

942,218.

Patented Dec. 7, 1909.



UNITED STATES PATENT OFFICE.

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AUTOMATIC CAR-COUPLING.

942,218.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, OTTO F. RICHTER, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Automatic Car-Couplers, of which the following is a specification.

This invention relates to automatic car couplers; and the object of the invention consists in the provision of car couplers of the above specified class with certain means for supporting the locking-pins in elevated position, when the knuckles are standing open, so that the latter may be closed at will without interference.

The object consists further in the provision of car couplers of the above specified class with knuckles which will be moved automatically into their most open positions, when released, thereby keeping the knuckles out of the path of the engaging knuckles and thus insure that proper couplings between cars will result.

The object consists further in the provision of car couplers of the above specified class with certain means extending to the side of the car from which the couplers are operated, thereby eliminating the necessity of the switchmen entering between the cars in effecting couplings.

I accomplish the objects of my invention by means of the car coupler illustrated in the accompanying drawings in which—

Figure 1 is a top or plan view of the head of a draw-bar showing the knuckle of the coupler in closed position, and by means of dotted lines its open position. Fig. 2 is an under side plan view of the construction shown in Fig. 1. Fig. 3 is a cross section on the line A—A in Fig. 1, showing the normal position occupied by the locking-pin which retains the knuckle in closed position. Fig. 4 is a view similar to Fig. 3 except that the locking-pin is shown in its uppermost position to permit the knuckle to move into its open position. Fig. 5 is a detail in cross section on the line B—B in Fig. 1, showing the opposite side of the locking-pin from that shown in Figs. 3 and 4. Fig. 6 is a top plan of the knuckle with the surrounding parts omitted.

In the drawings, 1 represents the body and 2 the integral head, both of which are somewhat similar to the standard couplers

in use. The head 2 is provided at one side with the projecting lip 3 adapted to direct the knuckle of the engaging coupler into position to cause a perfect locking between the two couplers, when making a connection. The opposite portion 5 of the head 2 forms a bearing for the knuckle 10, which is pivotally mounted on the vertically extending pivot pin 11. The knuckle 10 is formed with the shank 12, the latter terminating with an extension or tail-piece 13. This tail-piece of the knuckle is formed on a curve concentric with the pin 11, so that the knuckle 10 is free to move. The tail-piece 13 of the knuckle moves within an aperture 15 which intersects the vertically extending aperture 17 in which the locking-pin 20 operates. The locking-pin is composed of a rectangular bar 20 which is provided at its top with the horizontal arms 21 adapted to engage the operating arm which will be hereinafter described. The lower end of the locking-pin 20 is reduced in size at 22 to form the shoulder 23, which shoulder rides upon the tail-piece 13 to keep the pin 20 in elevated position when the knuckle is unlocked.

The relative position of the knuckle with relation to the locking-pin 20 is such that when the knuckle is closed, the body of the pin 20 drops in front of the shank 12 and forms a stop to prevent the knuckle from being accidentally opened. However, when the pin 20 is moved past the adjacent edge of the shank 12 of the knuckle, the lower portion 22 of the pin will permit the shank 12 and tail-piece 13 to pass, thereby allowing the knuckle 10 to be opened. The lifting or elevating of the locking-pin 20 is accomplished by means of the lever 25 which is bifurcated at its lower end, each branch of the lever being provided with a horizontally disposed lug 26 which forms rests for the arms 21 on the upper end of the locking-pin. The upper end of the lever 25 is engaged by suitable operating rods 30 and chains 31 which extend to each side of the car, and from which points the coupler can be operated without requiring the switchmen to step between the cars.

