June 3, 1941. R. M. DILWORTH 2,244,002

LOCOMOTIVE COUPLING DEVICE

Filed April 13, 1939 2 Sheets-Sheet 1

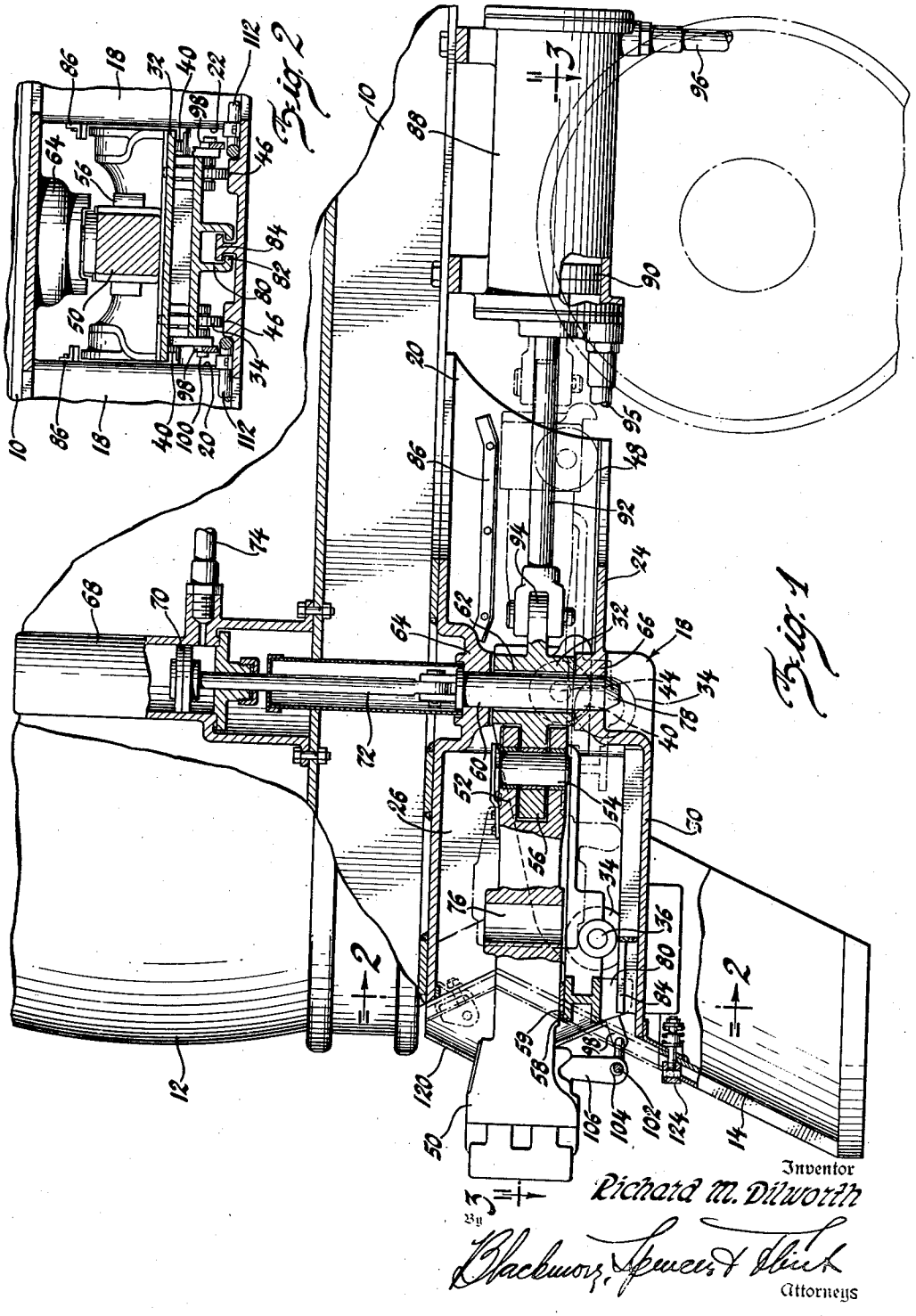


Fig. 1

Fig. 2

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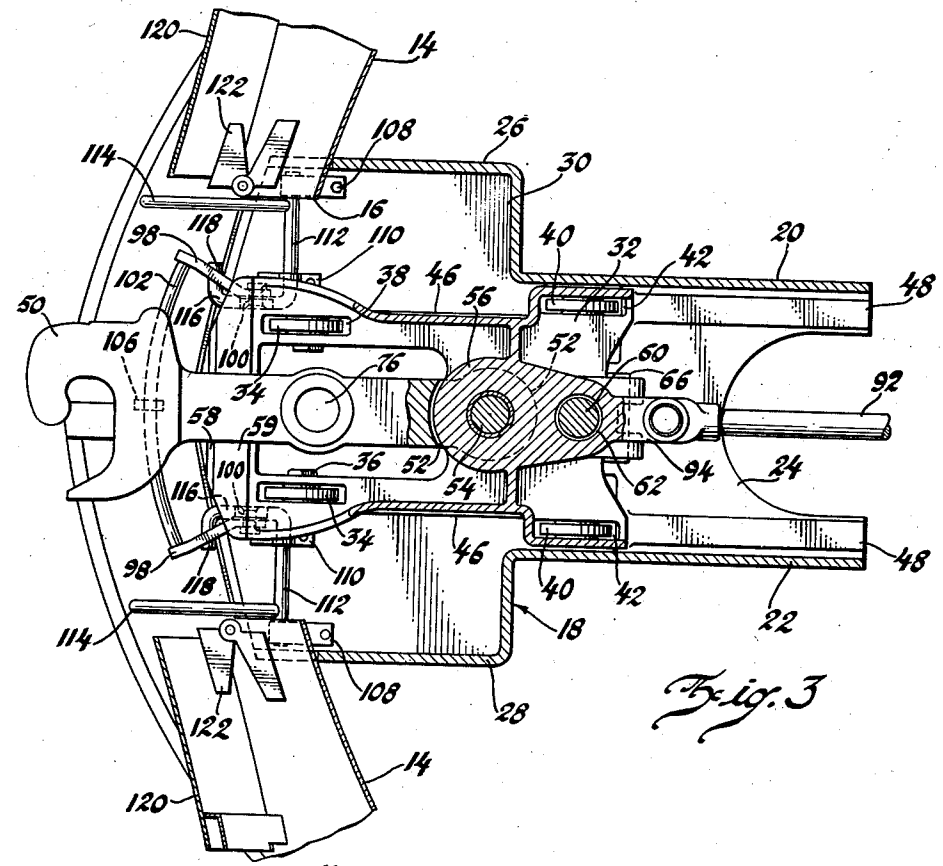


Fig. 3

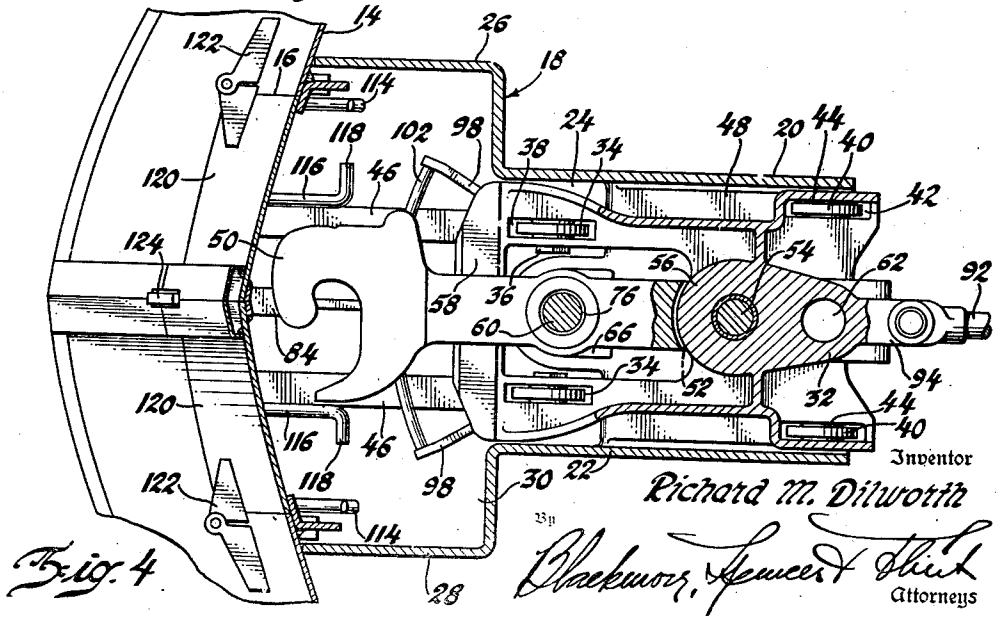


Fig. 4

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LOCOMOTIVE COUPLING DEVICE

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2 Claims. (Cl. 213—4)

This invention relates to locomotive coupling devices of the type which may be moved to a retracted position when they are not being used, in order to get them out of the way for safety reasons and to improve the appearance of the front end of the locomotive.

