

March 8, 1966

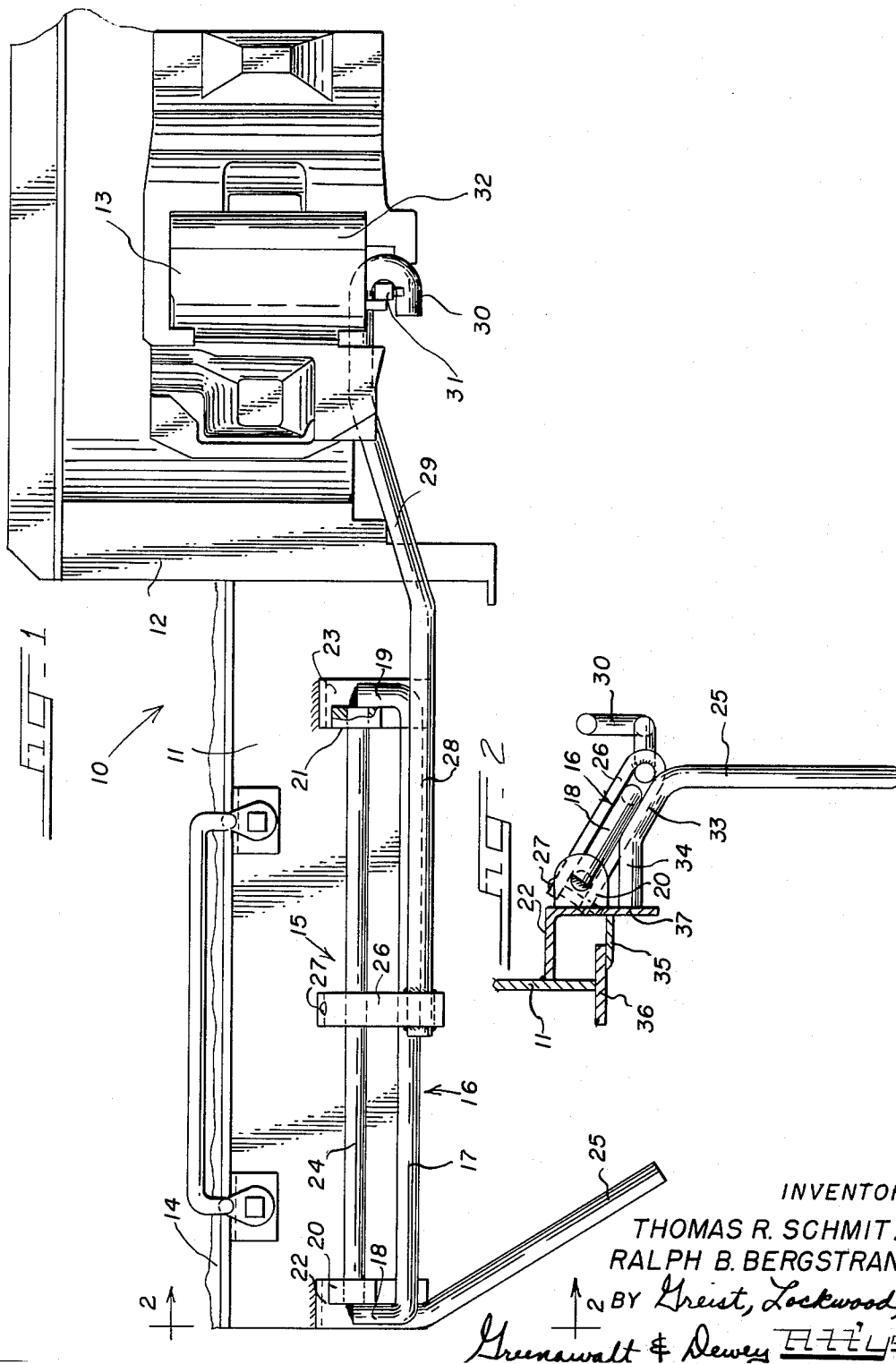
T. R. SCHMITZ ETAL

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UNCOUPLING MECHANISM

Filed June 26, 1964

2 Sheets-Sheet 1



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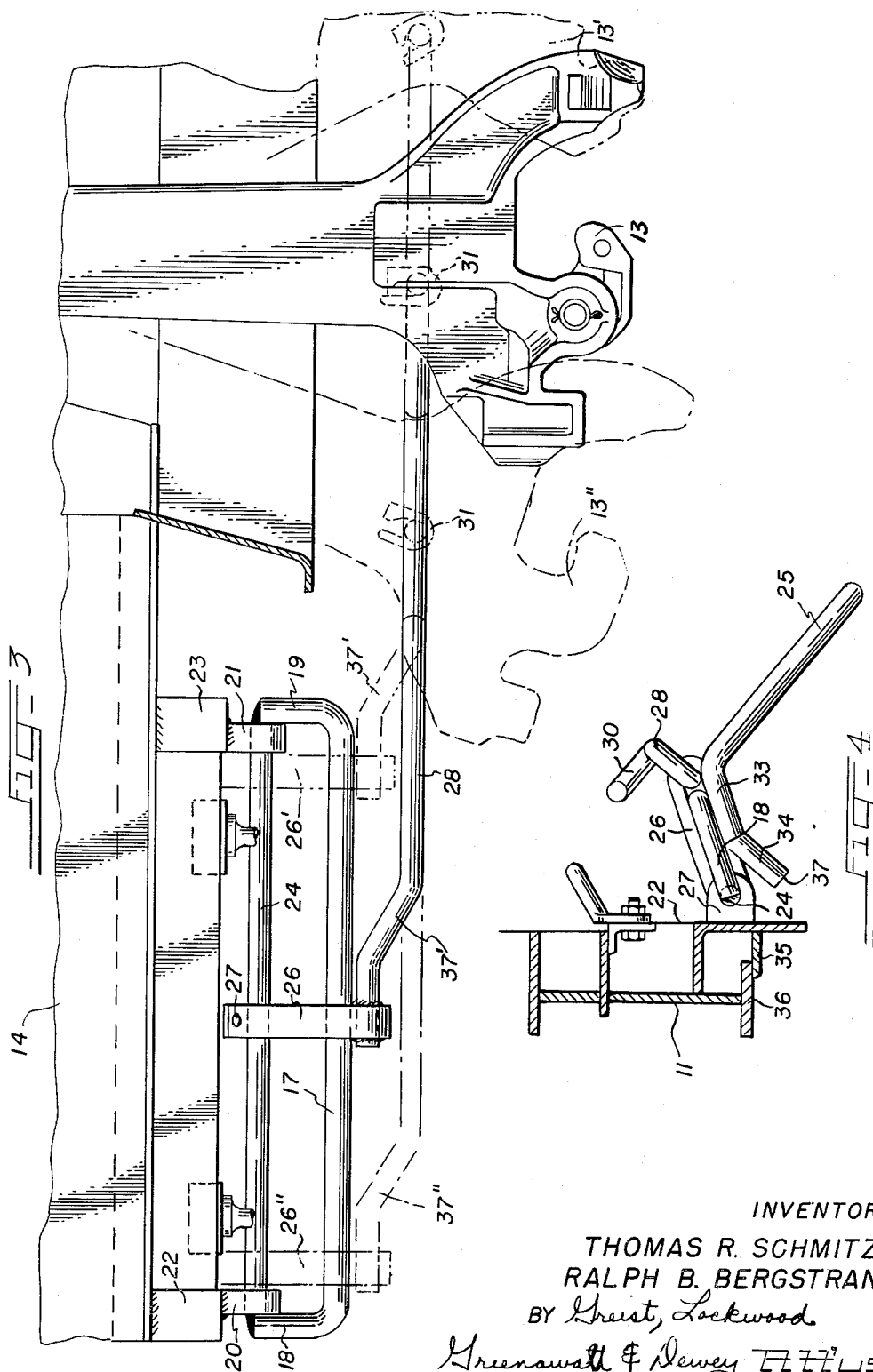
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3,239,075

UNCOUPLING MECHANISM

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Filed June 26, 1964, Ser. No. 378,192

1 Claim. (Cl. 213-211)

This invention relates to a new and improved uncoupling mechanism particularly adapted for use in conjunction with railway cars having end sills supporting plate-like deck extensions on opposite sides of couplers, with the whole assembly being movable relative to the remainder of the car in response to impacts.

In vehicles of the type noted, the uncoupling mechanism of necessity must be mounted on the end sill and as a consequence is movable therewith. Motion of this type is conducive to inducing creeping of the coupler lock operating means in known types of uncoupling mechanisms which is undesirable for obvious reasons. The present invention resolves this problem while providing additional benefits and advantages in the form of cost savings, simplicity in design, and the like. A more complete appreciation and comprehensive understanding of the salient points of the present invention may be had through a consideration of the objects to be achieved and the detailed description of the invention to follow.

It is an object of this invention to provide a new and improved uncoupling mechanism of simplified and uncomplicated construction.

It is a further object of this invention to provide a new and improved uncoupling mechanism particularly adapted for use on railway cars equipped with a plate-like deck portion extension which moves relative to the car deck during impacting, shock loading and the like.

