Aug. 21, 1923. 1,465,614

E. D. O'DONNELL

UNDERCARRIAGE AND BODY OF RAILWAY VEHICLES AND IN PLATFORM TO BE USED THEREWITH WHEREVER A BREAK OF GUAGE OCCURS

Filed Nov. 27, 1922 3 Sheets-Sheet 1

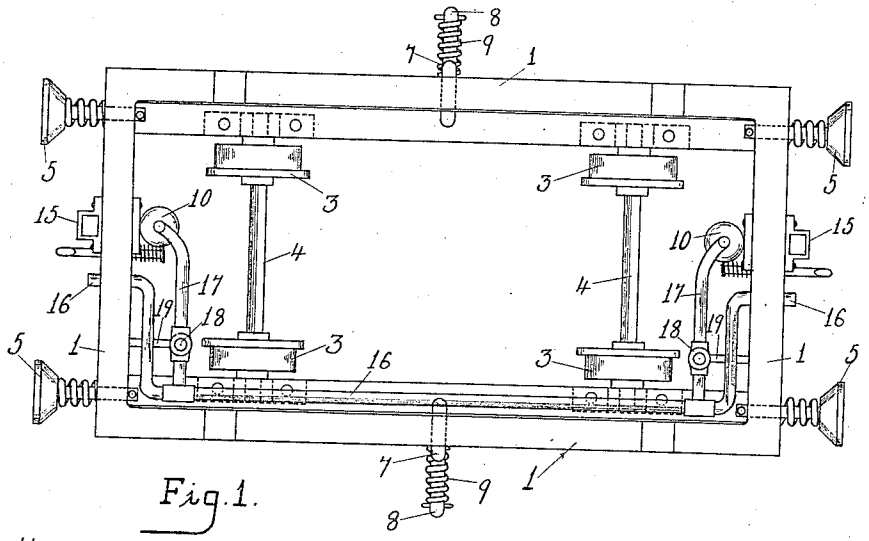


Fig. 1.

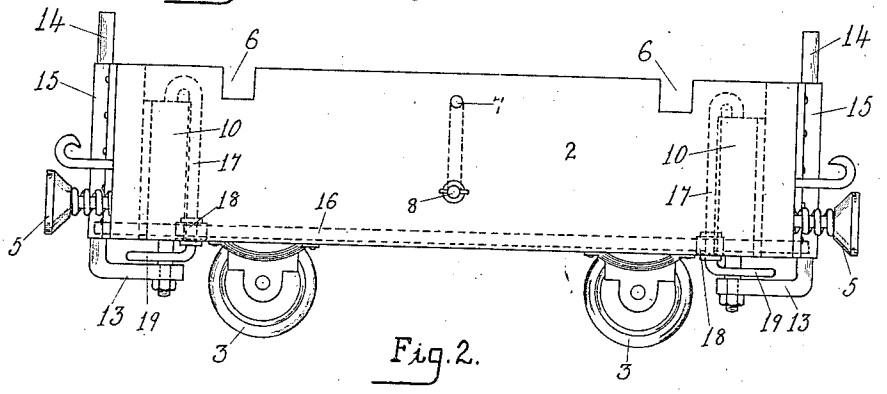


Fig. 2.

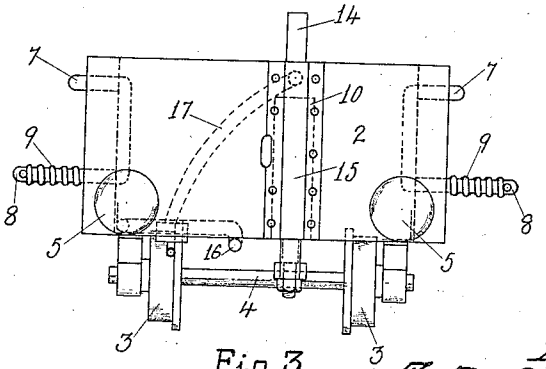


Fig. 3.