One of the objects of the invention is to provide a coupling device wherein the coupler is mounted upon and supported by a carriage, which is adapted to be moved forwardly or rearwardly in a coupler housing located at the front of the locomotive, underneath the platform or frame. Since the coupler and its carriage must necessarily be quite large and heavy in order to be able to withstand the loads and shocks imposed upon them, the carriage is supported upon rollers or wheels which run on tracks provided in the coupler housing. The coupler is pivotally connected to the carriage, and in the operative position is free to swing sidewise with respect to the carriage.

Another object is to provide power actuated means for moving the coupler and its carriage forwardly and rearwardly in the coupler housing.

A still further object is to provide means for locking the coupler carriage in either the operative or the retracted positions, and since such locking means is relatively large and heavy because the pulling and buffing loads are transmitted from the coupler and carriage through it to the locomotive frame, power operated means are provided to move this locking means into or out of engagement with the carriage.

Other objects and advantages of the construction will be apparent upon reference to the specification and accompanying drawings, in which

Fig. 1 is a vertical longitudinal section through the front end of a locomotive, taken on the center line thereof, showing my improved coupler associated therewith.

Fig. 2 is a section taken on the line 2—2 of Fig. 1.

Fig. 3 is a section taken on the line 3—3 of Fig. 1, showing the coupler in extended or operative position.

Fig. 4 is a view similar to Fig. 3 but showing the coupler in retracted position.

The reference numeral 10 indicates the platform or frame of the locomotive, and 12 is the front end of the body. Supported from the frame is a pilot structure 14, which may be generally of conventional construction, except that it has a centrally located opening 16 formed in it, for a purpose to be presently described. 18 is a coupler housing, which is supported from the underside of the frame, and this housing is comprised of side walls 20 and 22 and a bottom wall 24. The front end of the housing is made larger in size than the rear end, by locating side walls 26 and 28 farther apart, and by providing a bottom wall 30 located at a lower level than bottom wall 24. The front end of the housing extends forward to the rear face of the pilot 14.

Mounted within the housing is a coupler carriage 32, which is supported by a pair of wheels 34 at its front end, which wheels are journaled upon pins 36 secured in the coupler carriage and are located in slots 38 formed in the latter, while the rear end of the carriage is supported by a pair of wheels 40 located in slots 42 and journalled upon pins 44 mounted in the carriage. A pair of tracks 46 are secured to or formed on the bottom wall 30 for the wheels 34 to run on, while another pair of tracks 48 are provided on the bottom wall 24 for the wheels 40 to run on.

A coupler 50, which is generally of conventional construction, has a yoke portion 52 which is pivotally connected by a pivot pin 54 to the central portion 56 of the coupler carriage, and this coupler extends forwardly beyond the end of the carriage, being slidably supported upon a cross member 58 located at the forward end of the carriage, so that the coupler may swing sidewise a limited amount about the axis of the pivot pin 54, there being a wear plate 59 interposed between the coupler and the cross member 58.

The coupler is shown in extended or operative position in Fig. 1, and it is held in this position by a vertically movable pin 60 which passes through a passageway 62 formed through the rear portion of the coupler carriage, the pin 60 being slidably supported in bores formed through bosses 64 and 66 formed in the upper and lower walls respectively of the coupler housing. Since the mechanism necessarily must be quite large and heavy in order to carry the heavy loads and shocks imposed upon it, it would be quite difficult to move the pin 60 manually, so provision is made to move it by the use of compressed air.

This consists of an air cylinder 68, the piston 70 of which is connected by a rod 72 to the upper end of the pin 60. It will be seen that when compressed air is admitted to the lower end of the cylinder through the pipe 74, by operating a control valve (not shown) the pin 60 will be pulled upwardly out of the passageway 62 in the coupler carriage, whereupon the carriage may be moved rearwardly to the position shown in Fig. 4, in which position the entire coupler 50 will be located inside the housing with its forward end lying back of the pilot.

In this position a passageway 76 in the central portion of the coupler will be in line with the pin 60, and by admitting compressed air to the upper portion of the cylinder 68, the pin 60, which has its lower end chamfered or beveled as at 78 to facilitate its entry, will be lowered so that it extends through the passageway 76, thereby locking the coupler in retracted position. In order to insure that the wheels on the coupler carriage

will remain on the track portions on the bottom walls of the housing, portions 80 having laterally extending flanges 82 extend longitudinally of the carriage on the under side thereof, as shown in Fig. 2, and these flanges extend under the edges of a T-shaped member 84 formed on or secured to the bottom wall 30 of the housing. To prevent the rear portion of the carriage from moving upwardly and to properly guide it during its longitudinal movement in the housing, guide members 86 are secured to the side walls of the housing in a position slightly above the upper face of the rear portion of the carriage, so that they will be engaged by the latter should it tend to tilt upwardly during its rearward movement or while it is located in retracted position.