Fig. 4 of the drawings shows the inclined position of the lever 25 whereby the locking-pin 20 is elevated to permit the knuckle 10 to open. The aperture 17 in the head 2 of the coupler is enlarged as at 18 to pro-

vide room for the bifurcated ends of the operating lever 25 and the extending arms 21 of the locking-pin. This enlargement of the aperture 17 forms a ledge 36 on each side of said locking-pin. Each of these ledges is provided with a depression or recess 37 adjacent to the locking-pin to provide catches against which the bifurcated ends of the operating lever 25 abut, so as to temporarily hold said operating lever 25 in its inclined position, and maintains the locking-pin 20 in its elevated position to permit closing of the knuckle 10, all as clearly shown in Fig. 4 of the drawings. The lever 25 is released from the recesses 37 in the ledges 36, when the knuckle 10 opens. This is accomplished by means of the shoulder 14, formed on the upper surface of the tail-piece engaging the face of the shoulder 24 on the locking-pin 20. The engagement of these two parts elevates the pin, and by means of the shoulder 24 on the opposite side of the pin contacting the lower end of the operating lever 25 the latter is dislodged from the recesses 37. After the lever 25 is released it will right itself, by assuming a vertical position, on account of the pressure of the spring 40 which is being applied to one side of said lever through the arm 21 (see Fig. 3), and the continued pressure of the spring will cause the lever 25 and locking-pin 20 to move downwardly until said movement is arrested by the contact of shoulder 23 on said pin with the face of the tail-piece 13. The locking-pin is then carried by the tail-piece until the knuckle is entirely closed when the pin will drop past the edge of the shank 12. The locking-pin 20 when released will drop by gravity into its lowest position but to insure a positive reseating of said pin, I provide the spring 40 (see Fig. 2) which is coiled around the lower end of the pivot-pin 11, the free end 41 of this spring engaging the vertical arm of the bell-crank 42, which is pivoted at 43 to the boss 44 located on the lower side of the head 2. The bell-crank 42 is provided with a horizontally projecting arm 46 the outer end of which normally rests upon the horizontally projecting lug formed integrally with the lower portion 22 on the locking-pin 20. It will be seen that when the operating lever 25 is shifted from its inclined position shown in Fig. 4 to its vertical position shown in Fig. 3, whereby the locking-pin 20 is released, the latter will be positively lowered by the tension of said spring 40.

It has been previously stated in the specification that the knuckle 10, when released, is automatically opened so as to permit a subsequent coupling to be made at all times. To insure that the knuckle will be moved in its outermost position in a positive man-

ner, I employ the remaining free end 43 of the spring 40 to accomplish this purpose. The action of the spring upon said knuckle 10 is accomplished by providing the latter with the boss 45 formed on its lower surfaces which boss forms a seat for the end 43 of said spring. Thus it will be seen that both ends of the spring 40 are utilized—the end 41 to lower the locking-pin 20 and the end 43 to open the knuckle 10. It will also be noted that the operation of moving the pin and knuckle 10 occurs at different times so that the operation of one has a tendency to increase the pressure of the spring to insure the operation of the other. In other words, it will be noted that when the locking-pin 20 is elevated the free end 41 of the spring 40 is moved in a direction to compress the spring which causes the latter to exert more pressure upon the knuckle, and with the closing of the knuckle the free end 43 of the spring is moved in a direction to compress the spring 40 so that an increased pressure is exerted upon the bell-crank 42 to move the locking-pin 20 downwardly and lock the knuckle when closed.

With the foregoing description it will be seen that I have provided an automatic car coupler which is simple in construction, and one in which the opening and closing are both automatically accomplished.

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

1. An automatic car coupler of the above specified class comprising a coupler-head, a knuckle pivotally mounted within said head, a locking-pin passing through said head and adapted to lock the knuckle in closed position, means to hold said locking-pin in its uppermost position when the knuckle stands open, and a tension device adapted to apply tension to both the locking-pin and knuckle.

2. An automatic car coupler of the above specified class comprising a coupler-head, a knuckle pivotally mounted within said head, a tail-piece on said knuckle extending rearwardly in same plane in which said knuckle moves, a locking-pin passing at right angle through the path of travel of said tail-piece, and a single tension device operatively associated with both the locking-pin and knuckle and adapted to lower the locking-pin when released and open the knuckle when the locking-pin is raised.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, this 20th day of March, A. D. 1909.

OTTO F. RICHTER. [L. S.]

Witnesses:

F. W. WOERNER,
E. E. MILLER.