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Filed Nov. 27, 1922 3 Sheets-Sheet 2

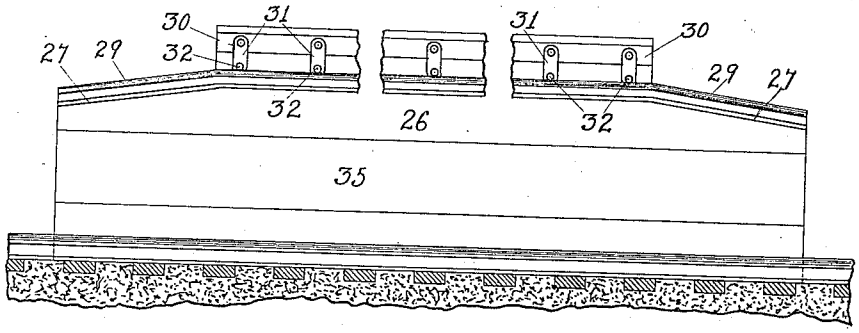


Fig. 4.

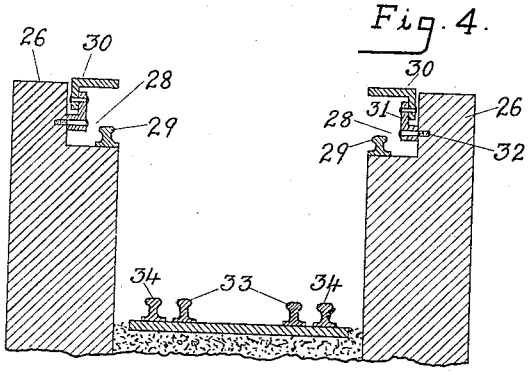


Fig. 5.

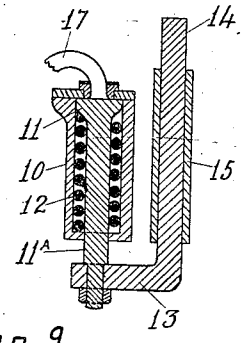


Fig. 9.

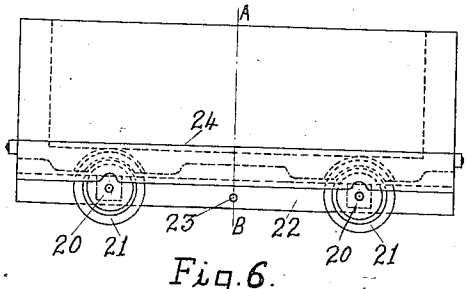


Fig. 6.

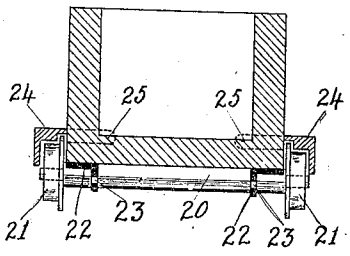


Fig. 7.

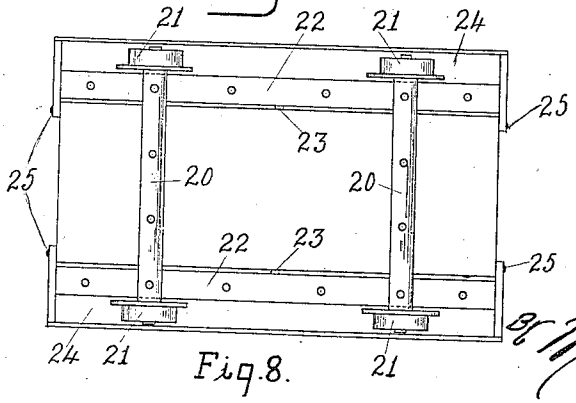


Fig. 8.