While supporting the coupler on the carriage which is mounted upon wheels running on tracks makes it possible to move the coupler in or out manually, it may be considered desirable, in view of their relatively great weight, to provide means for moving them with the use of power. Therefore another air cylinder 88 may be located to the rear of the coupler housing, and piston 90 in it is connected by a rod 92 to a lug 94 formed on the rear of the coupler carriage, so that when compressed air is admitted to the front end of the cylinder 88 through pipe 95, by operating a control valve which is not shown, the carriage, and the coupler which is supported on it, will be moved rearwardly to the retracted position shown in Fig. 4, while by admitting compressed air to the rear end of the cylinder 88 through the pipe 96, the carriage and coupler will be moved forwardly to the position shown in Figs. 1 and 3, which is termed the operative position.

The following mechanism is provided to permit uncoupling of the coupler. Arms 98 are pivotally connected at 100 to opposite sides of the front end of the carriage, and a curved rod 102, having a radius struck from the center of the coupler pivot pin 54 is supported in the free ends of these arms. This curved rod extends through an opening 104 formed in the lower end of the coupler operating lever 106, and it will be seen that since the curvature of the rod 102 is the same as the arc of movement of the coupler in swinging about the pivot pin 54, the coupler operating lever may swing freely over the curved rod 102 and may be actuated by the latter in any position of angularity. Pivotally supported in brackets 108 and 110 connected to each side of the housing are coupler operating bars 112 having handles 114 connected to their outer ends, and having their inner ends bent parallel to the longitudinal axes of the coupler as at 116 and then bent outwardly as at 118.

When the coupler and carriage is being moved to operative position, the curved rod 102 will strike the portions 116 of the bars 112, since the portions 116 are extending in a vertical position at that time as shown in Fig. 4, and continued forward movement of the coupler and carriage will cause the bars 112 to be rotated in the brackets 108 and 110 to the position shown in Figs. 2 and 3, in which position the bent portions 118 will lie under the arms 98. The handles 114 will at this time extend out through the opening 16 in the pilot so that they will be accessible. It will be seen that as either of the handles 114 is swung rearwardly, the end 118 associated with it will engage the adjacent arm 98 and will cause the latter and the curved rod 102 to move upwardly, thereby actuating the coupler operating lever 106 and causing the coupler to be uncoupled. By providing the coupler operating linkage at both sides, the coupler may be uncoupled from either side of the locomotive, as well as in any position of angularity of the coupler. When the coupler is moved to retracted position, the handles 114 and the bars 112 with their out-turned ends 118 are manually swung inwardly into the coupler housing, into the position shown in Fig. 4, so that they will lie back of the face of the pilot.

A pair of doors 120, pivotally connected to the pilot by hinges 122 are adapted to close the opening 16 in the face of the pilot when the coupler is moved to retracted position. These doors are of the same curvature as the face of the pilot, so that when they are closed they form a continuation of the latter, thereby maintaining the streamlined appearance of the front end of the locomotive. These doors are held in closed position by means of a lock 124, shown in Figs. 1 and 4. When the coupler is to be moved to operative position, the lock is disengaged and the doors are swung outwardly to the position shown in Fig. 3. Any suitable mechanism may be employed to hold them in this latter position. If desired, means may be provided to connect the doors to the coupler carriage so that when the latter is moved outwardly, the doors will be automatically opened, and when the coupler is moved to retracted position, the doors will be pulled to closed position, and will be held in that position.

It will be understood of course that various changes may be made in the details of the structure without departing from the spirit and scope of the appended claims.

I claim:

1. In combination, a locomotive underframe, a housing supported from said underframe, a carriage located in the housing and supported therein upon wheels whereby the carriage may be rolled forwardly or rearwardly in the housing, a coupler pivotally supported upon the carriage, a coupler operating bar carried by said carriage, and means for uncoupling the coupler pivotally supported in the housing and adapted to be in inoperative position when the coupler is in retracted position, said means being adapted to be swung into operative relation to said bar by the forward movement of said carriage.

2. In combination, a locomotive pilot having an opening formed therein, a pair of hinged doors adapted to close said opening, a housing located behind the pilot in line with said opening, a carriage supported in the housing and adapted to be moved forwardly and rearwardly therein, a coupler pivotally supported on said carriage, said coupler being adapted to project out through the opening in the pilot when the carriage is moved to its forward position in the housing, a coupler operating bar carried by said carriage, and means for uncoupling the coupler, said means being concealed within the housing behind said doors when the coupler is in retracted position but being adapted to be engaged by said bar and thereby to be swung outwardly when the coupler is moved to operative position, for the purpose of being rendered accessible for uncoupling the coupler.

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