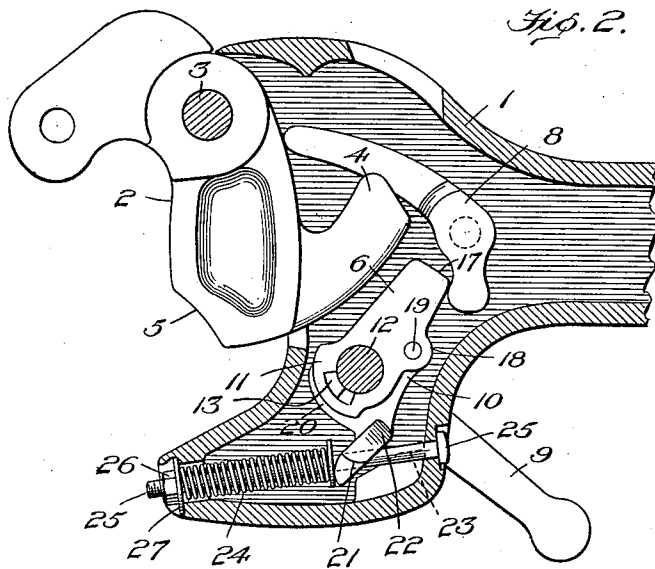
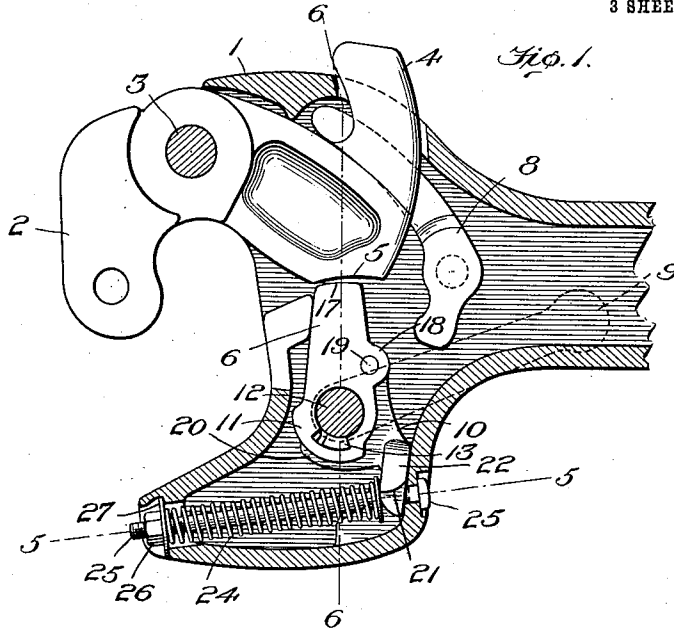


W. & J. KELSO.
CAR COUPLING.
APPLICATION FILED SEPT. 8, 1909.

1,024,083.

Patented Apr. 23, 1912.

