No. 620,300. Patented Feb. 28, 1899.

J. A. GRAHAM, J. A. McGEE & F. H. STARK.

CAR COUPLING.

(Application filed May 7, 1898.)

(No Model.)

Fig. 1.

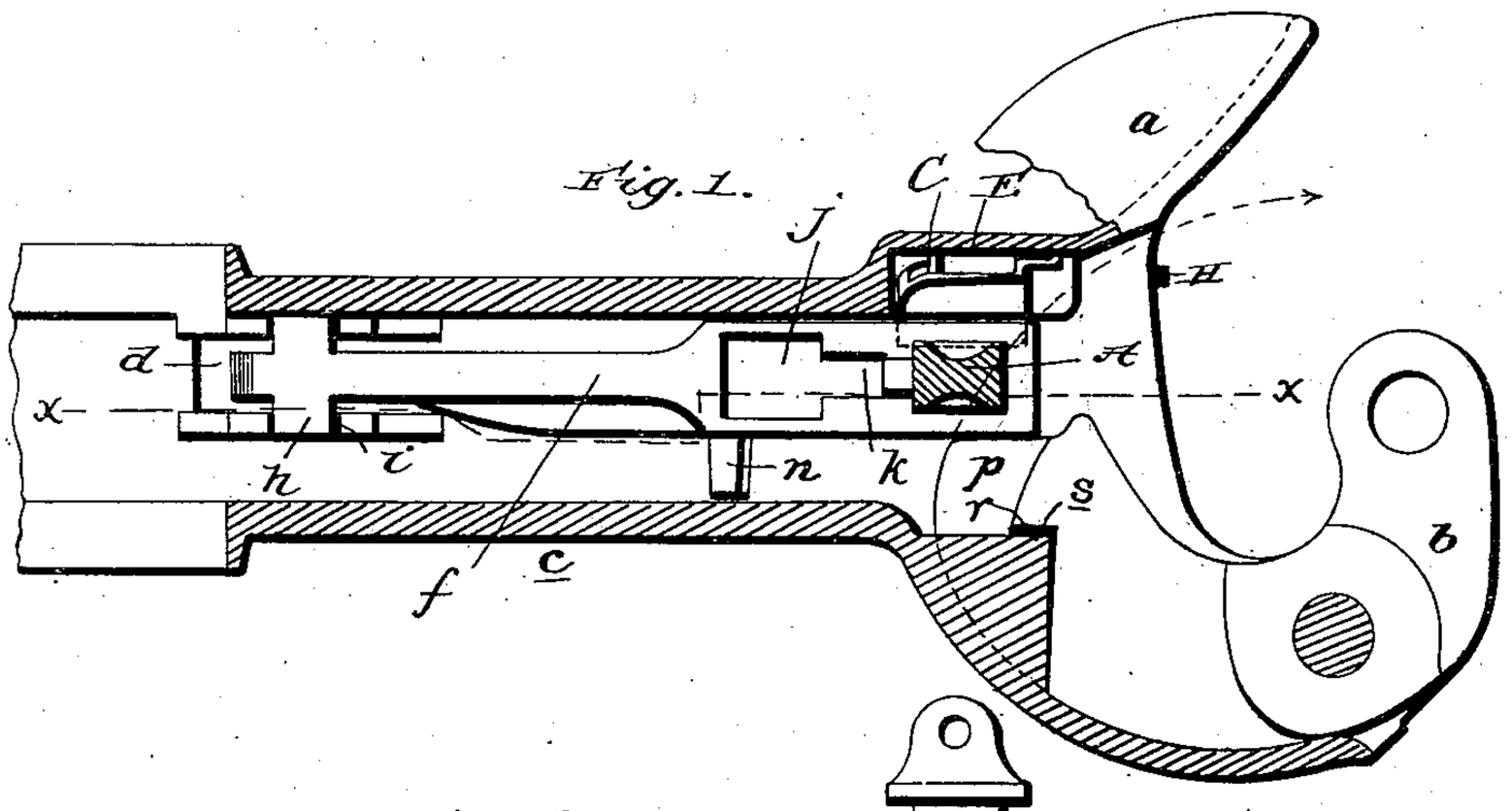


Fig. 2.

