ABSTRACT OF THE DISCLOSURE

A knuckle-type car coupler wherein the lock includes a latch stored within the general control of the lock to pivotantinely by gravity into a position for engaging the top wall of the coupler head during upsetting of the coupler. Movement of the lock is thus limited to prevent unlocking of the coupler.

Description

This invention is primarily concerned with avoiding accidental unlocking of couplers after the couplers have been rotated, e.g., through 135 degrees to 180 degrees as during a car-dumping operation, and returned to upright position. In the transportation of such bulk commodities as coal and ore, railway cars are dumped singly or in pairs while coupled in a train. To enable such dumping, a swivel coupler is provided at one car end and a stationary or non-swiveling coupler is provided at the opposite car end. The non-swiveling car coupler has the conventional or standard uncoupling rod and associated uncoupling mechanism. Consequently, when the cars are rotated through 135 degrees or more in the car dumper, the uncoupling rod handle drops or falls out of its normally down position and actuates the coupler-operating mechanism. The coupler operating parts are thus shifted to unlocking position. After the cars are returned to upright position, the lock fails to drop into lock position because it is retained in lock set position. The associated cars are thus prepared for unintentional separation as the car train is shifted for another car-dumping operation. The conventional anti-creep mechanism of the coupler does not prevent this condition from arising because of the opportunity for the operating rod to reach the full unlocking position during upsetting of the cars.

Hence it is an essential object of this invention to provide anti-creep mechanism in a knuckle type coupler which provides protection against unlocking of the coupler under conditions which permit unintentional travel of the operating rod to its coupler unlocking position.

A further object is to provide additional anti-creep facility to knuckle type couplers for the special function mentioned above with a minimum of modification of standard coupler design.

These objects are achieved in a general way in any automatic railway car coupler which comprises a lock which is free to move toward the top wall of the coupler head from a condition in which it maintains coupled relation with another coupler to an unlocked condition. Such lock has a recess extending inwardly from its top surface in which is housed a latch pivotally connected with the lock to be swung by its own weight out of the recess toward the top wall of the coupler head to prevent such movement of the lock as would result in unlocking of the coupler when the coupler is tilted more than 90 degrees from its usual upright position.

In the drawing with respect to which the invention is described:
its normally upward surface 27 into engagement with a stop therefor, i.e., the forward surface 26 of the recess 27.

The latch has a head 29 which is enlarged and radially outward with respect to the stem portion 28. The head is joined with the stem so that, when the latch is in its maximum outwardly tilted position against stop 26, the center of gravity of the latch is rearwardly of a vertical plane M—M. Hence, in the upright position of the coupler, the latch 6 always returns to the position illustrated by FIG. 4 as soon as the lock moves slightly toward the bottom of the coupler to disengage the latch from the wall 36.

If the coupler is visualized with the parts arranged as seen in FIG. 6 but, instead, in its usual upright position, it is obvious that the mass of the latch is disposed primarily rearwardly of the vertical plane M—M and that the latch will swing rearwardly and downwardly to a position such as illustrated by FIGS. 1 and 4 whenever the coupler assumes an orientation wherein the lock leg 9 is inclined downwardly, i.e., less than 90 degrees relative to a vertical plane.

A common function of the coupler shown in the drawings and in Metzger Patent No. 2,709,007 is that it may assume a lock set condition in which the lock is positioned as shown in FIG. 5 so that the tail 31 of a knuckle 32 may engage a forward node of the lock in swinging toward the foreground as viewed in FIG. 5. This enables the trainman to set a coupler of two coupled cars so that the cars will uncouple at any delayed occasion when one is pulled away from the other. Lock set condition is normally attained by swinging the operating rod to its full unlocking position and allowing the rod end lock to return by gravity toward locking position. However, the lock returns only part way to a lock-set position.

The lock 6 remains in lock set condition, as shown in FIG. 5, wherein a downward facing shoulder surface 33 formed by a notch along a lower rear area of the leg 9 rests on an upper surface or lock seat 34 of the knuckle thrower 12.

When inverting railroad cars to discharge ladings, such as ore, the lock of a conventional coupler including a chain of parts terminating in the operating rod connected therewith, move to coupler unlocking position. Such parts, in a majority of instances, would return to the coupler locking position when the car was returned to its upright position were it not for the lock-set mechanism. However, in using rotary dumping cars equipped with couplers of conventional internal parts wherein there is an opportunity for the operating rod to swing to its full coupler-unlocking position, the lock is normally retained in lock set position when the car is returned to upright condition.

In the present invention, the latch 6 readily swings out of its storage recess 7 within the lock body as the parent coupler is rotated about its longitudinal axis through an angle exceeding 90 degrees out of its normal upright position. At approximately 110 degrees out of normal orientation, the latch 6 may be assumed to be positioned in an orientation relative to the lock body as shown in dot-dash outline in FIG. 4, wherein it is prepared to engage the under surface 36 of the top wall of the coupler head 37. Engagement thereof with the top wall is completed as shown in FIG. 6 as the lock shifts by gravity toward the top wall.

From the relationship of the lock 5 and the knuckle thrower 12 as shown in FIG. 6 it is obvious that the coupler cannot attain the lock-set condition shown in FIG. 5. Experience with the invention has now proved that the coupler always returns to its desired locked condition as shown in FIG. 4 as the car returns to upright position, and that the operating rod mounted on the front end of the car assumes its normal downward position.
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DRAYTON E. HOFFMAN, Primary Examiner.

U.S. Cl. X.R.
UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,433,369  March 18, 1969

William J. Metzger et al.

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 16, "control" should read -- contour --. Column 2, line 30, after "surface" cancel "111" and insert -- 11 --. Column 4, line 44, "movmeent" should read -- movement --.

Signed and sealed this 7th day of April 1970.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents