(No Model.)

G. W. BARFIELD.

CAR COUPLING.

No. 545,839. Patented Sept. 3, 1895.

Fig. 1.

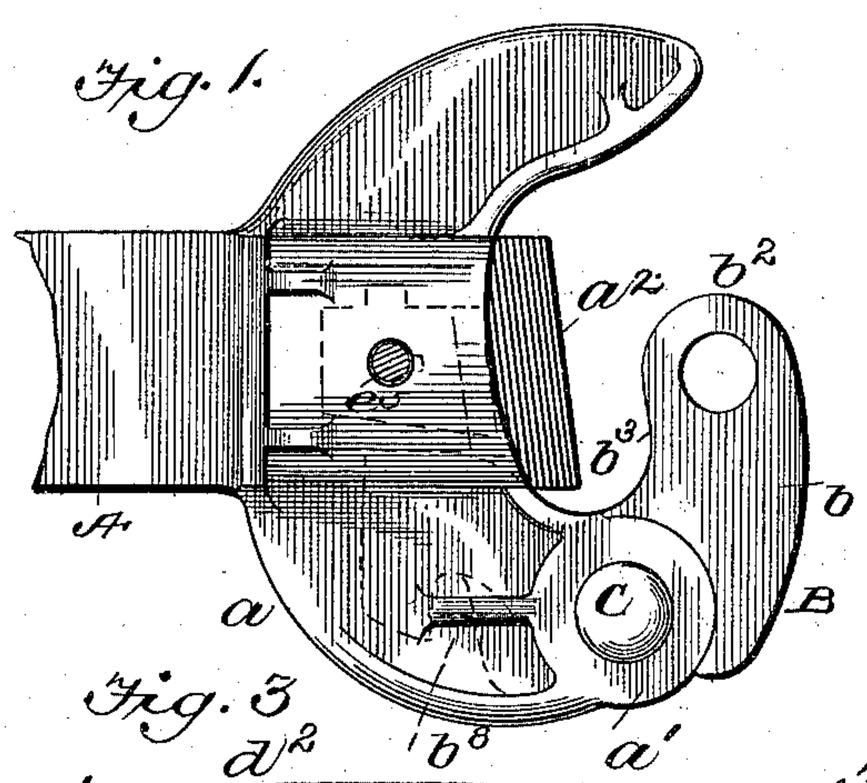


Fig. 2.

