Aug. 4, 1942. M. P. BLOMBERG 2,292,193

DRAFT GEAR AND UNCOUPLING MECHANISM

Filed Aug. 2, 1940 2 Sheets-Sheet 1

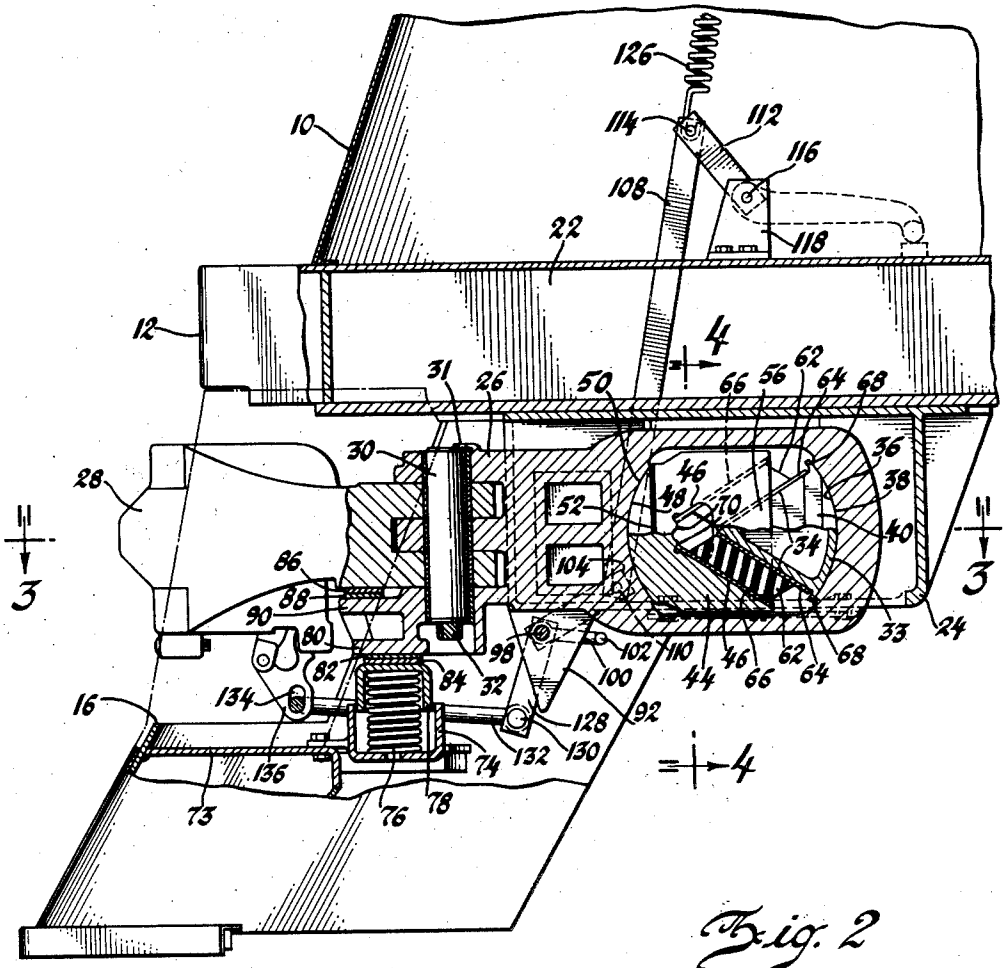


