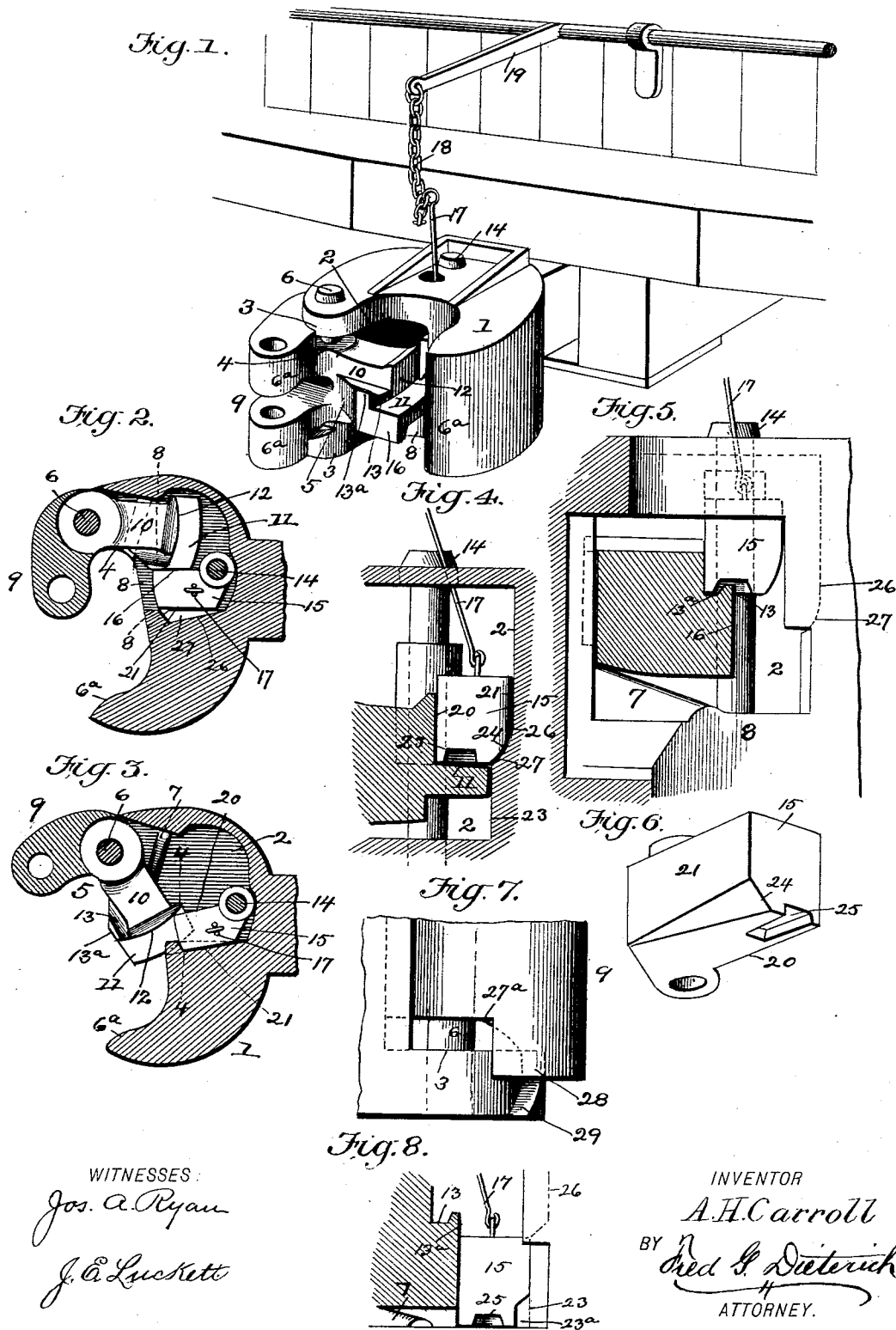


(No Model.)

A. H. CARROLL.
CAR COUPLING.

No. 580,036.

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UNITED STATES PATENT OFFICE.

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CAR-COUPLING.

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To all whom it may concern:

Be it known that I, AARON H. CARROLL, residing at Jacksonville, in the county of Morgan and State of Illinois, have invented a new and Improved Car-Coupler, of which the following is a specification.

My invention, which is in the nature of an automatic knuckle-coupler, refers more particularly to improvements on the Janney type of car-couplers; and it seeks to provide a coupler of this character of a very simple and strong construction, which will couple automatically and in which the knuckle member when released will automatically swing to its outer or uncoupled position.