It is a further object of this invention to provide a new and improved uncoupling device designed and constructed so as to prevent creeping of the coupler lock operating means under shock loading while being mounted relative to the end sill of the car so as to provide greater mechanical advantage for trainmen.

Further and fuller objects will become readily apparent when reference is made to the accompanying drawings wherein:

FIG. 1 is a fragmentary end elevational view of the end sill and coupler of a railroad car having the uncoupling mechanism of the present invention mounted thereon;

FIG. 2 is a fragmentary side elevational view taken generally along lines 2-2 of FIG. 1 with the coupler omitted for clarity;

FIG. 3 is a top plan view of the fragmentary end portion of the car illustrated in FIG. 1 with the coupler shown in the central or neutral position in solid lines and phantom lines to illustrate the relative position of the parts as the coupler moves laterally from the neutral position; and

FIG. 4 is a side elevational view similar to FIG. 2 with the handle of the uncoupler lifted as would occur during uncoupling operations.

The fragmentary end portion of the railway car 10 is of the type disclosed in the co-pending application, Serial No. 222,404, filed September 10, 1962 in the name of William H. Peterson and reference to this co-pending application for the complete structural details of the car structure is hereby made. It is to be understood, however, that the principles of the present invention are equally applicable to other types of car structures embodying the general principles as will be set forth below in describing the structure illustrated.

The car 10 is provided with an end sill 11 which extends laterally from a horn shaped coupler housing 12 in

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which is mounted a laterally swingable long shank coupler 13 of known type. The preferred form of the invention contemplates that the coupler will be of the variety known as a type "F" coupler with the particular specifications therefor being defined in the A.A.R. standard manual. The end sill 11 supports a plate-like deck extension 14 which as described in the co-pending application referred to above is slidably received in a main deck portion supported by an underframe.

The uncoupling mechanism of the present invention is indicated generally by reference numeral 15 and includes a generally U-shaped bail member 16 having an elongated base portion 17 and upstanding side leg portions 18 and 19. The upstanding legs 18 and 19 are joined at their respective ends by a longitudinal brace 24 which is received in pivots 20 and 21 respectively with a bearing fit for free rotary movement therein.

The terminal ends of the legs 18 and 19 are welded to the ends of the cross brace 24 as is best seen in the right-hand portion of FIG. 1 where the pivot 21 has been broken away. This simplified form of mounting arrangement minimizes the constructional costs of the uncoupling mechanism while enhancing the ease with which it may be installed.

The pivots 20, 21 are mounted on the end sill 11 by means of identical angle brackets 22 and 23 which are positioned well above the lower portion of the end sill 11. By this arrangement the handle 25 can extend downwardly a maximum amount while being within A.A.R. standards, to provide increased mechanical advantage for unequaled ease in the operation of the uncoupling mechanism 15. Vertical clearance between the end of the handle 25 and the top of the rail is also limited by A.A.R. standards as is side clearance limitations, all of which can be readily accommodated by the simplified arrangement.

The ball member 16 and brace 24 form a mounting for a generally U-shaped connecting link 26 which is slidably received over the elongated base 17 of the U-shaped bail 16 and the cross brace 24 and held thereto by means of a bolt or pin 27. The connecting link 26 is joined to a coupler lock operating rod 28 which extends generally parallel to the brace 24 and is bent upwardly slightly, as at 29, terminating in a curled or hook-shape end 30 which is joined to the coupler lock operating means 31.

As is well known in the art, the coupler lock operating means 31 when rotated a slight amount effects release of the knuckle 32 on the coupler 13 in a manner well known. As will be pointed out hereinafter, the coupler 13 swings laterally as the car negotiates curves, and such lateral movement must be accommodated by the uncoupling mechanism without interfering with the operativeness of the same. The unique manner in which the uncoupling mechanism of the present invention functions to permit lateral movement while remaining freely operable will be described in connection with FIG. 3 in conjunction with the operation of the uncoupling device 15.

The cross section view of FIG. 2 best illustrates one of the more important features of the present invention. As is evident in the drawing, the handle 25 is formed at its upper end into an angularly bent portion 33 which merges with a straight or terminal portion 34 which is generally disposed at right angles to the main portion of the handle 25. The angular bent portion is easily joined to the upstanding leg 18 as by welding, so that lifting of the handle imparts rotation to the uncoupling mechanism 15 about the pivots 20 and 21. Rotation of the bail 16 and cross brace 24 transmits the rotation to the coupler lock operating rod 28 through the U-shaped connecting link 26, serving to unlock or throw the knuckle 32 in a well known manner.

