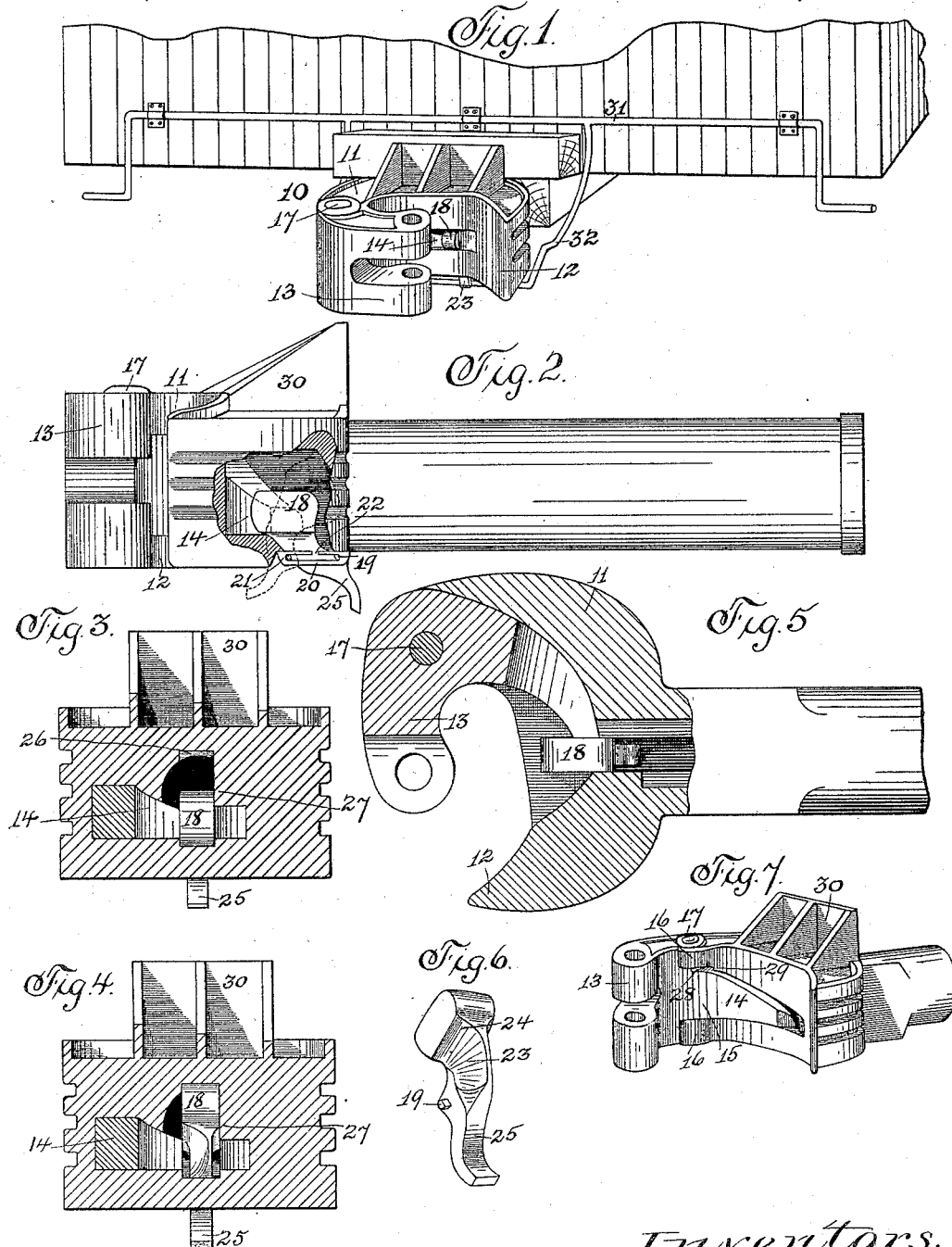


No Model.)