Fig. 2

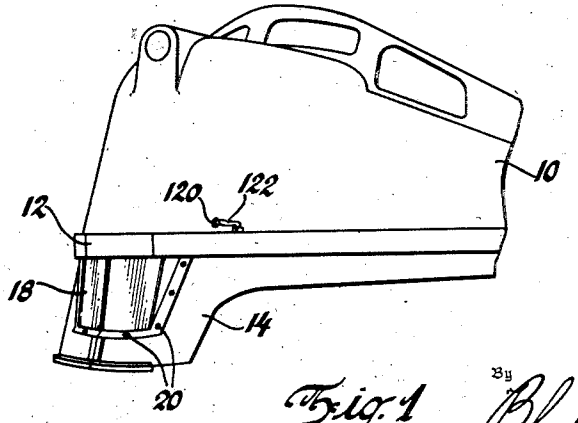


Fig. 1

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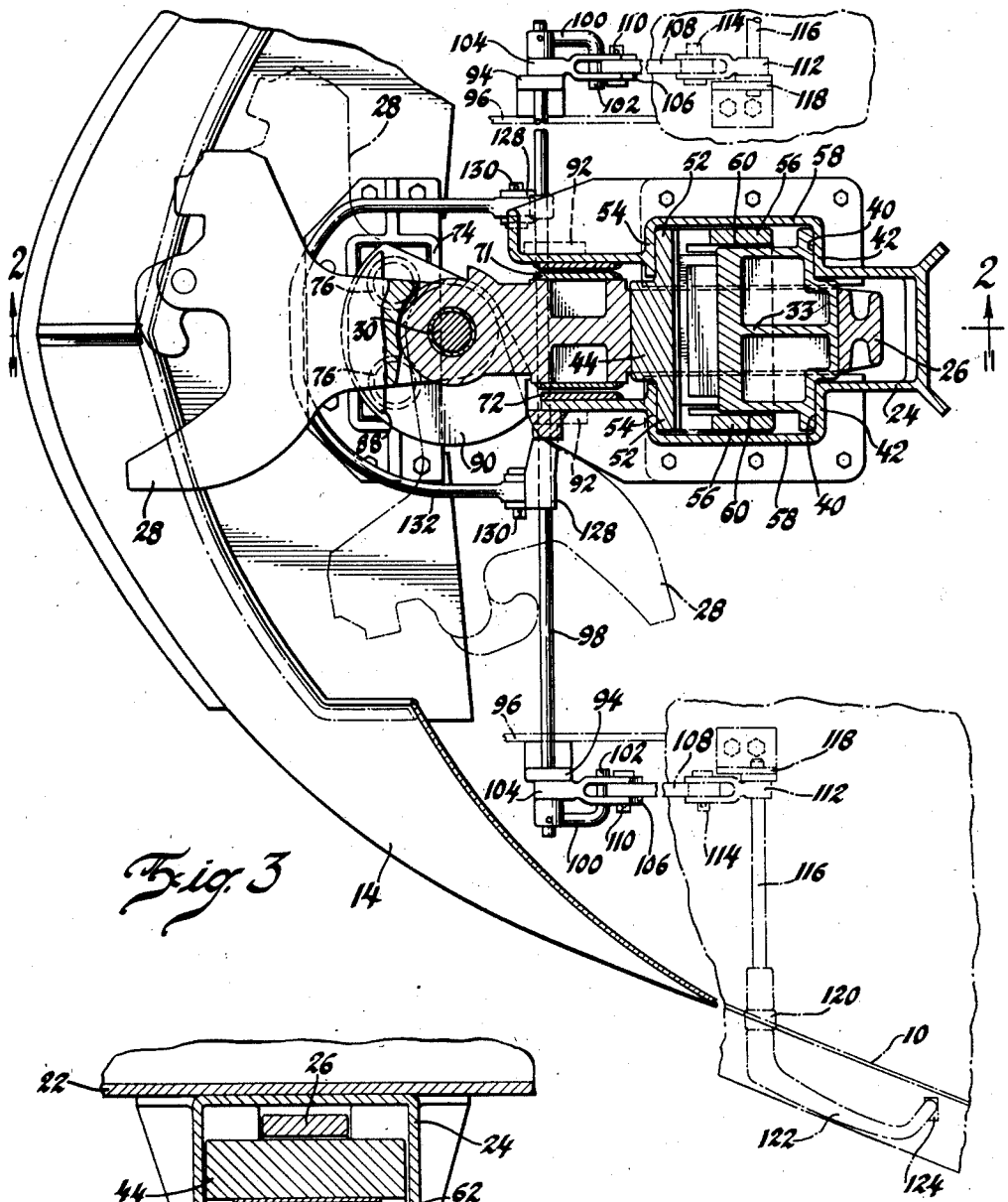