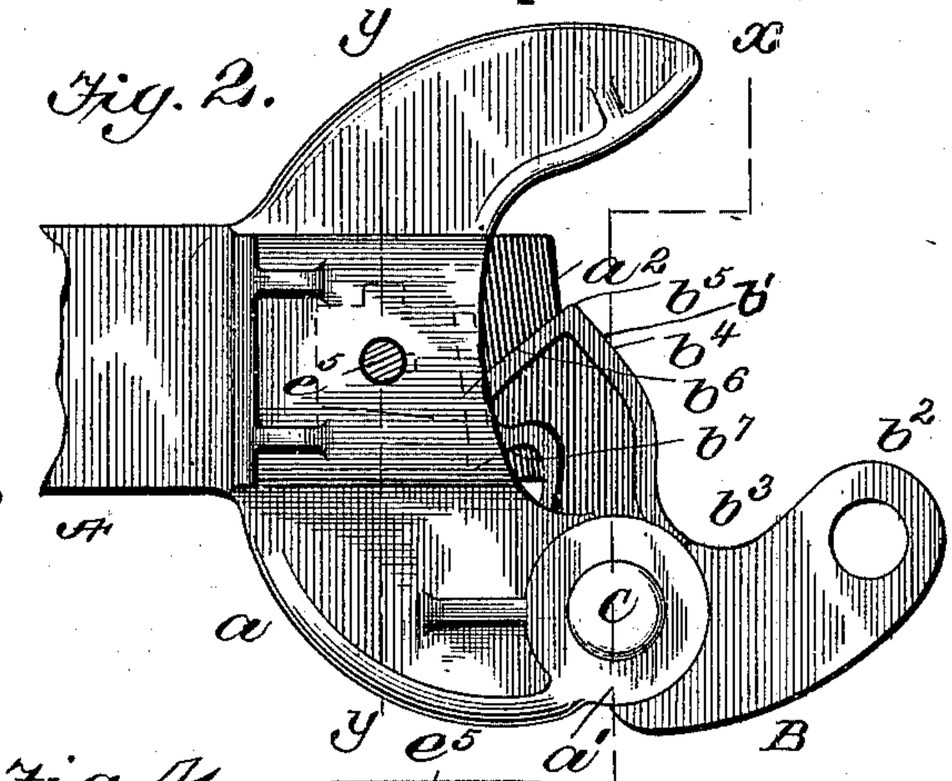


Fig. 3

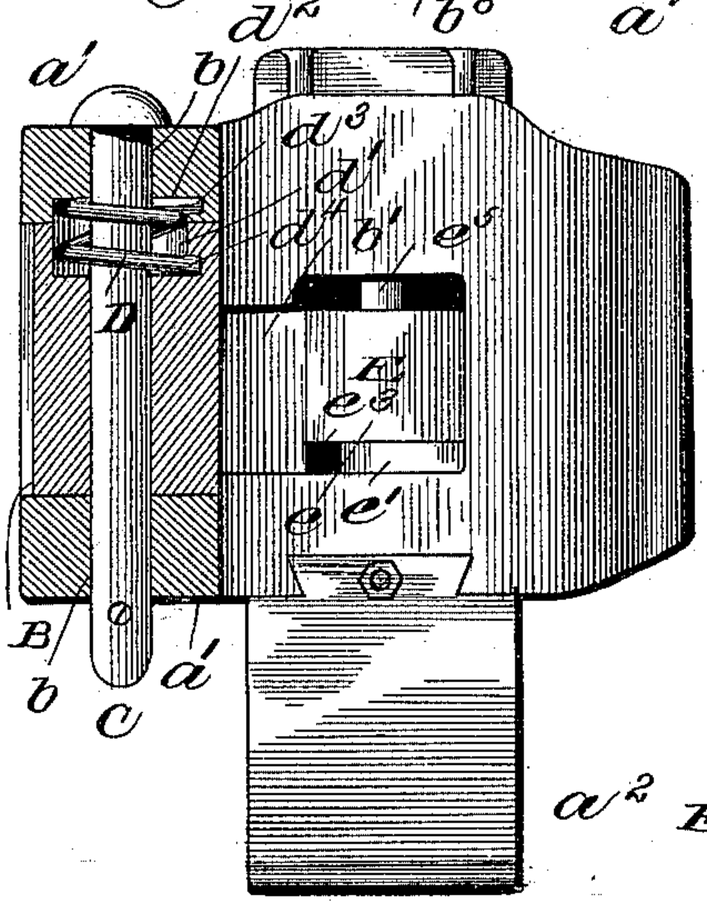


Fig. 4.

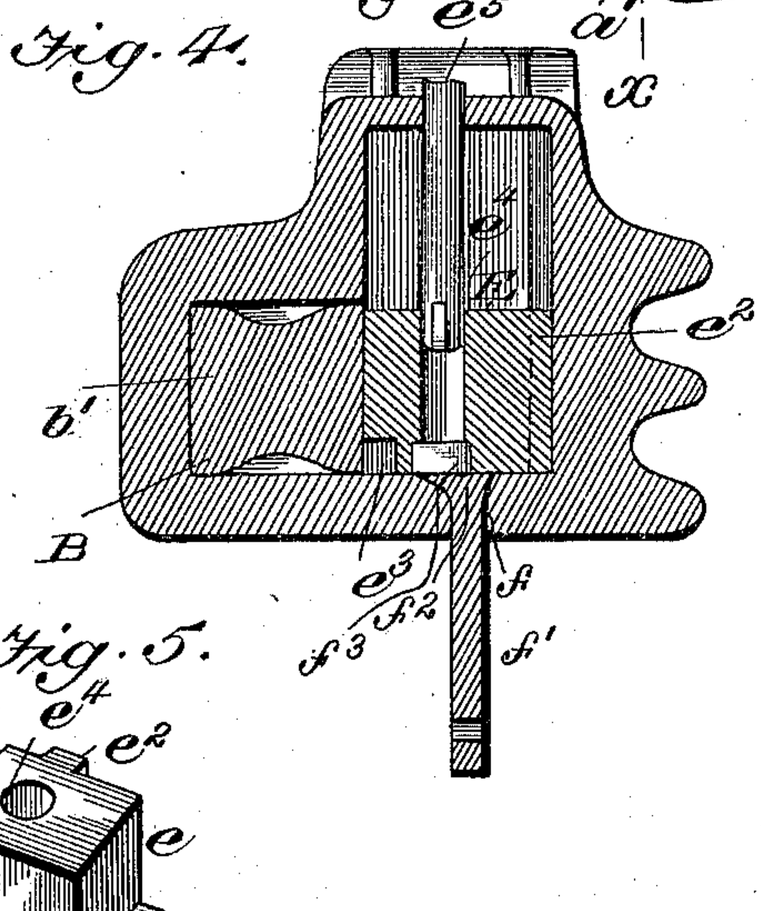


Fig. 5.