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Filed Nov. 27, 1922 3 Sheets-Sheet 3

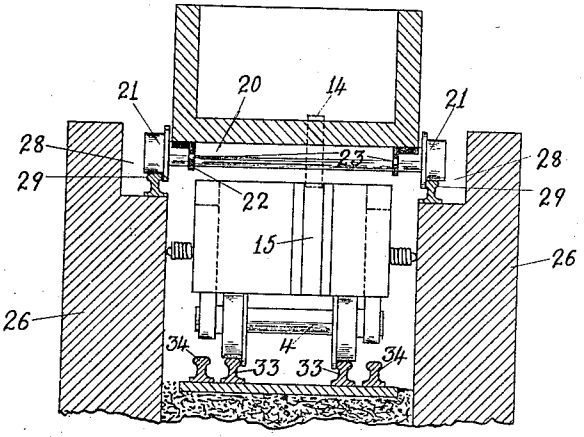


Fig. 10.

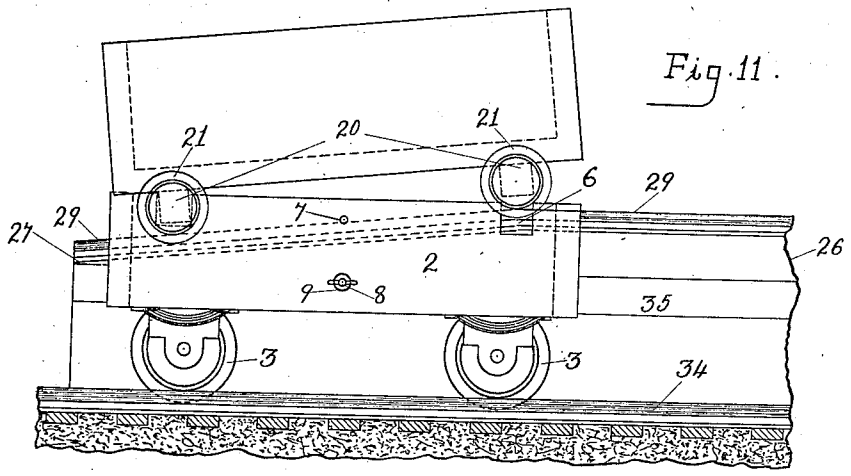


Fig. 11.

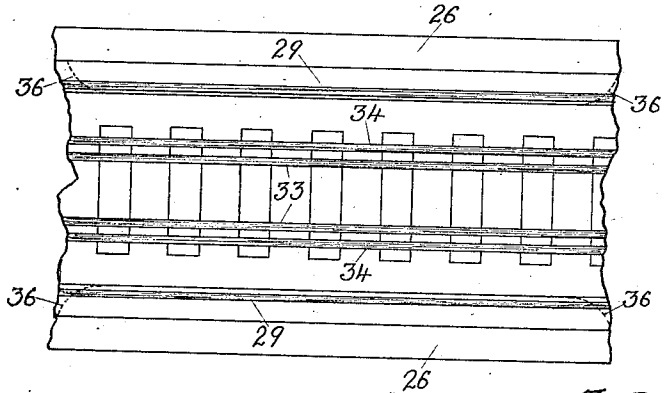


Fig. 12.

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Patented Aug. 21, 1923. 1,465,614

UNITED STATES PATENT OFFICE.

EUGENE DUDLEY O'DONNELL, OF GLEN INNES, AUSTRALIA.

UNDERCARRIAGE AND BODY OF RAILWAY VEHICLES AND IN PLATFORM TO BE USED THEREWITH WHEREVER A BREAK OF GAUGE OCCURS.

Application filed November 27, 1922. Serial No. 603,668.

To all whom it may concern:

Be it known that I, EUGENE DUDLEY O'DONNELL, a subject of the King of Great Britain, residing at Glen Innes, in the State of New South Wales and Commonwealth of Australia, have invented improvements in the undercarriages and bodies of railway vehicles and in platforms to be used therewith wherever a break of gauge occurs, of which the following is a specification.

