

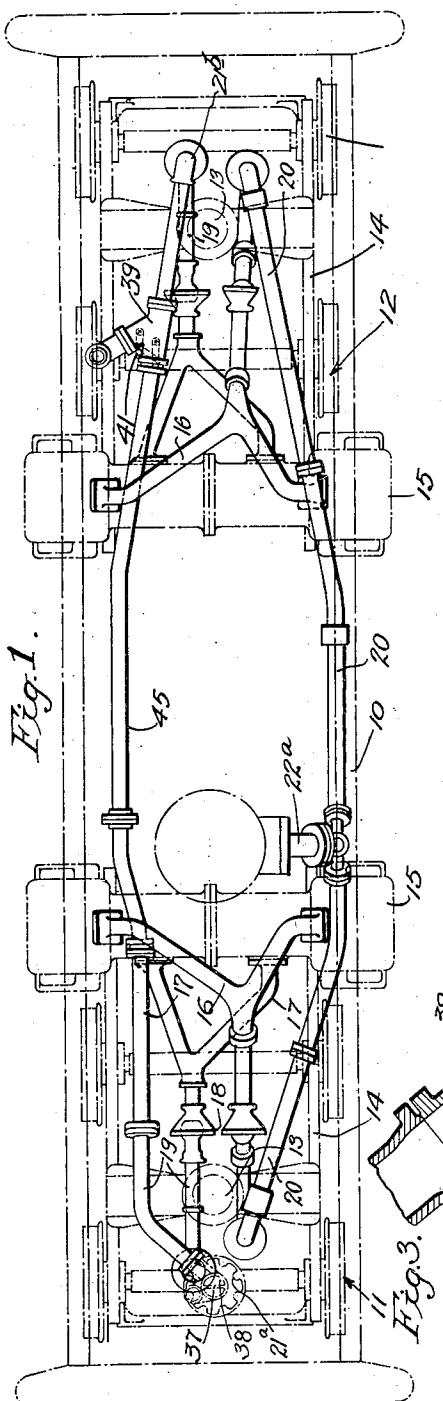
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DUPLEX LOCOMOTIVE

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DUPLEX LOCOMOTIVE

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This invention relates to duplex locomotives, and has for an important object thereof the provision in a device of this character of an arrangement permitting the use of supporting trucks having relatively small driving wheels, thus providing greater tractive effort and rendering the locomotive suitable for use with steep grades and heavy loads.

A further object of the invention is to provide in a construction of this character an arrangement affording a long total wheel base distributing the weight on the road bed while at the same time employing a short rigid wheel base in each truck permitting the use of the apparatus

15 on tracks having sharp curves.

A still further object of the invention is the provision in apparatus of this character of an arrangement such that the exhaust from one of the trucks may be passed through a water supply tank or through the smoke box to provide draft at the will of the engineer.

A still further object of the invention is the provision of an arrangement of this character affording a convenient method of providing 25 steam and exhaust connections.

These and other objects I attain by the construction shown in the accompanying drawing wherein, for the purpose of illustration, I have shown a preferred embodiment of my invention 30 and wherein:

Fig. 1 is a side elevation of a duplex locomotive constructed in accordance with my invention;

Fig. 2 is a plan view showing the steam supply and exhaust connections;

Fig. 3 is a detail sectional view through the exhaust control mechanism employed with the rear truck in the construction shown in Figs. 1 and 2.