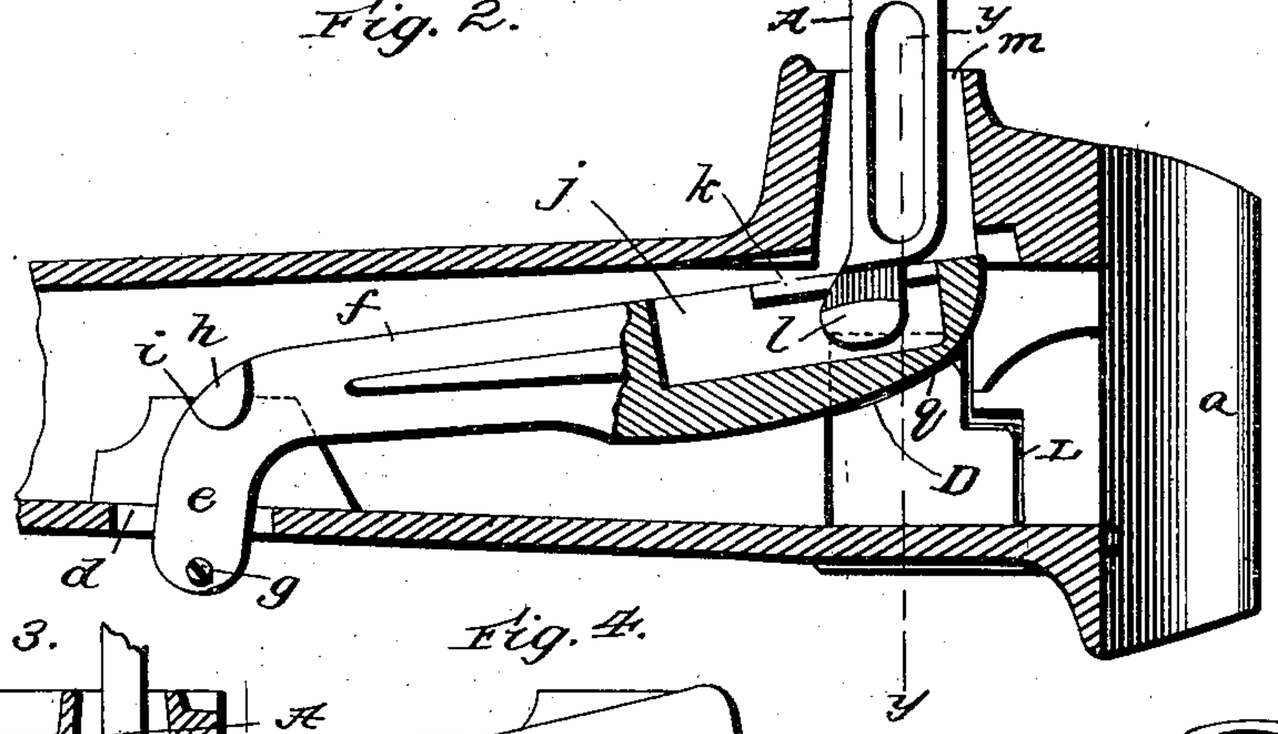


Fig. 3.

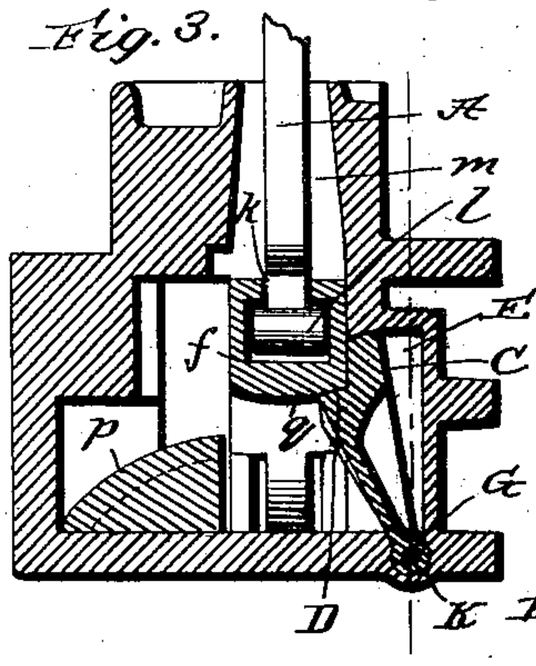


Fig. 4.

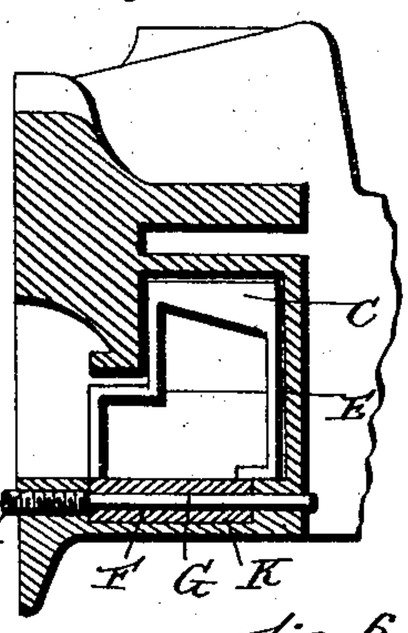


Fig. 5.