J. M. SCURR & S. R. COTTON.
CAR COUPLING.

No. 493,792.

Patented Mar. 21, 1893.



Witnesses
T. C. Tate,
G. R. Green,

Inventors.
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UNITED STATES PATENT OFFICE.

JAMES M. SCURR AND SCOTT R. COTTON, OF CRESTON, IOWA, ASSIGNORS
TO THE SIMPLEX CAR COUPLER COMPANY, OF ST. JOSEPH, MISSOURI.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 493,792, dated March 21, 1893.

Application filed January 13, 1892. Serial No. 417,993. (No model.)

To all whom it may concern:

Be it known that we, JAMES M. SCURR and SCOTT R. COTTON, citizens of the United States, and residents of Creston, in the county of Union and State of Iowa, have invented certain new and useful Improvements in Car-Couplings, of which the following is a specification.

Our invention relates to that class of car couplers technically known as the "vertical plane" type.

Our invention has for its object the provision of a strong and compact coupler cheap in point of construction and of a minimum number of parts, which shall have a central draft and also such a disposition and location of the parts as to give the maximum strength of material in and about the pivotal pin of the knuckle.

Our invention has for a further object the provision of means by which the mechanism adapted to effect a coupling in the movement of the knuckle is caused to assume under all circumstances a position in which to automatically engage and lock the knuckle.

Our invention has for a further object the provision of means, integral with the mechanism locking the knuckle which when acted upon by means manually operated unlocks the knuckle.

Our invention has as a further object such a disposition and variable pivoting of the mechanism locking the knuckle as that the utmost freedom of movement of said mechanism is attained.

Our invention has for a further object such a disposition and pivoting of the locking mechanism as that the latter may be caused to assume and retain by gravity, a position which permits the free opening movement of the knuckle.

Our invention has for a further object such a disposition and positioning of the mechanism locking the knuckle and pivoting of the same as that the knuckle acts upon and operates said mechanism from a point above the axis of rotation of the locking mechanism.

Our invention consists first in the construction of a car coupler in which a vertical knuckle employing a rearwardly extending impact arm is pivoted to the drawhead, and

a locking block pivoted below the plane of the impact arm, which locking block is adapted to oscillate in such a plane as to intersect the arc of rotation of the said impact arm and lock the knuckle.

Our invention consists secondly in pivoting the locking block below the plane of the rearwardly extending impact arm integrally formed with the knuckle, in such a manner as that the axis of rotation of said locking block is automatically changed in position whereby the impact arm of the knuckle may readily and freely act upon said locking block and vary the center of gravity, of the said block and retain the same by gravity in a closed or open position.

Our invention consists thirdly in the integral construction of a gravity locking block and a trigger which latter when acted upon by devices manually operated from the top or side of the car, causes the locking block to assume a position by which the impact arm of the knuckle in its travel clears said block.

Our invention consists fourthly in a locking block so constructed and positioned relatively to the impact arm of the knuckle as that the said impact arm contacts with and acts upon the locking block at a point above the axis of rotation of the locking block whereby the point of application of the power to move said locking block is outside and away from the dead center thereof and in proximity to its center of gravity, thus materially reducing the friction in the movement of the locking block.

Our invention consists fifthly in the construction of a locking block having a contact face chamfered in two directions whereby in the contacting of the impact arm said block is moved upwardly and rearwardly upon its axis of rotation.

Our invention consists sixthly in such a positioning of the impact arm relatively to the chamfers of the locking block having a variable pivot as that said impact arm changes the axis of rotation and also the center of gravity of said locking block in unison with its upward and rearward movement.