The object of this invention is to so construct the undercarriages and bodies of railway vehicles, whether used for passengers, live stock, or goods, as that, when such vehicles reach a point on their journey where the narrow gauge line ends, and the broad gauge line commences, or vice versa, the bodies, with the aid of specially constructed platforms one on either side of the permanent way, which, as usual, carries two parallel sets of rails of different gauge, may be easily and quickly disconnected from their undercarriages, automatically raised therefrom, and held in such raised position on rails laid on said platforms. When the bodies have been raised on to said platforms, their undercarriages are run back on to the line over which they have travelled, and other under-carriages adapted to run on a different gauge are backed in underneath the bodies. The bodies and the substituted undercarriages are subsequently automatically connected together, when the journey is resumed on a broader or narrower gauge, as the case may be.

Referring to the three sheets of drawings hereto annexed, in which my invention is shown applied to a railway truck for the conveyance of goods:—

Figure 1 is a plan view of the undercarriage of a truck, which undercarriage is constructed according to my invention and adapted to be automatically connected to and disconnected from the body of a railway truck constructed according to my invention;

Figure 2 is a side elevation of Figure 1;

Figure 3 is an end elevation of Figure 2;

Figure 4 is a side elevation of one of the parallel platforms each of which is constructed with an incline at each end, the road bed and sleepers thereon between the platforms being shown in section;

Figure 5 is a sectional end elevation of the two parallel platforms, the permanent way which includes two sets of rails of different gauge being also shown in section;

Figure 6 is a side elevation of the body of a railway truck embodying my improvements and adapted to be automatically connected to and disconnected from the undercarriage illustrated in Figures 1, 2, and 3;

Figure 7 is a part sectional end elevation of Figure 6 on the line A—B;

Figure 8 is an underneath plan view of the bottom of the body of the railway truck illustrated in Figures 6 and 7;

Figure 9 is a sectional side elevation of a cylinder containing a piston, piston rod, and spring, the lower end of the piston rod being connected to a horizontal bar forming a portion of a vertical bar, the use of which will be hereinafter explained;

Figure 10 is a sectional end elevation of the two parallel platforms showing the body of the truck disconnected from its undercarriage, the body being in its raised position, and supported by small wheels carried by a square axle beneath the body, which wheels engage with rails laid in recesses one on either of the inner sides of the parallel platforms;

Figure 11 is a sectional side elevation of one of the parallel platforms showing the position of the body of the truck in relation to its undercarriage, when the front wheels of the body reach the top of the inclined portion of the said parallel platforms;

Figure 12 is a plan view of the parallel platforms with two sets of rails of different gauge laid between them, the tapered ends of the paths for the locking pin illustrated in Figures 1, 2, and 3, being indicated by dotted lines.

Referring now more particularly to Figures 1, 2, and 3, which illustrate an undercarriage for a railway truck constructed according to my invention, 1 is the rectangular frame of the undercarriage 2 of a railway truck. 3 are its wheels and 4 the axles which carry said wheels. 5 are spring buffers. 6 are square slots in the upper sides of said rectangular frame for the purpose of receiving square axles attached to the underneath portion of the removable body of the truck. 7 are locking pins which pro-

ject horizontally outwards from the undercarriage 2 about midway of its length, the inner end of said pins, as shown more particularly in Figure 3, being bent at right angles and connected at its lower end to a horizontal operating rod 8, the outer end of which projects beyond the outer end of the pin, said outer end of the rod 8 being fitted with a spring 9. 10 are cylinders at each end of the undercarriage of the truck, each cylinder containing a piston 11, the piston rod 11A of each piston being fitted with a coiled spring 12. The lower end of each of these piston rods extends below its cylinder 10 and is connected by means of a horizontal extension 13 with a vertical bar 14 capable of an up and down movement within a casing 15. These bars, when in their normal position, extend vertically above and outside either end of the undercarriage, and, when in that position, engage with the respective ends of the body of the truck. 16 is a main pipe for the conveyance of compressed air from any suitable air compressor on the locomotive. 17 are branch pipes for conveying compressed air from said main pipe 16 to the top of the cylinders 10. 18 is a turncock, and 19 is a handle for operating it, when it is desired to cut off the supply of compressed air to the cylinders 10 of one or more trucks, to enable them to be shunted.