Fig. 3

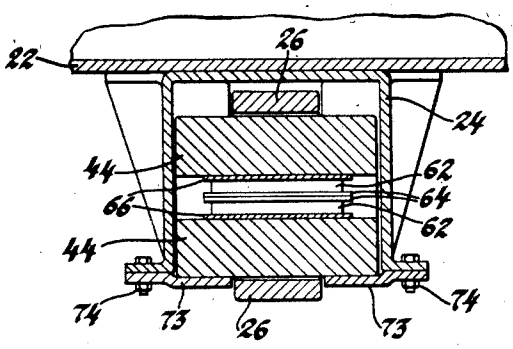


Fig. 4

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UNITED STATES PATENT OFFICE

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DRAFT GEAR AND UNCOUPLING MECHANISM

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Application August 2, 1940, Serial No. 349,713

3 Claims. (Cl. 213—4)

This invention relates to draft gear and uncoupling mechanism of the type which is particularly adapted for use at the front end of locomotives of the Diesel-electric type, wherein since it is only necessary occasionally to couple another lcoomotive or car thereto, the coupler is of the retractible variety which when it is not to be used, may be swung back into a recess which is then closed by a cover to maintain the streamlined appearance of the front end of the locomotive.

An object of the invention is to provide such a construction wherein the retractible coupler is pivotally supported on a yoke which is connected to the locomotive by a cushioning structure, so that all buffing and pulling loads and shocks imposed upon the coupler will be cushioned.

A further object is to provide an uncoupling mechanism for use with the above construction, which mechanism is operable by a handle located on the side wall of the locomotive body and which is so arranged that it will remain in operating relationship to the coupler in any angular position the latter may be in, and need not be disconnected therefrom when the coupler is moved to retracted position.

Other objects and advantages of the invention will be apparent upon reference to the following description and accompanying drawings, in which

Fig. 1 is a perspective view of the front end of a locomotive to which my improved draft gear and uncoupling arrangement is applied.

Fig. 2 is a longitudinal vertical sectional view through the front end of the locomotive, showing the parts on a larger scale.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2.

Referring to Fig. 1, the numeral 10 designates the body of a locomotive of the Diesel-electric type, and 12 is a bumper secured to the front end thereof. Extending below the bumper is a pilot 14 having an opening 16 formed in it through which a coupler of the retractible type, to be later described, may be pulled out to extended position. When the coupler is not being used and is in retracted position, the opening in the pilot is closed by a cover or door 18 which is shown as being held in place by cap screws 20 which are threaded into the pilot, although if desired the door may be hinged thereto or may be secured in place in any other suitable manner.

Referring now to Fig. 2, 22 is the locomotive platform, and secured to the underside of this is a housing 24, open on its underside, within which is supported a coupler yoke 26, which has a coupler 28 pivotally connected to it by a pin 30, the latter being inserted from the bottom of the yoke, which has a stop 31 formed on it to limit upward movement of the pin, which is held in place by a key 32 which extends through the lower portion of the yoke. The yoke 26 is supported in the housing 24 by the following structure. 33 is an inner wedge member having angularly inclined surfaces 34 and a curved surface 36 formed on it, the curved surface fitting against a correspondingly curved surface 38 formed at the rear end of the yoke 26. As shown in Fig. 3, the inner wedge member has projections 40 extending from each side, which projections normally bear against shoulders 42 formed in the housing 24 to prevent movement of the inner wedge member relative to the housing in the one direction. An outer wedge member 44 has angularly inclined surfaces 46 and a curved surface 48 formed on it, which curved surface bears against a correspondingly curved surface 50 formed on the yoke 26. The outer wedge member has projections 52 extending from each side of it, which projections normally bear against shoulders 54 formed in the housing 24 to prevent movement of the outer wedge member relative to the housing in the one direction. Portions 56 extending between the outer ends of the angularly inclined surfaces on the outer wedge member are adapted to bear against walls 58 of the housing to prevent sidewise movement of the outer wedge member relative to the housing, while the side surfaces 60 of the inner wedge member abut against the portions 56 to prevent sidewise movement of the inner wedge member.