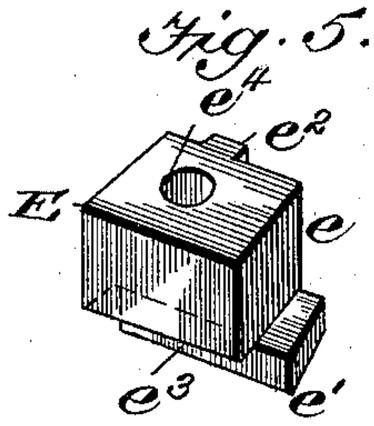


Fig. 6.

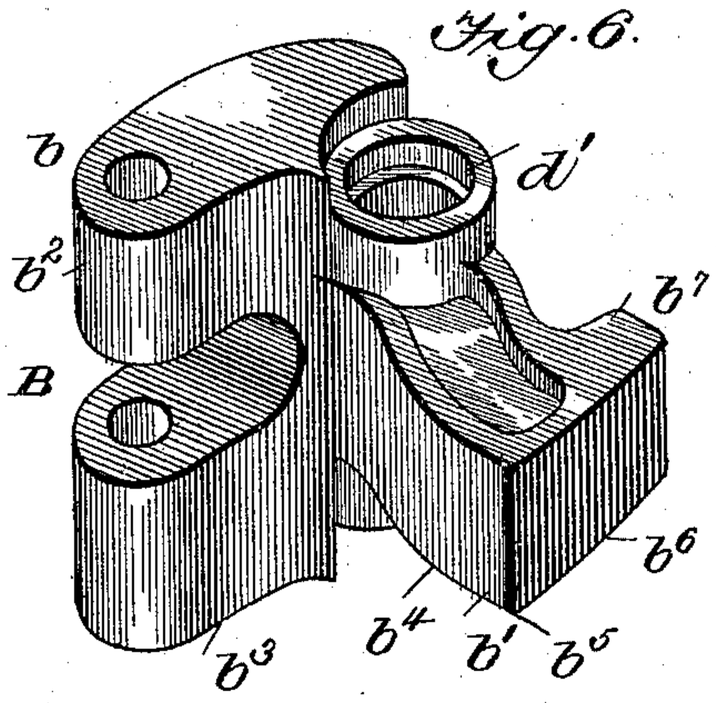
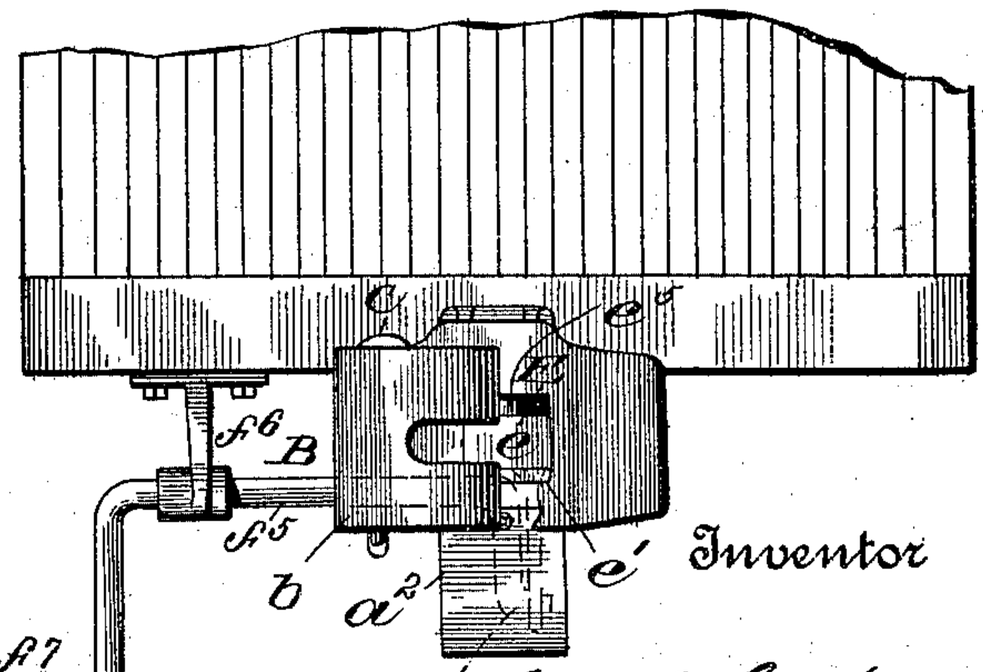


Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE WASHINGTON BARFIELD, OF ROME, GEORGIA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 545,839, dated September 3, 1895.

