod *a*, which passes through a perforation in the plate L. As said plate L travels up and down it moves upon this rod *a*. The plate L normally rests on the draw-head B, but is vertically movable under the action of certain of the mechanical parts, and when it is lifted it obviously carries with it the pin C and places the latter in the position shown in Fig. 2, whence it can easily drop into engagement with the link D whenever the latter may be introduced into the draw-head below the pin for the purpose of coupling. Although in Figs. 1, 2 and 3 I have represented the coupling-pin C as supported or hung upon the plate L, which is on top of the draw-head, yet I do not wish to be confined to this arrangement of the coupling-pin; but if desired said pin may be arranged below the draw-head in the manner shown in Figs. 7 and 8, in which case it will be carried by the plate L', which is vertically movable below the draw-head and is provided with the upwardly-projecting rack-bars *l' l'* arranged on opposite sides of the draw-head and operating in like manner with the downwardly-projecting rack-bars *ll*. (Shown in Figs. 1, 2, and 3.)

Within the bottom of draw-head B is a short horizontal tube or sleeve E. (See Figs. 3, 5,

and 6.) This sleeve E has one or more forwardly-projecting arms *e*, there being two of these arms in the example shown in the drawings, and said arms being preferably grooved or recessed on their upper edges, as shown, although this is not essential. Through the sleeve E, and likewise through the sides of the draw-head B, passes a horizontal shaft or rod F, which extends from one side of the car to the other, being journaled in the horizontal projecting arms F² F² and being provided at each end with a handle F'.

The shaft F is loose within the sleeve E, as shown in Figs. 3 and 5, and may make nearly an entire revolution without affecting the position of said sleeve or moving it in the least; but I have placed thereon a small lug or projection *f*, which is within the sleeve E, (see Figs. 3 and 5,) and which is adapted to come into contact with a similar lug E' on the interior face of said sleeve. When this contact occurs, as shown at the left-hand in Fig. 3, then the rotation of shaft F will obviously result in partially rotating the sleeve E and lifting the forwardly-projecting arms *e e*, thereby lifting the link D which may be resting thereon and consequently adjusting the said link to the desired height to enable it to enter with facility and accuracy the mouth of the opposite draw-head, no matter what the elevation of said draw-head may be, whether it corresponds to the elevation of the draw-head that carries the link or not.

When the shaft F is reversely rotated and the lug *f* consequently withdrawn from contact with the lug E', the result will be that the arms *e* will again drop down into the bottom of the draw-head and with them will drop the link into its normal position. Thus it will be understood that by the rotation of the shaft F in one direction it will act upon the sleeve E and the arms *e* to accomplish the lifting of the link. When it is rotated in the reverse direction it will be obvious that it can be allowed to accomplish nearly an entire reverse rotation freely within the sleeve E, before the lugs *f* and E' will again engage and encounter each other, and during such reverse revolution of the shaft F, the pin-lifting devices may be brought into action in the manner which I shall proceed presently to explain.

On the shaft F adjacent to one of the sides of the draw-head B is a ratchet-wheel or segment ratchet-wheel G. This is engaged by a pawl H pivoted at *h* to the side of draw-head B and having its rear part H' heavier than its front end, so that said front end normally projects in an inclined position slightly beyond the vertical edge of the mouth of the draw-head, as shown in Figs. 1 and 2, where it will be in a position to be struck by the adjacent draw-head when two cars come together for the purpose of coupling, and the result of such contact with the inclined projecting face of the pawl H will be to disengage the rear end H' from the teeth of the ratchet-wheel and allow the arms *e e*, which have previously been

lifted by the rotation of the shaft F, to drop down into their lower position. It will be understood that when the shaft F is partially rotated, with the lugs *f* and E' in contact with each other, the ratchet-wheel G which is fast on shaft F will likewise be rotating and will be held by the pawl H in whatever position it may have been caused to take. Thus the link will be held lifted by this link-lifting mechanism until the two draw-heads meet, and the result of such meeting will be the disengagement of the pawl H through the action upon its outer edge, as already explained, and then the links will drop down normally into the bottom of the draw-head as before. Likewise on the shaft F, near the ratchet-wheel G, is a loose gear I, being generally simply a segment-gear. (See Figs. 1 and 2, and especially Fig. 4, the latter figure showing these parts in an enlarged view.) This gear-wheel I is provided on its side face near the ratchet-wheel G with a slot *i* (see Fig. 4) which is engaged by a lateral lug or cog *g* on the side face of the ratchet-wheel G. This segment-gear I engages one of the rack-bars *l*. Hence by rotating the shaft F in the reverse direction already referred to—that is to say, by revolving it in a direction reverse to that in which it is revolved when the lugs *f* and E' are in contact for the purpose of lifting the link—the result will be that the lug *g* will act in the end of the slot *i* and cause the gear-wheel I to be thereby bound to the shaft so that it will rotate sufficiently to lift pin-carrying plate L into its upper position, as shown in Figs. 2 and 3, where the pin C will be in readiness for coupling.