Mounted between the inner and outer wedge members are assemblies consisting of blocks 62 of rubber or other resilient material which are vulcanized to metal plates 64 and 66, the plates 64 bearing against the angularly inclined surfaces 34 of the inner wedge member and abutting against shoulders 68 formed thereon, while the plates 66 bear against the angularly inclined surfaces 46 of the outer wedge member and abut against shoulders 70 formed thereon. As shown in Fig. 4, the assembly consisting of the yoke and the inner and outer wedge members with the rubber blocks between them is held in place in the housing 24 by spaced plates 73 secured to the bottom of the housing by bolts 74, the outer wedge member resting on top of the plates and being free to slide thereon, the yoke lying in the space between the two plates 73.

It will be seen that this structure will serve to cushion the buffing and pulling loads imposed upon the coupler, since when the yoke tends to move toward the right as viewed in Fig. 2, the inner wedge member will be prevented from moving in that direction by the engagement of the projections 40 with the shoulders 42, and movement of the yoke will be resisted by the action of the rubber blocks 62 which are placed in combined compression and shear due to the wedging action and the fact that they are vulcanized to the metal plates which engage the shoulders 68 and 70 on the inner and outer wedge members respectively. When the yoke is pulled to the left as viewed in Fig. 2, movement of the outer wedge member in that direction is prevented by the engagement of the projections 52 with the shoulders 54 in the housing, and since the movement of the yoke pulls the inner wedge member toward the left, again the rubber blocks 62 are placed in combined compression and shear due to the wedging action, thus cushioning such movement and absorbing the shock. The curved surfaces 36, 38 and 48, 50 permit the wedge members to have a limited amount of rocking movement relative to the yoke while at the same time maintaining a large area of contact between these members so that the buffing and pulling loads will at all times be distributed over a relatively large surface. Secured to the side surfaces of the yoke are wear plates 71 which are adapted to bear against wear plates 72 secured to the inner surfaces of the walls of the housing 24 to prevent sidewise movement of the yoke.

The forward end of the yoke is supported by the following construction. Connected to the framework 73 of the pilot is a member 74 which is of U-shaped in cross-section, and within this member are located a pair of compression springs 76. On top of the springs rests a cap 78 which is of inverted U-shape in cross-section and this cap fits in telescoping relationship within the member 74. Extending forwardly from the yoke is a projection 80 which has a wear plate 82 secured to its underside, which plate rests on top of a wear plate 84 secured to the cap 78. It will be seen that this structure yieldingly supports the yoke and the coupler which is carried by it, so that they will be free to have a limited amount of up and down movement, which is necessary to permit coupling of adjacent cars where the couplers are at slightly different levels, the springs 76 being compressed to allow the yoke and coupler to move downwardly and tending to return them to their normal position.

A wear plate 86 secured to the lower surface of the coupler 28 rests on top of a wear plate 88 secured to another projection 90 which extends forwardly from the yoke. This structure supports the weight of the coupler and permits it to be swung from retracted tot extended position or vice versa about the pivot point formed by the pin 30. The coupler is shown in extended position in Fig. 2 and in full lines in Fig. 3, and is shown in retracted position by the dotted lines in Fig. 3. It is of course also free to pivot about the pin 30 during operation to assume the different positions necessitated by the angular relationships of adjacent coupled cars when going around curves.