Referring now more particularly to Figures 6, 7, and 8 of the drawings, which illustrate the body of a railway truck constructed according to my invention, 20 are square axles, one at either end, and beneath the bottom of the body of said truck, and which axles, when said body is in position on the undercarriage, illustrated in Figures 1, 2, and 3, lie snugly in slots 6 in the upper sides of the rectangular frame of said undercarriage. 21 are small flanged wheels on each end of said square axles and which wheels, as shown in Figure 7, project beyond the sides of the body of the truck. 22 are angle irons underneath the body of the truck, and which extend parallel to each of its sides, and for the full length thereof. 23 are holes in said angle irons to receive the locking pins 7 on the undercarriage of the truck, which locking pins, when in engagement with said holes, lock the body to the undercarriage and prevent any side movement of the body. 24 are brake blocks (pivoted at 25) for the small wheels 21, which brake blocks are only operated when the bodies of the trucks or other vehicles have been disconnected from and raised above their under carriages, and the small wheels of the bodies are supported on the rails on the platforms previously referred to.

Referring now to Figures 4, 5, 10, 11, and 12 of the drawings, 26 are the parallel platforms between which railway vehicles constructed according to my invention are run, in order to effect the disconnection of the bodies from their undercarriages and the subsequent transference of the bodies to rails laid in recesses along the top of the said parallel platforms. 26 are the parallel platforms and 27 are inclines at each end thereof. 28 are recesses which commence at the beginning of one incline, extend along the whole length of the horizontal portion of the platform and terminate at the end of the other incline. 29 are the rails laid in said recesses 28. 30 are clamps for applying the brake blocks 24 to the small flanged wheels 21 when the said bodies are on the rails of the parallel platforms 26. These clamps which are connected to the said platforms by hinges 31 pivoted at 32 to the said platforms can be operated either by a lever (not shown) from the platform or direct from the signal box, in order to cause said clamp to force the pivoted brake blocks 24 on to the wheels 21 and so hold the bodies in position on the rails on the horizontal portions of the platforms 26. 33 are the narrow gauge lines and 34 the broad gauge lines between the parallel platforms 26 and on one or other of which the train has traveled prior to the bodies of the trucks being disengaged from their undercarriages and transferred to the said platforms. 35 is a metal plate on the side of each platform, and 36 are the tapered ends of said plate, and along which the locking pins 7 travel to the horizontal portion of said plate 35, when immediately they come in contact therewith, they are caused to disengage from the holes 23 in said angle irons 22, and so effect the unlocking of the body of the truck from its undercarriage.

When a train of trucks constructed according to my invention enters between the inclined ends 27 at one end of the platforms 26, the outer ends of the horizontal operating rods 8 of the first truck come in contact with the tapered ends 36 of the metal plates 35 on the sides of each platform, causing a compression of the springs 9 on the operating rods 8, and, at the same time, gradually withdrawing the locking pins 7 from engagement with the holes 23 on the angle irons 22 underneath the body of the truck. When the withdrawal of the locking pins 7 has been completely effected, the body of the truck is disconnected from its undercarriage. This operation is effected with every succeeding truck, and, as the train of trucks passes on between the platforms 26, the small flanged wheels 21 of the body of the first and every succeeding truck engage with that portion of the rails 29 laid on the inclines 27 of the parallel platforms 26. As the small wheels 21 of the body of the truck travel up said inclines, the square axle 20 at the front of