As seen in the fragmentary view of FIG. 2, the angle bracket 22 supporting the pivot 20 is joined to the web of the end sill 11 and supported by a brace 35 joined to the lower flange 36 of the end sill 11. Pivot 21 is supported in a similar manner. The angle bracket 22 forms a stop for the end 37 of the straight or terminal portion 34 of the handle 25. In the absence of external force, the end 37 abuts the bracket 32 when the bail member 16 is angularly disposed relative to a vertical plane. The center of mass of the bail member, together with connecting link and the coupler lock operating rod 28, is urged by the influence of gravity to rotate clockwise about the axis of the cross brace 24, thereby urging the end 37 of the terminal portion 34 on the handle 25 against the angle bracket 22. Rotation is thus limited to the approximate angle shown, serving as an anti-creep feature preventing accidental swinging of the uncoupling mechanism 15 which avoids the accidental creeping type rotation of the coupler lock 31 with the undesirable consequences.

As illustrated, the bail member 16 extends downwardly from the pivots 20 and 21. Impacts serving to move the bail member 16 further downward are resisted by the upper end 37 of the handle 25 abutting the bracket 32. Any movement in the opposite end is resisted by the center of mass of the uncoupling mechanism 15 acting through a lever arm relative to the axis of rotation which also coincides with the geometric axis of the brace 24. The disposition of the bail and associated components when "at rest" being angulated relative to a horizontal plane at an angle of less than 90° relative to a vertical plane, serves to resist any tendency of the uncoupling mechanism 15 to swing under the influence of impact forces.

Referring now to FIGS. 3 and 4, it can be observed that an additional bend 37' in a horizontal plane is provided in the coupler lock operating rod 28 to bring the same into alignment with the coupler lock 31. This of course may vary with the coupler used and the type of mounting.

During car operation, when the coupler moves to the position shown in phantom and indicated a 13' the connecting link 26 moves to the position shown at 26' in abutment or closely adjacent the pivot 21. Lateral movement of the coupler to the position at the opposite extreme, shown at 13'', moves the connecting link to the position shown at 26''. Due to the long shank on the coupler 13, the movement of the coupler lock 31 relative to the end sill 14 is along a substantially flat arc and no additional means need be provided to accommodate increases or decreases in the distance of the coupler lock relative to the uncoupling mechanism 15 due to its arcuate travel. The connecting link 26 affords sufficient compensation for the arcuate movement of the coupler while retaining full and easy operability of the uncoupling mechanism 15 regardless of the coupler position.

In FIG. 4 the handle 25 has been moved to the approximate position required to operate the coupler lock 31 resulting in "throwing" the knuckle. Only a short "lift" is required of the handle 25 due to the positive type of connection between the bail member 16 and the coupler lock operating rod 28.

It is obvious from a consideration of the foregoing that the uncoupling mechanism of the present invention affords benefits in the way of reduced costs of construction due to the unique design without detracting from the

ease of operability. The placement of the pivots permits increased length in the operating handle so that the coupler lock may be operated by trainmen with unequaled ease, regardless of the lateral position of the coupler. An added important benefit is achieved by way of the anti-creep feature discussed above which does not rely on external clamps and the like found in prior art devices, but makes use of the location of the mass of the uncoupling mechanism to preclude swinging and therefore accidental creep or rotation of the coupler lock. While the coupler mechanism of the present invention has been described in conjunction with a movable end sill it is obvious that it may be used with equal facility in conjunction with those cars wherein movement of the coupler relative to the end is of low order and accordingly within the design limitations of the present uncoupling device.

It will become obvious to those skilled in the art that other departures are possible without departing from the inventive concepts embodied herein and therefore any limitations imposed should be within the spirit and scope of the appended claim.

We claim:

An uncoupling mechanism for use in operating a coupler locking operating means on a coupler which is mounted for lateral movement relative to a coupler housing on a railway car, said uncoupler mechanism comprising a bail member having an elongated portion and upstanding leg portions, brace means joined to a terminal end portion of each of said leg portions and arranged parallel to each of said elongated base portion, pivot means with said brace means providing a longitudinal pivot axis for said bail about the longitudinal axis of said brace, bracket means adapted to be mounted on said car and including a vertical flange on which said pivot means are mounted, a coupler lock operating rod being joined at one end to said bail member and brace means through a connecting means, said connecting means embracing said bail member and said brace so as to be slidable lengthwise of said bail member and brace member while rotatable therewith about said longitudinal pivot axis, said coupler lock operating rod being adapted to be joined at the other end to said coupler lock operating means, handle means connected to one end of said leg portion for rotating said bail member, said handle means including a portion projecting therefrom and engageable with said vertical flange to limit the turning movement of said bail member about said longitudinal pivot axis to an inclined position below a horizontal plane passing through said pivots.

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