Application filed May 24, 1895. Serial No. 550,504. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WASHINGTON BARFIELD, of Rome, in the county of Floyd and State of Georgia, have invented certain new and useful Improvements in Car-Couplings; 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 contemplates certain new and useful improvements in car-couplings, and is specially designed as an improvement upon the device shown and described in Letters Patent No. 521,094, issued to me on June 5, 1894.

The object of the present invention is to so form and mount the knuckle in the flared end of the draw-bar that in the coupling operation the knuckle of each draw-bar will act upon that of the other in such way that said knuckles are nearly or entirely turned and locked together before the respective knuckles strike the curved surface of the guard-arm of the other draw-bar, thereby insuring the easy and ready coupling of cars without any unnecessary jarring upon the draw-bar.

A further object is to provide a simple and efficient means for insuring the opening and proper positioning of the knuckle when the same is unlocked and ready for coupling.

A further object is to insure the retention of the knuckle after being coupled, even though the pivot-pin should be broken or injured.

A further object is to provide a simple and improved locking-block which will permit the coupling of cars when on curves and the retention of the locking-block in its proper position.

A further object is to provide improved means for operating this lifting-block.

These objects I accomplish, first, by so curving the tongue of the knuckle and pivoting the latter in the flared end of the draw-bar that said tongue will, when the knuckle is opened ready for coupling, extend forward beyond the curved surface of the guard-arm of the draw-bar sufficiently far to insure contact therewith of the forward arm of an approaching similar knuckle, and thereby effect the turning of both knuckles to nearly the entire limit before the arms of either knuckle contact with the guard-arms or curved surfaces of the respective draw-bars. A coil-spring is located in corresponding or opposite mortises formed in the knuckle and flared end of the draw-bar, its ends being connected to the latter and to the knuckle, respectively. The inner end of the tongue of the knuckle is flared to form a flange or hook which, when the knuckle is closed, rests in the rear of an interior flange on the draw-bar. The knuckle is held locked by an upwardly-movable block which on one side has a cut-away portion which will permit cars to be coupled when on curves. This locking-block is raised from below by mechanism extending upwardly through the bottom of the draw-bar and comprising a plunger and an operating crank-shaft extended to one side of the car. The block may also be raised by a pin extending therefrom through the top of the draw-bar.

The invention comprises the novel features of construction and also the detail combination and arrangement of parts, substantially as hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view with the knuckle closed. Fig. 2 is a similar view with the same open. Figs. 3 and 4 are cross-sectional views taken, respectively, on the lines $x\ x$ and $y\ y$, Fig. 2. Figs. 5 and 6 are respectively views of the locking-block and knuckle detached. Fig. 7 is a front end view showing a portion of a car-frame.

Referring to the drawings, A designates the draw-bar; a, the curved and flared end constituting the guard-arm, and having at one side upper and lower ears a'. A safety-shoe a^2 depends from the under side of the draw-bar, the same being constructed and designed to operate substantially as shown and described in my above-mentioned patent.

B is the jaw or knuckle, having a forward arm b and a rearward tongue b'. This arm is rounded at its end b^2 and curved inwardly at b^3 on an arc of a circle, which latter curvature extends to the tongue b', and the latter is then curved outward at b^4 and bent inward at b^5, where it joins the rear end b^6 of the tongue. This tongue has a flange or hook b^7 extending therefrom, designed to fit back of

and engage an interior flange b^8 of the draw-bar when the knuckle is locked.

C is the pivot pin or bolt, which passes through coincident holes b in ears a' and a hole or opening in the knuckle at the point of union of the arm and tongue thereof. At this point in the knuckle and surrounding the bolt-hole therein is a circular mortise d', which coincides with a corresponding mortise d^2 in the upper ear a' of the draw-bar. In these mortises fits a coil-spring D, through which the pin C passes. This spring has its ends d^3 d^4 bent to fit, respectively, in grooves in the upper ear a' and the knuckle. The tension of this spring is such as to constantly tend to hold the knuckle open. When so held, the curved surface of the tongue extends outwardly in front of the guard-arm of the draw-bar—that is, beyond the inner curved portion of the latter—so that the arm of the knuckle of the approaching draw-bar first contacts with the curved surface of said tongue and forces the latter inward into the chambered draw-head nearly the full extent of its movement, the additional or further movement being obtained by contact of the arm against the curved surface or guard-arm of the approaching draw-bar.