With other objects in view which will hereinafter be referred to, the invention consists in the peculiar combination and novel arrangements of parts, such as will be first described in detail, and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved coupler, the knuckle being at its outer or uncoupled position. Fig. 2 is a horizontal section of the draw-head, the parts being in a coupled position. Fig. 3 is a similar view, the parts being in an uncoupled position. Fig. 4 is a transverse section taken practically on the line 4 4 of Fig. 3. Fig. 5 is a detail view illustrating the lock-block lifted to its unlocked position and in position to be swung back into its seat by the outward swing of the knuckle member. Fig. 6 is a detail view of the block. Fig. 7 is a detail view of a portion of the knuckle and the bearing portion therefor. Fig. 8 is a detail section taken on the line 8 8 of Fig. 2.

Referring now to the accompanying drawings, in which like numerals indicate like parts in all the figures, 1 indicates the draw-head, which has at the knuckle side a chamber 2 to receive the strike or swing end of the knuckle and the block devices presently referred to, such head having the usual bifurcated end 3 to receive the bearing portion 4 of the knuckle 5, which is held thereto by the pin 6, it also having the usual guide or deflector member 6^a, as shown.

By referring to Fig. 5 it will be seen that the

bottom of chamber or mortise 2 at one side at the rear of the knuckle-pivot has an inclined flange 7 at the front edge, having its lowest point near the front or lock-chamber end 8 of the chamber for a purpose presently explained.

The knuckle or coupling member 5 has the usual bifurcated and apertured coupling-wing 9 and a strike portion 10, which has a horizontal extension 11, a vertical portion 12, and a supplemental rest portion 13, having a flange 13^a at the front edge, as shown.

14 indicates a pivot-pin disposed to one side of the center of the draw-head and at the rear part of the chamber 2, on which is pivotally supported a lock-block 15, which has its front or bearing face 16 projected forward from the center of the pin 14, while its body portion is disposed to one side thereof and provided with a lift-rod 17, the upper end of which connects with a lift-chain 18, in turn connected with a lift-lever 19, projected out from the body of the car at the side of the pin 14 opposite to that from which the block projects and to which the lift-rod is attached, so that when the lock-block is lifted it will also be swung over toward the knuckle member in the manner hereinafter more fully explained.

By referring now to Fig. 6 it will be noticed the lock-block has vertical slides 20 21, one of which, 20, when the same is in a coupled position engages the outer edge of the knuckle, while the other, 21, engages the straight portion of the wall 23 of the mortise 2, whereby when in a locked position the block will snugly fit between the strike end of the knuckle and the draw-head. The side 21 of the block has its lower end beveled, as at 24, and its bottom at the front end recessed, as at 25. The straight portion of the wall 23 extends up a height equal that of the block 15 and merges into a depressed or seat portion 26, having an outwardly-inclined bottom 27, such seat portion being provided to receive the block 15 when turned to its locked position, the incline 27 facilitating the drop movement of the block when the knuckle swings outward.

The object in providing the supplemental rest portion 13 on the knuckle extension is

to provide for a free vertical play of the block without unnecessarily increasing the weight of the chamber or mortise 2, it also admitting of the use of a block of a reduced height, so that the same can readily adjust itself either into a coupling or uncoupling position, as such block when raised will swing over onto the supplemental rest portion, its recess engaging the flange 13^a, it being obvious that when swung to such position the knuckle member will be at once swung out by gravity, as its rear extension at this time rests on the inclined flange, and as it thus swings out it will throw the block outward and cause it to drop on the extension 11, when the vertical member 12 will force such block up into the seat in the wall of the draw-head and hold it there so long as the knuckle is swung out.

To provide for a positive outward swing of the knuckle, such knuckle has a limited free vertical movement on its pivot-bolt 6, as clearly shown in Fig. 7, by reference to which it will also be seen the lower end of the knuckle is cut away, as at 27^a, and the lower bifurcated end of the draw-head is extended forward and provided with an incline 29, rising inward, with which the bottom of the pendent portion 28 of the knuckle engages, as clearly shown in Figs. 1 and 7. The free movement of the knuckle and the height of the incline 29 are, however, relatively such that at no time will the bearing 28 be otherwise than on the incline 29, so that the lower end of part 28 will have no fixed lodgment on such incline during any part of its movement thereon. This construction of parts is very advantageous. Inasmuch as the greatest weight of the knuckle is at or just in advance of its pivotal axis it follows, as its lower end has no fixed bearing, such knuckle as soon as released from the lock-block will swing out irrespective of the incline 7, thereby providing a double means for forcing the knuckle automatically outward.

By forming the seat for the lock-block with an inclined portion and the block with an inclined end adapted to engage such seat portion such block will be caused to drop vertically in position in a quick and positive manner.