3 SHEETS-SHEET 1.



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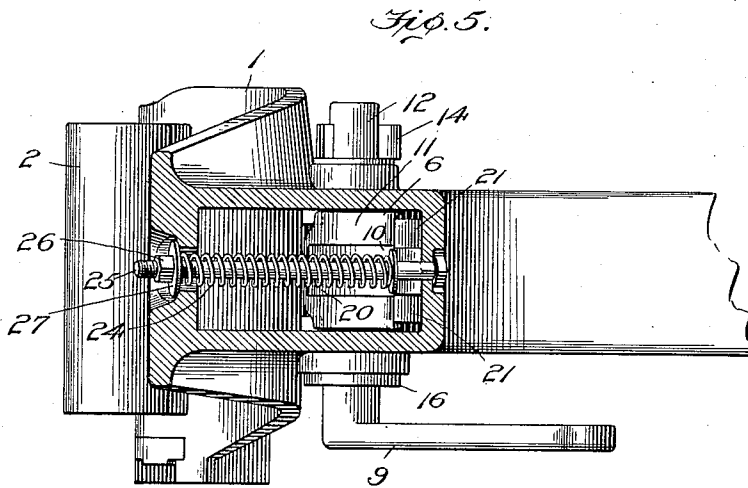
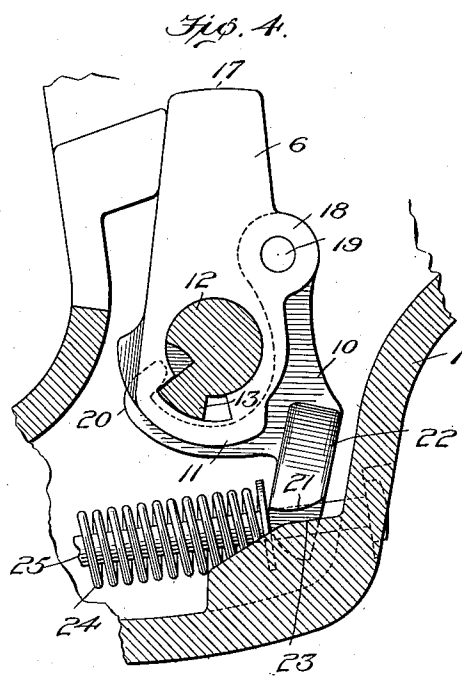
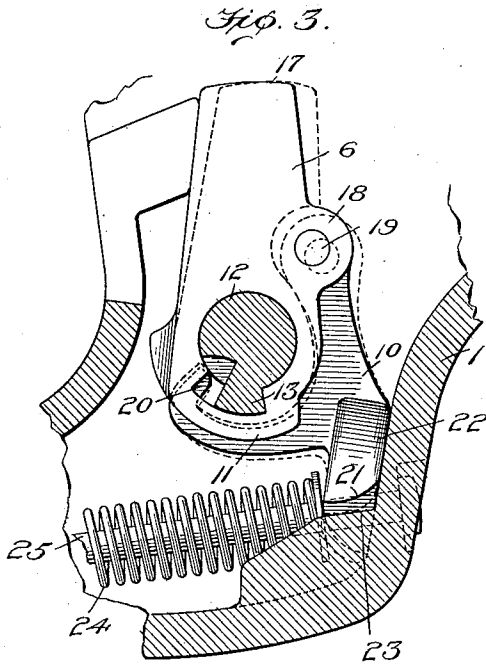
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3 SHEETS—SHEET 2.