E is the lock, which consists of a block e, having at its lower forward end a projection e', and at one side a lug e^2, which serves to hold the block in place when elevated. In the opposite side of the block, near its bottom, is a groove or cut-away portion e^3, which is designed to accommodate the end of the tongue of the knuckle when cars are being coupled on curves, the locking-block, by reason of the cut-away portion, being capable of being lowered to that extent so that the end of the tongue will fit against the inner wall of said cut-away portion. In a hole e^4 in this block a pin e^5 is designed to fit, said pin extending through the top of the draw-bar to enable the block to be operated from above, if desired; but I prefer to operate the block from below, as I find it can be easily accomplished with very simple and inexpensive mechanism. Movable in a narrow slot f in the bottom of the draw-head is a plunger f', having an upper flanged end or head f^2, provided with a rounded lug f^3, designed to fit in the lower end of hole e^4. With the lower end of this plunger engages the inner cranked end f^4 of a shaft f^5, which is supported by a bracket f^6, depending from the bottom of the car, its handle end f^7 being on a line with the side of the car. In practice the operator by turning this crank-shaft will cause the plunger to move upward, effecting the raising of the locking-block, and thus unlock the knuckle, permitting the latter to open, the tongue being freed from contact with the block. The forward extended end of the latter rests upon the tongue when elevated, and hence when cars are again coupled the tongue moves from beneath the extended end of the block and the latter is instantly lowered, thus locking the knuckle. When on a curve, the tongue is not moved to the full limit; but by reason of the groove or cut-away in the side of the block the latter is permitted to lower sufficient to lock and hold the tongue until the cars are on a straight line, when the block will be lowered to the bottom of the draw-head upon the tongue being forced to the limit of its movement, with it shooked end in rear of the flange in the draw-head. Should the pivot pin or bolt of the knuckle be broken, the latter will still be retained in place by the locking-block and the flange.

The advantages of my invention are apparent to those skilled in the art to which it appertains, and it will be specially observed that I have produced an improved car-coupling of the type known as "vertical plane," and that the same comprises advantages in point of simplicity, durability, and inexpensiveness, and that the parts are so constructed that they are not liable to get out of order or be deranged. It will also be seen that by curving the tongue of the knuckle in the manner stated the coupling of two draw-bars is effected with but a minimum amount of jarring. By providing a locking-block of the kind herein described the knuckle is firmly locked in place, and the uncoupling of the cars is effected by the raising of said block from below.

I claim as my invention—

1. In a car coupling, a drawbar having a chamber, a knuckle pivoted to said drawbar having its tongue movable in said chamber, the locking block located in said chamber and designed to be engaged by said tongue, the plunger engaging the under side of said block, and the operating shaft connected to said plunger, substantially as set forth.

2. In a car coupling, a drawbar having a chamber, a knuckle pivoted to said drawbar having its tongue movable in said chamber, and the locking block having a tapered groove or cut-away portion in one side and a forward extension designed to engage said tongue when the knuckle is unlocked, substantially as and for the purpose stated.

3. In a car coupling, a drawbar having a chamber, a knuckle pivoted to said drawbar having its tongue movable in said chamber, and the locking block having a tapered groove or cut-away portion in one side, a lower forward extension designed to rest on said tongue when the knuckle is unlocked, and the lug projecting from the side of said block, substantially as set forth.

4. In a car coupling, a drawbar having a chamber, a knuckle pivoted to said drawbar having its tongue movable in said chamber, the locking block designed to be engaged by said tongue, the plunger extended through the bottom of said draw-bar and engaging said block, and the operating shaft connected to the lower end of said plunger, substantially as set forth.

5. In a car coupling, a drawbar having a

chamber, a knuckle pivoted to said drawbar having its tongue movable in said chamber, the locking block having a hole therein, the plunger extended through the bottom of said drawbar having an upper flared end or head provided with a lug designed to fit in said hole, and the crank-shaft connected to the lower end of said plunger, substantially as set forth.

6. The herein-described improved car coupler, comprising the drawbar having the curved guard-arm, a slot in its bottom, and an inner flange, the knuckle having its tongue curved on its front surface in the manner stated, and provided with a flange or hook at its rear end, the pivot bolt designed to be passed through coincident holes or openings in said flared end and also in said knuckle, the spring connected at its ends to said guard-arm and to said knuckle, the locking block, the plunger engaging the under side thereof and extended down through said slot in said drawbar, and the operating shaft connected to the lower end of said plunger, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEORGE WASHINGTON BARFIELD.

Witnesses:
C. F. JACKSON,
H. T. OLMSTED.