In order to permit uncoupling of adjacent cars from the outside thereof, the following structure is provided. Pivotally supported in inner brackets 92 depending from the bottom of the housing 24 and in outer brackets 94 mounted on the framework 96 is a shaft 98. A lever 100 is secured to each end of the shaft and each lever has a portion 102 which is bent inwardly. Pivotally supported on each end of the shaft between the lever 100 and the bracket 94 is a link 104 which has a yoke portion 106 to which a bar 108 is pivotally connected by a pin 110. Another link 112 is pivotally connected to the upper end of the bar by a pin 114, and this link is secured to a shaft 116 which is rotatably supported at its inner end in a bracket 118 secured to the top of the locomotive platform, and at its outer end in an escutcheon member 120 supported in the locomotive body side wall. A handle 122 is secured to the outer end of each of the shafts 116, and the free end of this handle is adapted to rest upon a stop 124 when in normal position, in which the parts are held by tension spring 126, one end of which is secured to the pin 114 and the other end of which is connected to any suitable part of the body structure.

Secured to the shaft 98 on each side of the housing 24 adjacent to the brackets 92 are arms 128, the lower ends of which are pivotally connected by pins 130 with a U-shaped bar 132 which extends through a slot 134 formed in the coupler unlocking member 136. As shown in Fig. 3, the bar 132 is formed of curved shape on the side toward which the coupler swings when it is moved to retracted position, the curvature of the bar being struck from the center of the pin 30, so that the coupler will be free to swing either to extended or retracted position with the coupler unlocking member sliding over the curved portion of the bar 132, so that it is unnecessary at any time to disconnect the uncoupling mechanism from the coupler.

The operation of the uncoupling mechanism is as follows:

When either of the handles 122 on opposite sides of the locomotive body is swung upwardly, the shaft 116 to which it is attached is rotated and this causes the link 112 to be swung downwardly, pulling the bar 108 down against the tension of the spring 126. The link 104 which is connected to the lower end of the bar is likewise swung downwardly and strikes the inbent portion 102 of the lever 100, swinging the latter downwardly and thereby rotating the shaft 98. This results in swinging the arms 128 forwardly, and since the ends of the curved bar 132 are attached to the arms 128, it is moved forwardly and imparts the necessary movement to the coupler unlocking member 136 to cause the coupler to be unlocked. Since the coupler unlocking member 136 is connected to the curved bar 132 at all times, operation of the mechanism will serve to uncouple the coupler regardless of what angular position it is in relative to the locomotive. When the operator lets go of the handle 122, the spring 126 serves to restore the parts to their normal position.

It will be understood that the invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all aspects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

I claim:

1. In combination with a locomotive frame, a housing secured to said frame, a coupler yoke located in said housing and slidable longitudinally therein, cushioning means located in said housing, said means serving to resist longitudinal movement of said yoke in said housing, and being adapted to allow a limited amount of vertical rocking movement of the yoke relative to the housing, a retractible coupler pivotally connected to said yoke, a projection extending forward from the front end of said yoke, a member carried by said frame under said projection, and spring means located between the projection and the member and serving to resiliently support the front end of said yoke.

2. In combination with a locomotive frame, a housing secured to said frame, a coupler yoke located in said housing, cushioning means connecting said yoke to said housing, said yoke and said cushioning means having cooperating curved bearing surfaces formed thereon to allow a limited amount of vertical rocking movement of the yoke relative to the housing, a retractible coupler pivotally connected to said yoke, and a resilient support located under the front portion of said yoke.

3. In combination with a locomotive frame, a housing secured to said frame, a coupler yoke located in said housing, said yoke having curved bearing surfaces formed therein, cushioning means located inside the yoke and connecting said yoke to the housing, said cushioning means having curved bearing surfaces formed thereon which cooperate with the curved bearing surfaces in the yoke to allow a limited amount of vertical rocking movement of the yoke relative to the housing, a retractible coupler pivotally connected to said yoke, and a resilient support located under the front portion of said yoke.

MARTIN P. BLOMBERG.