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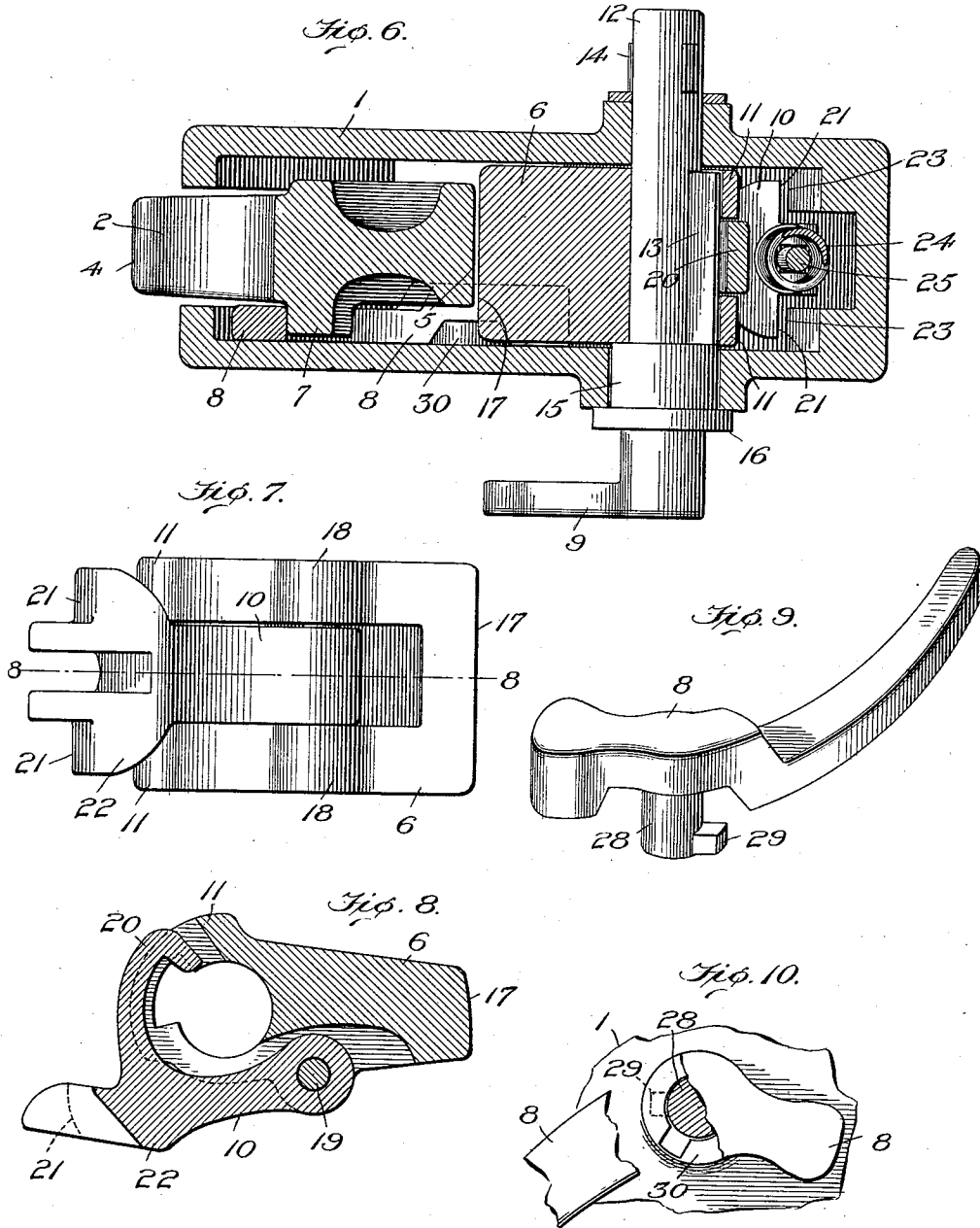
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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CAR-COUPLING.

1,024,083.

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To all whom it may concern:

Be it known that we, WILLIAM KELSO and JOSEPH KELSO, citizens of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Car-Couplers; and we 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.

Our invention relates to the construction of car couplers of the vertical plane type, and has for its object to provide a simple, strong, durable and efficient construction in which the coupler lock is prevented from accidentally assuming an unlocked position when the device is in service and in which the pivoted knuckle may be readily rotated to an open position through an extended unlocking movement of the coupler lock.

To this end, the principal feature of our invention, generally stated, consists in pivotally mounting upon a coupler head, which is provided with a rotatable knuckle, a knuckle locking member to which is pivotally attached an auxiliary or supplemental locking member that is adapted upon an accidental rotation of the knuckle locking member toward an unlocked position, to move into engagement with a suitable stop or abutment, thereby arresting the unlocking rotation of the said knuckle locking member.

There are other, minor, features of invention, residing in particular combinations and elemental constructions, all as will hereinafter more fully appear.