Our invention consists seventhly in the combination of elements and details of construction hereinafter set forth, pointed out and

claimed, reference being now had to the accompanying drawings, in which:

Figure 1 is a perspective view showing our coupler secured to a car, and the manually operated levers. Fig. 2 is a side view of our car coupler, a portion being broken away to show the locking block, the dotted lines representing said block in a changed position. Fig. 3 is a transverse sectional view on the line X—X of Fig. 2, showing the locking block in a position to lock the knuckle. Fig. 4 is a transverse sectional view on the same line as Fig. 3, the locking block being in a position to permit of the unlocking of the knuckle. Fig. 5 is a horizontal sectional view on the line Y—Y of Fig. 2. Fig. 6 is a perspective view of the locking block in the direction of the arrow in Fig. 4. Fig. 7 is a perspective view of the drawhead, the knuckle being thrown open.

In the construction of the device as shown, the numeral 10 designates the drawhead having an arm portion 11 and a guiding arm 12, respectively formed integrally with and projecting forwardly from opposite sides of the drawhead. A knuckle 13 having an integral rearwardly extending impact arm 14 is vertically hinged to the forward side of the arm portion 11 by means of the ear 15, which latter is formed on the knuckle 13, said knuckle being secured to the ears 16 formed on the arm portion 11, by the vertically positioned knuckle pin 17. The impact arm 14, when the coupling is locked, extends transversely within a cavity in the drawhead 10, and when the parts are in the position assumed when about to effect a coupling said impact arm is so positioned as that its free end is in advance of or beyond the locking block about to be described.

The locking block, designated by the numeral 18, is provided with integral nipples or trunnions 19, which latter travel within longitudinal slots 20, 20, in the ears 21, 21, which ears are located on either side of and underneath the drawhead. A vertical aperture extends upward from the underside of the drawhead and intersects the interior cavity thereof, through which aperture the locking block 18 is passed, the trunnions 19 passing through the vertical slots 22, 22, intersecting the longitudinal slots 20, 20, into said latter slots. It will be observed from the shape of the nipples or trunnions 19 that after they have been caused to enter the longitudinal slots 20, said trunnions cannot escape from the said slots except by adjusting the locking block manually in one certain position, and that thus during the normal operation of the coupler the locking block is held in its proper position.

The locking block 18 is provided with two chamfers 23 and 24, on the forward side of said block within the cavity, and the rear face of the impact arm 14 is chamfered correspondingly. A trigger 25 formed integrally with the locking block 18 extends downwardly

therefrom and is curved so as to present a convex rear surface, which trigger is operated by mechanism hereinafter described. A shoulder 26, formed on the interior face of the drawhead in the top and rear of the cavity therein serves as a stop for the locking block and limits the rearward movement of its upper end. The upper end of the impact arm 14 presents a plane surface to the side of the locking block adjacent thereto when the knuckle is locked, the opposite side of said locking block resting against the side 27 of the drawhead, which side may be made of suitable thickness to resist the strain of the knuckle. The impact arm 14 is of less vertical dimension than the ear 15 of the knuckle 13, thereby forming a shoulder 28 on said knuckle, which shoulder contacts with and is stopped when the said knuckle is closed by a shoulder 29 positioned respectively above and below the forward opening in the drawhead. A bumper plate 30 is formed integrally with the upper surface of the drawhead 10.

The numeral 31 designates a manually operated lever mounted upon the end of the car, having integrally formed therewith a yoke, 32.

The operation of our improved coupler is as follows: The locking block 18 and integral trigger 25 are inserted within the interior cavity through the forward opening of the drawhead, and so adjusted within the said cavity as that the trigger extends downwardly through the vertical aperture in the lower side of the drawhead, the trunnions 19 of said block having passed through the vertical slots 22, 22, into the longitudinal slots 20, 20, in the ears 21, 21. The parts being in the locked position shown in full lines in Fig. 2, the trunnions 19 being in the rear ends of the longitudinal slots 20, 20, in the ears 21, 21, and the forward face of the locking block resting on the bottom of the cavity, in order to effect an uncoupling the levers are actuated from the side of the car to move the trigger 25 forward causing the locking block to rotate upon the trunnions into the position shown in dotted lines in Fig. 2. During this movement of the locking block the trunnions 19 are advanced along the longitudinal slots 20, 20, thus changing the center of gravity of the locking block, which then rests by gravity upon the shoulders 26 so that the impact arm and knuckle are unlocked, the said impact arm in the opening of the knuckle engaging the chamfer 23 of the locking block 18, causing the same to fall into its locking position, as heretofore described, in this instance also shifting the trunnions 19 to their first position, changing the center of gravity, the locking block by virtue of gravity remaining in this position until further acted upon. The knuckle being open and the locking block being in the position just described in effecting a coupling the chamfered faces of the impact arm engages the chamfer 24 of said