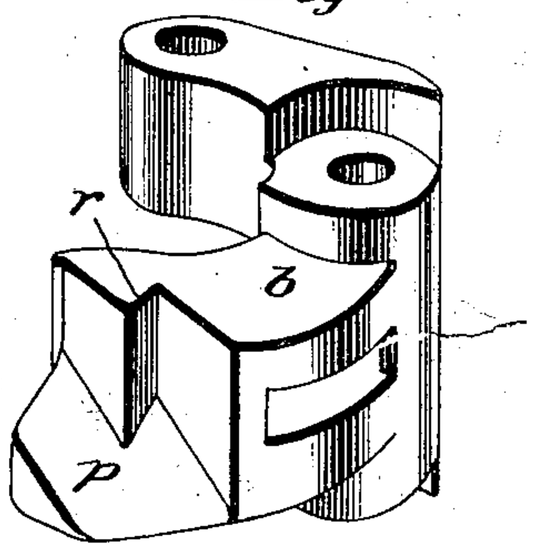
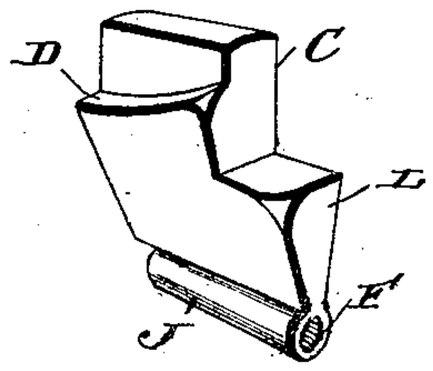


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES A. GRAHAM AND JAMES A. McGEE, OF LORAIN, AND FRANK H. STARK, OF ELYRIA, OHIO.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 620,300, dated February 28, 1899.

Application filed May 7, 1898. Serial No. 680,037. (No model.)

To all whom it may concern:

Be it known that we, JAMES A. GRAHAM and JAMES A. MCGEE, of Lorain, and FRANK H. STARK, of Elyria, in the county of Lorain and State of Ohio, citizens of the United States, have invented new and useful Improvements in Car-Couplings, of which the following is a specification.

This invention relates to improvements in automatic car-couplers of the Master Car-Builders' type, in which a pivoted or hinged knuckle is employed in conjunction with a pivoted locking-bar to engage the arm or tail of the knuckle, and it contemplates the provision of a lock or rest for the bar to be tripped by the arm of the knuckle, so that said locking-bar may be held from and also thrown into engagement with the knuckle when desired, thereby insuring a proper coupling by impact and avoiding the necessity of securing or adjusting the usual pin-operating shaft and the employment of short connections between said shaft and pin, all of which result in the saving of labor and avoidance of danger and loss of life.

With the foregoing ends in view the invention will be fully understood from the following description and claim when taken in connection with the annexed drawings, in which—

Figure 1 is a horizontal longitudinal sectional view of a draw-head with our improvements applied and showing the knuckle in a locked position. Fig. 2 is a sectional view taken in a plane at right angles to Fig. 1 and on the line indicated by *x x* on said figure. Fig. 3 is a vertical sectional view taken in the plane indicated by the dotted line *y y* on Fig. 2. Fig. 4 is a sectional detail view. Fig. 5 is a perspective view of the movable jaw of knuckle removed, and Fig. 6 is a perspective view of the improved lock or prop removed.

In illustrating our invention we have shown a draw-head of the "Master Car-Builders'" or "Janney" type, having a fixed jaw *a* and a hinged or pivoted jaw *b*, commonly termed a "knuckle." In this type of coupler the neck or shank *c* is provided at a suitable point in its floor or bottom with a longitudinal vertical slot *d*, through which the inner downwardly-curved end *e* of a locking-bar *f* is passed and secured in position by a cross pin or key *g*. This locking-bar is provided near its inner end with lateral lugs *h*, which rest in suitable curved bearings *i*, and said bar is provided on its forward upper side with a slot *j*, which opens into a forwardly-directed slot *k* of less width to receive a T-head *l* on the lower end of a pin A. The draw-head is also provided with the usual vertically-disposed pin-aperture *m* and the locking-bar with a laterally-disposed lug or arm *n* to contact with one of the side walls of the shank and prevent undue lateral movement of said locking-bar during operation.