the underneath portion of the body of the truck, and which axle carries the said small wheels 21, gradually rises clear of the slots 6 in the upper sides of the rectangular frame 1 of the undercarriage 2 of the body, and by the time the front wheels 21 of the truck reach the top of the inclined portions of the platforms, the axles which carry said wheels are, as shown in Figure 11, entirely clear of the slots 6 with which they previously engaged. By the time the rear wheels 21 of the truck reach the same point, their axle is also clear of the slots 6 in which it rested, with the result that the body of the truck is supported by said small wheels 21 on the rails 27 extending along the horizontal portion of the parallel platforms 26, while the undercarriage 2 of the truck remains on the rails over which it has travelled. On the undercarriage being pulled forward by the locomotive, the vertical bars 14, which extend vertically above and outside either end of the undercarriage, and which are in contact with the front and back of the body of the truck, cause the body of the truck to travel on its wheels 21 along the rails 27 in order to make room for the second and succeeding trucks. When all the bodies are in position on the rails 27 on the horizontal portion of the parallel platforms 26, the brake blocks 24 are operated to hold the bodies in position on the platforms and compressed air is forced through main pipe 16 and branch pipes 17 to the top of the cylinders 10, thus depressing the piston 11 in each of said cylinders, and thereby causing each piston rod 11A to pull down the vertical bar 13 connected thereto sufficiently far to cause said bar to be clear of the body 2 of the truck. The undercarriages are then pushed back on the line over which they have travelled, and other undercarriages constructed according to my invention, whose vertical bars 13 have been depressed, and which undercarriages are adapted to travel on a different gauge, are backed in underneath the bodies of the trucks still standing on the rails 27. The compressed air supplied through the main pipe 16 and branch pipes 17 to the cylinders 10 is then allowed to escape to the atmosphere, thereby permitting the coiled springs 12 to expand, and thus allowing the vertical bars 13 to return to their normal position. Care must be taken to ascertain as regards the truck which constitutes the rear truck of the train that the vertical bars 13 of its undercarriage are in contact with the back of its body. The position of the vertical bars on the other undercarriages as regards the bodies is immaterial, as, on the locomotive attached to the undercarriages moving forward, those vertical bars which may be underneath the body of the truck adjust themselves automatically in position during the forward movement of the undercarriage thereof, when it is in the act of travelling along the platform. During the passage of the trucks between the inclines at the other end of the parallel platforms 26, the locking pins 7 are forced outwards by the expansion of the springs 9 and caused to engage again with the holes 23 in the angle irons 22 underneath the body of the truck and so lock both body and undercarriage together.

I claim:—

1. In undercarriages for railway vehicles, a cylinder at each end thereof, a piston within said cylinder, a piston rod fitted with a coiled spring, the lower end of said piston rod extending through the bottom of said cylinder, a vertical bar parallel with said cylinder and horizontally extending above the top of said undercarriage and capable of an up and down movement within a casing, a horizontal extension from the botton of said vertical bar, said horizontal extension at its outer end being connected to the bottom of said piston rod, a main pipe for the conveyance of compressed air, branch pipes for conveying said compressed air from the main pipe through branch pipes to the top of said cylinders, to operate said piston and its appurtenant parts, locking pins projecting horizontally from each side of the undercarriage, and slots in the upper sides of the rectangular frame of the undercarriage, as and for the purpose described and as illustrated in the drawings.

2. In bodies of railway vehicles adapted to be used in conjunction with undercarriages as claimed in claim 1, square axles one at either end and beneath the said body, said axles being adapted to lie snugly in slots in the upper sides of the rectangular frame of the undercarriage, angle irons underneath the body of the truck and which extend parallel to each of its sides and for the full length thereof, and holes in said angle irons to receive the locking pins which project horizontally from the sides of the undercarriage.

3. In bodies of railway vehicles to be used in conjunction with the undercarriage claimed in claim 1, the combination with the subject matter of the preceding claim, of the hinged brake blocks for the small flanged wheels of the body of said vehicles.

4. Parallel platforms for use with railway vehicles, in which the body of the vehicle fitted with small wheels is capable of being disconnected from its undercarriage, said platforms having an incline at each end, and each platform carrying a rail with which the small wheels of the body of the railway vehicle engage as and when required.

5. Parallel platforms for use with railway vehicles constructed as claimed in

claim 2, said platforms having an incline at each end, and each carrying a rail with which the small wheels of the body of the railway vehicle engage as and when required.

6. The combination with the parallel platforms claimed in claim 5 of the clamps hinged to each of the said parallel platforms and capable of being operated in any approved manner to apply the pivoted brake blocks to the small wheels of the bodies of the railway vehicles when on the said parallel platforms.

EUGENE DUDLEY O'DONNELL.