locking block rotating the latter upon its pivot until the center of gravity of the locking block is in equilibrium, the impact arm then acting upon the chamfer 23 to hold the trunnions 19 at the rear ends of the slots of the ears, thus always insuring a gravity fall of the locking block into locking engagement with the impact arm when the latter shall have passed into its locked position. In other words when the knuckle is open and the impact arm beyond the locking block and the latter occupies a closed or locking position, in closing the knuckle the impact arm swings against the locking block and as the axis of the latter is below the plane of travel of the arm the block is caused to assume an upright position and its pivot pushed rearward permitting the impact arm to pass by the block. It will be apparent that to accomplish this result no chamfer or bevel is necessary but that upon any opening tendency or movement of the knuckle, the end of the impact arm engages the bevel or chamfer of the locking block and causes the block to fall into a locking position.

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent of the United States, is—

1. In a car coupler of the class aforesaid the combination with a pivoted knuckle and a rearwardly extending impact arm, of a locking block pivoted at its lower end to the drawhead and extended within the interior cavity thereof, which pivot of the locking block assumes varying positions, together with mechanism for rotating said locking block.

2. In a car coupler of the class aforesaid, the combination with a pivoted knuckle and a rearwardly extending arm, of a locking block pivoted at its lower end to the drawhead, which pivot is adapted to assume varying positions, and a trigger, acted upon by manually operated mechanism, integral with the locking block.

3. In a car coupler of the class aforesaid, the combination with a pivoted knuckle and rearwardly extended impact arm, of a locking block pivoted at its lower end which pivot assumes varying positions to the drawhead,

and having a chamfered face acted upon by the impact arm to rotate said block.

4. In a car coupler of the class described, the combination with a pivoted knuckle and a rearwardly extending impact arm, of a locking block pivoted at its lower end to the drawhead, said pivot being adapted to assume varying positions, and a chamfered face on said locking block, which face is acted upon by the impact arm to shift the position of the said pivot.

5. In a car coupler of the class aforesaid, the combination with a pivoted knuckle and a rearwardly extended impact arm, of a locking block pivoted at its lower end to the drawhead, and a pin constituting said pivot of the locking block, which pin is held and travels within slots in ears formed with the drawhead.

6. In a car coupler of the class described, the combination with a pivoted knuckle and a rearwardly extended impact arm, of a locking block pivoted at its lower end to the drawhead, said locking block being centrally located within the interior cavity of said drawhead, the pin forming the pivot for said locking block assuming varying positions longitudinally of the drawhead at various times.

7. In a car coupling of the class described, the combination with a pivoted knuckle and a rearwardly extended impact arm, of a locking block having chamfered faces centrally located in said drawhead, which locking block is pivoted at its lower end to the lower portion of the drawhead, the pin forming the pivot for said locking block assuming various positions longitudinally of the drawhead, and a trigger integrally formed with the locking block, together with means manually actuating to effect an unlocking of said locking block.

In testimony whereof we hereunto have set our hands, this 10th day of December, 1891, at Des Moines, Iowa, in the presence of two witnesses.

JAMES M. SCURR.
SCOTT R. COTTON.

In presence of—
C. C. BULKLEY,
S. C. SWEET.