In the drawings chosen for the purpose of illustrating our invention, the scope whereof is pointed out in the claims, Figure 1 is a view of a car coupler embodying our invention, the coupler head being in horizontal, central section and the movable parts of the coupler, which are shown in normal or locked position, being in plan; Fig. 2 is a view similar to Fig. 1, but illustrating the relation the parts assume when the knuckle is rotated to an open position by the knuckle-opening means; Fig. 3 is a detail, horizontal section, taken in the plane of the upper face of the knuckle locking member, showing, in full lines, the normal relation of said member and the supplemental lock when the

parts are in locked position, and showing, in dotted lines, the relative positions the same parts assume when accidental unlocking of the coupler is prevented by the supplemental lock; Fig. 4 is a view similar to Fig. 3, but illustrating the position assumed by the supplemental lock at the end of the preliminary unlocking movement of the lock lever; Fig. 5 is a vertical section of the coupler, taken in the plane of the line 5—5, Fig. 1; Fig. 6 is a detail, vertical section, taken in the plane of the line 6—6, Fig. 1; Fig. 7 is a detail elevation of the knuckle locking member and supplemental lock; Fig. 8 is a horizontal section, taken in the plane of the line 8—8, Fig. 7; Fig. 9 is a detail, perspective view of the knuckle opening member; and Fig. 10 is a detail view illustrating the manner of pivotally mounting the knuckle-opener upon the coupler head.

Like symbols refer to like parts wherever they occur.

We will now proceed to describe our invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the particular embodiment of our invention illustrated in the drawings, 1 is the coupler head, 2 the knuckle and 3 the pin by which the knuckle is pivotally mounted upon the coupler head in the usual manner. The tail of the knuckle 2, which may be, and preferably is, formed with a hooked portion 4 that is adapted to enter an appropriate opening in the side wall of the coupler head, is preferably provided with a curved face which is designed to bear upon the knuckle locking member 6 when the several parts are in locked position and the coupler is in service, and is preferably also provided upon its under side with a depending, flange-like portion 7 which extends from a point adjacent to the hook 4 forwardly toward the knuckle pin 3 for a distance sufficient to afford a bearing face for the forward end of the knuckle opening member 8 as that member is rotated in performing its function of forcing the knuckle to an open position.

The knuckle locking member 6, which for the sake of brevity will be hereinafter termed the catch, is preferably pivotally mounted upon the guard-arm side of the coupler head 1 by means of the catch lever or device 9 through the instrumentality of which the

catch is caused to perform an unlocking movement, as will hereinafter appear. For this purpose, as well as to receive a portion of the supplemental lock 10, the catch 6 may be conveniently formed with two separated lugs 11 each of which is provided with a pin receiving aperture formed as two connected, concentric, cylindrical segments of different diameters. As will be readily understood, the segments of smaller diameter receive the vertically extending pin 12 of the catch unlocking device 9, while the cylindrical segments of greater diameter receive the spline 13, which is preferably formed integral with said pin 12. As the spline receiving segments of the pivot lugs 11 extend through an arc which is of greater length than the thickness of the spline 13 along its periphery, it will be observed that the catch 6 and pivot pin 12 are capable of a slight, independent rotation, which, as will presently appear, serves to permit the actuation of the supplemental lock 10 at the beginning of an unlocking movement of the catch unlocking device 9.

The catch unlocking device, which, as shown, may be journaled in suitable openings formed in the top and bottom walls of the coupler head 1 and maintained in assembled position by means of a cotter 14 that passes through the upper end of the catch pivot pin 12, is preferably formed with a boss or enlargement 15 at the base of which is a flange or collar 16. The boss 15 serves to maintain the proper operative relation of the unlocking device 9 to the catch 6 and relieves the latter from wear which would be incident to a sliding contact with the lower wall of the coupler head 1, while the flange 16, by bearing against the coupler head, limits the upward movement of the catch lever 9.

Pivotally mounted upon the catch 6 between the knuckle engaging face 17 thereof and its pivotal point, is a supplemental lock member 10, or lock-to-the-lock, which serves to prevent the catch 6 from accidentally moving to an unlocked position when the coupler is in service. This supplemental lock, which is maintained between the perforated lugs 18 of the catch by means of a pivot pin 19, is provided with an actuating portion or arm 20 which extends into the path of movement of the spline 13 of the unlocking device 9 in such manner that, as more particularly shown in Fig. 3, the said spline, before coming into driving engagement with the shoulders at the outer ends of the external segments of the catch lugs 11, engages the said arm 20 and rotates the supplemental lock about its pivot 19 until the parts assume the relative positions illustrated in Fig. 4. When in the latter position the locking faces 21 at the outer end of the locking extension 22 of the supplemental lock clear the corresponding locking faces or

abutments 23 of the coupler head as the catch 6 and supplemental lock 10 are simultaneously rotated by the catch unlocking device 9, the catch being thus permitted to execute an extended unlocking rotation.