By constructing and combining the knuckle and the lock-block in the manner shown and described the block when lifted is seated automatically by the outward automatic swing of the knuckle.

Thus my coupler has practically a triple automatic operation, in that the coupling is effected automatically, the knuckle swings out automatically when released, and the lock-block is automatically seated by the outward swing of the knuckle.

To provide for a positive bearing for the lock-block, the straight wall 23 of the mortise may have a wedge or supplemental bearing portion 23^a, as shown in Fig. 8, to engage and form a solid bearing for the cut-away portion

of the lock-block, such construction being especially applicable for use on freight-cars.

I am aware that inclined members or spring devices have been held within the draw-head mortise for forcing the knuckle outward after it is released. This form of devices for forcing the knuckle outward have been found objectionable in that the springs frequently break and the inclined ways, being located within the draw-head mortise, are adapted to interfere with the proper operation of the lock devices. I am also aware that inclines on the lower bifurcated end of the draw-head have been provided to lift the knuckle as it swings inward. So far as I know such inclines are so arranged that the base of the knuckle which engages the same, when swung to its innermost or coupled position, will rise up over the upper edges of the inclines, rest upon them, and become seated thereon and held from automatically moving outward. Such arrangement of inclines is further objectionable in that the constant riding of the knuckle on the upper ends thereof soon flattens them and renders the automatic outward swinging of the knuckle almost impossible. In my construction of parts the lower bifurcated end is extended forward, as shown in Figs. 1 and 7, and the inclined way made uninterruptedly and gradually tapering inward and upward to a point above the highest lift-point of the lower edge 28 of the knuckle, thereby making it impossible for such lower edge to ride above the upper edge of the inclined way 29 and leaving the weight of the knuckle on such incline at all times. Furthermore, by placing such incline on the front edge of the extended portion the bulk of the weight of the knuckle will be at a point in advance of the axis thereof and thereby materially aid in the positive outward swing of the knuckle by gravity action on the incline 21.

By providing means at the pivot-point of the knuckle, arranged as shown, a positive swing action is obtained and the mortise of the draw-head held free for an easy operation of the locking devices, the use of springs and trip devices held within the draw-head for moving the knuckle outward by the use of my invention being entirely dispensed with.

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

1. In a car-coupler of the class described, the combination with the draw-head having a bifurcated end and a pivot-pin, a coupling member having vertical movement on such pin and having its lower end made flat and of a length to always be in a plane below the top of the lower bifurcated portion of the pivot end of the draw-head, said lower bifurcated end having a forwardly-extending member provided with an incline 21 rising gradually and uninterruptedly inward to a plane in line with the top of the said lower bifurcated end all being arranged substantially in the manner shown, whereby the bottom of

the lower end of the coupling member cannot rise above the upper end of the incline 21, as set forth.

2. In a car-coupling as described, the combination with the draw-head having an incline, and the knuckle member having a vertical movement on its pivot and provided with an extension, said extension having a rest portion, and the draw-head having a straight wall portion and a seat or depression above it, of the vertically and laterally movable lock-block adapted to automatically drop between the knuckle extension and the straight wall portion, and to seat on the rest portion and the wall-seat when raised, and automatically moved into the seat as the knuckle swings outward as specified.

3. In a car-coupler as described, the combination with the draw-head, said draw-head having a vertical lock-face 23 terminating at the upper end in an inclined seat 26, and the knuckle automatically movable to its uncoupled position, said knuckle having a rest member, of the vertically and laterally movable lock-block, means for swinging it laterally toward the knuckle member as it is raised, said block having a beveled portion 24 adapted to rest on the seat when such block is at its upper or unlocking position as specified.

4. The combination in a coupling of the

kind described with the draw-head and the automatic outwardly-swinging knuckle, said knuckle having an extension having a main rest portion and a supplemental rest portion, of the pivoted and vertically-movable lock-block, means for lifting the same whereby to swing the same out to the supplemental extension substantially as shown and described.

5. The combination with the draw-head having a straight lock-face 23, a seat portion 27, and an incline 7, arranged substantially as shown, of the vertically-movable swinging knuckle having an extension adapted to ride on the incline 7, and provided with a rest portion 11 and a lock bearing-face 16, the pivoted block 21 having its pivot in line with its front or bearing-face, a lift device adapted to swing such block inward as it is raised, said block having its lock portion adapted to rest on the portion 11 of the knuckle member when such member is at its unlocked position and to automatically drop down between the draw-head portion 23 and the face 16 of the said knuckle member when such member is swung to its coupled position as specified.

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Witnesses:

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