On the shaft F at the opposite side of the draw-head B is a disk J, (see Fig. 2,) having several teeth *j* in its periphery, which teeth are engaged by a pawl K, or "swinging block," as it may be termed, which is pivoted to the side of the draw-head at *j* and which has its rear part heavier than its front end, said rear part being provided with a tooth *k'* which is adapted to engage the teeth *j*. The front edge of the pawl K normally occupies a position slightly beyond the vertical edge of the draw-head and is normally inclined in that position in like manner with the pawl H already explained. Therefore when two draw-heads come together in close contact for the purpose of coupling, the result will be that they will not only strike the pawl H but they will also strike the pawl K, which will cause the teeth *k'* of pawl K to be disengaged from the toothed disk J. When the shaft F is reversely rotated for the purpose of lifting the pin C, the disk J, which is fast on shaft F, will obviously be reversely rotated and will be held in any position to which it may be rotated by means of the aforesaid pawl K. Consequently the pin C will be held in its lifted position until the two draw-heads come into contact, when the action of the draw-head in striking the pawl K and disengaging it from the disk J will result in allowing the pin C to drop

downward through its slot *b* and engage the link lying beneath.

On the shaft *F* is a rigid arm *N*, to which is attached a rod or cord *n* running to the top of the car. Ordinarily the shaft *F* will be rotated in one direction or the other by means of the handles *F'* *F'* provided at the opposite end of the shaft, but in the case of freight-cars or cars where these handles cannot be used with facility and where it is desired to operate the coupling mechanism from the top of the car the rod or cord *n* will be employed to advantage.

I have already alluded to the fact that sometimes it will be found convenient to support the pin *C* below the draw-head instead of above it. This location of the pin is shown in Figs. 7 and 8. The pin in this instance is carried by the plate *L'*, having the rack-bars *l'*. For the purpose of operating this modified form of coupler I rearrange the segment-gear, the segment-ratchet and the toothed disk, whereas in Figs. 1 and 2 the segment-gear and the segment ratchet-wheel are located at the left-hand side of the draw-head on shaft *F* and the toothed disk is situated at the right-hand side of the draw-head on the shaft *F*, a rearrangement is made in Figs. 7 and 8 and the segment ratchet-wheel and the segment gear-wheel are situated at the right-hand side of the draw-head and the toothed disk *J* is situated at the left-hand side of the draw-head. Otherwise the arrangement and application of the several mechanical parts is substantially the same in the modified form as in the original example.

Of course I do not intend to be restricted precisely and exactly to either the original form or the modified form, but reserve the liberty of varying and rearranging the details of construction in such a manner as the exigencies of individual cases may seem to demand.

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

1. In a car coupler and link-lifting mechanism consisting essentially of an arm-provided sleeve having an interior lug, and a horizontal operating shaft passing loosely through said sleeve and having a lug adapted to engage the sleeve lug and a pin lifting mechanism connected to the operating shaft, substantially as described.

2. In a car coupler and link-lifting mechanism, consisting essentially of an arm-provided sleeve having an interior lug, a hori-

zontal operating shaft passing through said sleeve and having a lug adapted to engage the sleeve lug, and a pin-lifting mechanism, consisting of a pin-carrying plate and a gearing connection between it and the operating shaft, substantially as described.

3. In a car coupler, the combination of the horizontal operating shaft, a pin-carrying plate having a rack arm, a gearing connection between the shaft and the rack and a detaining pawl for the shaft, the forward face of which pawl projects beyond the front face of the drawhead, substantially as specified.

4. In a car coupler, the combination with the link-lifting device, consisting of an arm-provided sleeve, a horizontal operating shaft passing through said sleeve and engaging it, a ratchet on said shaft and a pawl engaging said ratchet, said pawl having its forward end projecting beyond the front face of the drawhead so as to be struck by the opposite drawhead, substantially as described.

5. In a car coupler, the combination of the interiorly lug-provided sleeve, having a projecting arm, a lug-provided operating shaft passing through said sleeve, a rigid ratchet wheel on said shaft, a pivoted pawl engaging said ratchet, a pin-carrying plate having a rack arm engaging a gear on the operating shaft, a toothed disk on the operating shaft and a pivoted pawl engaging it, substantially as described.

6. In a car coupler, the combination of the operating shaft, having handles, the pin-carrying plate having a downwardly-projecting arm, a vertical guide rod for said plate, link-lifting devices consisting of an interiorly lug-provided sleeve having an arm or arms, through which sleeve passes the operating rod having a lug thereon and detent devices for holding the operating rod in any position to which it may be rotated, substantially as described.

7. The combination of the draw-head, the loosely-arranged interiorly lug-provided sleeve having an arm, the operating shaft passing through said sleeve and having a lug adapted to engage the sleeve lug and a detent device for the shaft and a pin-lifting mechanism connected to said shaft, substantially as described.

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

WILLIAM R. FINE.

Witnesses:

CHAS. A. RAGAN,
FRED E. TASKER.