For the purpose of causing the supplemental lock to constantly tend to assume a position in which it may prevent accidental unlocking of the coupler, as well as for the purpose of returning the catch 6 to locked position, it is preferred to employ a spring 24 which is interposed between the coupler head and the end of the locking extension 22 of the supplemental lock 10. As shown in the drawings, this spring, which is housed within the guard arm of the coupler head, is preferably mounted on a bolt 25 which passes through the slotted end of the supplemental lock and through suitable apertures in the walls of the coupler head. By means of a nut 26, which has threaded engagement with the bolt 25 and which bears upon a washer 27 that covers the opening through which the spring is introduced into the coupler head, the desired yielding pressure exerted upon the supplemental lock and catch may be readily attained.

The knuckle opening member or knuckle-opener which we prefer to employ in conjunction with the devices heretofore described is formed as a bell-crank lever 8 which is pivotally mounted upon the coupler head so as to operate in a horizontal plane. To this end, the member 8 may be conveniently formed with an integral pivot pin 28 which is provided at its lower end with a locking lug or projection 29, the said pivot pin and lug being adapted to enter a suitably shaped aperture in a boss 30 formed on the lower wall of the coupler head, and the locking lug or projection 29 being adapted, as more particularly shown in Fig. 10, to extend beneath a portion of the coupler head to thus maintain the knuckle-opener in proper position when the parts are in service. The shorter arm of the knuckle-opener lever 8 is designed to be engaged and forced rearwardly by the rear face of the catch 6 to thereby cause the longer arm of the knuckle-opener to rotate the knuckle 2 to an open position, as will be readily understood.

The construction being substantially such as hereinbefore pointed out, the operation of the device will be as follows: Assuming the parts to be in locked position, as shown in Figs. 1, 3, 5 and 6, an unlocking rotation of the catch lever 9 will cause the spline 13 upon the vertical pin 12 to move into engagement with the actuating arm 20 of the supplemental lock 10 and rotate said supplemental lock upon its pivot pin 19 until the parts assume the position illustrated in Fig. 4, when a further unlocking movement of the catch unlocking device 9 causes the catch 6 and supplemental lock to rotate together,

thus further compressing the spring 24 and withdrawing the catch from locking position in front of the tail of the knuckle 2 so that the latter may be rotated to open position. Should the knuckle be free to rotate and the unlocking movement of the catch lever 9 be continued after the knuckle has been unlocked, the catch 6 will engage the shorter arm of the knuckle-opener 8 and rotate the latter, thus causing the longer arm of the lever 8 to force the knuckle to open position, as shown in Fig. 2. When the knuckle 2 is in locked position and the unlocking force applied to the catch lever 9 is withdrawn, the spring 24 will automatically return the catch 6 and its supplemental lock 10 to their normal or locked positions.

The operation of the supplemental lock in preventing accidental unlocking of the coupler will be readily understood upon reference to Fig. 3. As there shown in dotted lines, an unlocking rotation of the catch 6 not due to the operation of the catch lever 9 causes the locking faces 21 of the supplemental lock 10 to be directed by the spring 24 into engagement with the corresponding locking abutments 23 of the coupler head, the unlocking rotation of the catch being thus positively arrested.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. In a car coupler, the combination with a coupler head and a knuckle pivotally mounted thereon, of a horizontally rotatable catch for locking said knuckle, and a horizontally rotatable supplemental lock pivotally connected to said catch.