The knuckle *b*, which is mainly of the ordinary construction, has the inner end of its tail or arm inclined toward its free end and also laterally, as shown at *p*, to engage the beveled forward end *q* of the locking-bar and also to engage our improved lock or prop for said bar, as will be hereinafter more fully described. The arm of the knuckle is shouldered, as shown at *r*, to engage with an abutment *s* in the draw-head, as better shown in Fig. 1 of the drawings.

The pin A is designed to be connected by means of a chain or the like with the operating-shaft usually journaled to the front wall or other suitable part of a car, so that said pin, and consequently the locking-bar, may be raised by the manipulation of said shaft and connection.

In couplers of this character, and which are the most desirable type, it has been found necessary to lock the operating-shaft in uncoupling and to employ labor to disengage the shaft, so as to place the coupler in a position to act automatically, and it has also been found necessary to so adjust the connection between the operating-shaft and the pin and its locking-bar that no slack may accumulate in the attachments. With a view of meeting these requirements and permitting the use of long connections between the operating-shaft and knuckle-lock we provide a lock or prop for said locking-bar. This lock or prop operates by gravity in taking beneath the locking-bar when elevated and allows said

bar to drop into a locked position when the prop has been engaged by the tail or arm of the knuckle. It is of a substantially V form in vertical section, with its reduced end lowermost, having a flat outer side C and its inner side shouldered at a suitable point from its top, as at D, and this shoulder is preferably pitched toward one end, as shown, so as to conform to the bevel or curvature on the forward under side of the locking-bar. The outer side of this lock or prop is designed to contact with the adjacent inner side wall of the draw-head when in a vertical position and when the coupler is in a locked position as well as when the knuckle has been swung on its pivot. The lock or prop is arranged to one side of the locking bar, and a chamber E is usually provided in the draw-head to receive said lock or prop. The locking-bar D when in its lower operative position rests at the side of the lock or prop and serves to hold the same in the chamber E. When, however, the locking-bar is raised, the lock or prop will, by reason of its upper portion being larger and heavier than its lower portion, immediately assume a position below the locking-bar, as shown in Fig. 3. Making the upper portion of the lock or prop heavy, as described, renders it reliable in operation and also increases its strength and enables it to withstand the shock and jar to which couplers are ordinarily subjected. The lower reduced end of the lock or prop is in some cases provided with a longitudinal hole F to receive a pin or rod G, which may be threaded, as shown at H, and the draw-head may have a screw-tapped aperture to receive the threaded portion of the pin or rod, while in other cases the aperture and pin may be dispensed with, and this reduced and preferably rounded lower end J may be placed in a recess K in the bottom of the draw-head, as better shown in Fig. 3 of the drawings. It is both desirable and preferable to employ the threaded rod, so as to avoid any possibility of the prop or lock leaving its seat by jerking or jarring movements.

The prop or lock may have a forward extension L, so as to lie in the path of the arm of the knuckle, as by this means when the knuckle has been swung on its pivot during the action of uncoupling it will trip the lock or prop and release the lock-bar therefrom, so that the latter will fall upon the floor of the draw-head to be operated upon by the arm of the knuckle and be engaged thereby when two cars are brought together.

From the foregoing description, taken in connection with the annexed drawings, the operation and advantages of our invention will be obvious. When it is desirable to either uncouple a car or set the same for uncoupling, it is simply necessary to raise the locking-bar by the operating-shaft and its connection until said locking-bar has rested upon the shoulder of the lock or prop. As the knuckle is swung outwardly on its pivot in uncoupling it will strike and trip the prop, which will cause the locking-bar to descend into a position to be struck by the arm of the knuckle in coupling, which may take place by impact. The extent of the bevel or incline on the knuckle-arm and the height of the shoulder on the prop should be such that the engagement of said arm with the locking-bar will not lift it to the height of the shoulder on the prop.

Having thus described our invention, what we claim is—

In the car-coupling described, the combination of the draw-head having the chamber E at one side, the knuckle pivoted in the draw-head and having the tail provided with the inclined end *p*, the longitudinally-disposed, vertically-movable locking-bar journaled adjacent to its rear end in the draw-head and having the beveled portion *q* at its forward end, and the gravitating, laterally-movable prop arranged in the chamber E of the draw-head at one side of the plane of movement of the locking-bar and journaled at its lower end in said draw-head so as to move at right angles to the locking-bar; the said prop having the enlarged and heavy portion with the shoulder D at the inner side thereof, and also having the forward extension L for the engagement of the tail of the knuckle, substantially as specified.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

JAMES A. GRAHAM.
JAMES A. McGEE.
FRANK H. STARK.

Witnesses:
W. P. LANIERS,
A. T. PLATT.