2. In a car coupler, the combination with a coupler head and a knuckle pivotally mounted thereon, of means for locking said knuckle in coupled position, a supplemental lock pivotally mounted on said knuckle locking means, and yielding means interposed between the coupler head and said supplemental lock.

3. In a car coupler, the combination with a coupler head and a knuckle pivotally mounted thereon, of pivoted means for locking said knuckle in coupled position, a supplemental lock pivotally mounted on said knuckle locking means, and means for causing said supplemental lock to rotate upon said knuckle locking means and also to rotate about the pivotal point of said knuckle locking means.

4. In a car coupler, the combination with a coupler head and a knuckle pivotally mounted thereon, of a pivoted catch for locking said knuckle, a supplemental lock pivotally mounted upon said catch, and a device for moving said catch to an unlocked position, said device being movable with respect to said catch and supplemental lock and being adapted to actuate each.

5. In a car coupler, the combination with a coupler head and a knuckle pivotally mounted thereon, of a catch for locking said knuckle, a supplemental lock pivotally mounted on said catch, and a device for moving said catch to an unlocked position, said device including means forming a connection between the said catch and coupler head.

6. In a car coupler, the combination with a coupler head and a knuckle pivotally mounted thereon, of a pivoted catch for locking said knuckle, a supplemental lock pivotally mounted on said catch, and a device for moving said catch to an unlocked position, said device being movable with respect to said catch and supplemental lock and being provided with a pin forming the pivot for said catch.

7. In a car coupler, the combination with a coupler head and a knuckle pivotally mounted thereon, of a horizontally movable pivoted catch having an opening at its pivotal point, a supplemental lock pivotally mounted upon said catch and having a portion adapted to extend into the opening in the said catch, and a device for moving said catch to an unlocked position, said device being provided with means adapted to engage the portion of the supplemental lock extending into the opening of the said catch to actuate said supplemental lock.

8. In a car coupler, the combination with a coupler head and a knuckle pivotally mounted thereon, of a pivoted horizontally movable catch for locking said knuckle, a horizontally movable supplemental lock pivotally mounted on said catch, means for actuating said supplemental lock to permit said catch to move to an unlocked position, and a spring for directing said supplemental lock to catch locking position.

9. In a car coupler, the combination with a coupler head and a knuckle pivotally mounted thereon, of a horizontally movable pivoted catch having a pivot opening formed of segments of different diameter, a horizontally movable supplemental lock pivotally mounted upon said catch at one side of the pivot opening thereof, a device for actuating said supplemental lock and catch to move the catch to an unlocked position, and a spring interposed between said supplemental lock and coupler head, said actuating device being formed with a pin and spline which enter the pivot opening of the catch, and said supplemental lock being adapted to engage the coupler head and having an actuating portion extending into the path of movement of said spline.

10. In a car coupler, the combination with a coupler head and a knuckle pivotally mounted thereon, of a horizontally movable catch pivotally mounted on said coupler head, a supplemental lock pivotally mounted

on said catch, and a horizontally movable knuckle-opener lever pivotally mounted on the coupler head and having an arm extending into the path of movement of the said catch.

11. In a car coupler, the combination with a coupler head having a guard arm, of a knuckle pivotally mounted upon said head, a horizontally movable catch pivotally mounted upon said head, a supplemental lock pivotally mounted upon said catch and adapted to engage a portion of the coupler head to prevent the said catch from rotating to an unlocked position, a spring arranged within the guard arm of the coupler head and bearing upon said supplemental lock, and a horizontally movable knuckle-opener lever pivotally mounted on the coupler head and hav-

ing an arm extending into the path of movement of the said catch.

12. A knuckle for car couplers of the vertical plane type, said knuckle having a pivot pin opening and being provided with a tail portion formed with a curved locking face, a hook and a depending flange which extends from a point adjacent to the hook forwardly toward the pivot pin opening.

In testimony whereof we affix our signatures, in presence of two subscribing witnesses.

WILLIAM KELSO.
JOSEPH KELSO.

Witnesses:

A. BANEY,
J. W. HARTLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."