Referring now to the drawing, the numeral 10 generally designates a locomotive main frame supported from front and rear trucks 11 and 12 through pivots 13 which, as illustrated, are preferably disposed more nearly adjacent the outer axle of each truck. Pivots 13 are preferably of such character that when the truck is otherwise disconnected the truck may be separated from the main frame 10 by vertically shifting the frame. Each truck comprises a frame structure 14 supporting a pair of driving cylinders 15, each driving cylinder 15 having driving connections, 45 not herein shown, with the wheels at the corresponding side of the truck. The cylinders of each truck have a common steam supply manifold 16 and a common exhaust manifold 17, these manifolds preferably, as illustrated, projecting 50 toward the pivotal connection of the truck to the

frame and connecting through a universal joint 18 with a longitudinally-extending conduit 19. Longitudinally-extending conduits 19 are placed in communication with steam supply conduits 20 or exhaust outlets 21 through vertically-extending conduit sections 22 which are universally connected at their opposite ends to the conduits 19 and to the supply conduits 20 or exhaust outlets 21. Steam supply outlets 20 comprise branches of a header 22a leading from the steam dome 23 or any other supply point of the boiler. The exhaust manifold 17 carried by the front truck frame communicates with the smoke box 34.

The exhaust from the rear truck is optionally 15 deliverable through a stack 35 extending upwardly through the water tank 36 or to the smoke box of the locomotive. In accomplishing this result, I provide an exhaust outlet 21a at the smoke box which has two passages 37 and 38 with one 20 of which the exhaust from the front truck communicates. The rear exhaust outlet 21b instead of communicating directly with the stack is placed in communication therewith through one 25 branch of a Y fitting 39. Each branch of this Y fitting has a butterfly valve 40 arranged therein, the butterfly valves 40 moving oppositely to close their respective branches so that upon simultaneous movement thereof, as through link 41 connected to arms 42 upon the stems of these 30 valves, one branch is closed and the other branch is opened. Manipulation of the interconnected valves 40 may be achieved in any suitable manner; in the present instance I have indicated an operating element 43 disposed in the cab and connected through suitable link and lever mechanism 44 with link 41. The second branch of Y 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500 505 510 515 520 525 530 535 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810 815 820 825 830 835 840 845 850 855 860 865 870 875 880 885 890 895 900 905 910 915 920 925 930 935 940 945 950 955 960 965 970 975 980 985 990 995 1000 1005 1010 1015 1020 1025 1030 1035 1040 1045 1050 1055 1060 1065 1070 1075 1080 1085 1090 1095 1100 1105 1110 1115 1120 1125 1130 1135 1140 1145 1150 1155 1160 1165 1170 1175 1180 1185 1190 1195 1200 1205 1210 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5 tank, a pair of trucks supporting said frame and one arranged at each end thereof, steam cylinder means for actuating the wheels of each truck carried by the truck, and exhaust connections from the cylinder means of one of said trucks to said smoke box and stack.

10 2. In a duplex locomotive, a frame supporting a locomotive boiler including the usual smoke box, a water tank supported from said frame and arranged at the opposite end thereof from said smoke box, a stack extending through the water tank, a pair of trucks supporting said frame and one arranged at each end thereof, steam cylinder means for actuating the wheels of each truck carried by the truck, an exhaust connection between the cylinder means of one truck and the smoke box, and means to selectively connect the exhaust of the cylinder means of the other truck with said smoke box or stack.

15 3. In a duplex locomotive, a frame supporting a locomotive boiler including the usual smoke box, water-heating means supported by said frame and arranged at the opposite end thereof from said smoke box, a pair of trucks supporting said frame and one arranged at each end thereof, steam cylinder means for actuating the wheels of each truck carried by the truck, and exhaust connections from the cylinder means of one of said trucks to said smoke box and water-heating means.

20 4. In a duplex locomotive, a frame supporting a locomotive boiler including the usual smoke box, water-heating means supported by said frame and arranged at the opposite end thereof from said smoke box, a pair of trucks supporting said

frame and one arranged at each end thereof, steam cylinder means for actuating the wheels of each truck carried by the truck, an exhaust connection between the cylinder means of one truck and the smoke box, and means to selectively connect the exhaust of the cylinder means of the other truck with said smoke box or water-heating means.

5. In a duplex locomotive, a frame supporting a locomotive boiler including the usual smoke box, a water tank supported from said frame and arranged at the opposite end thereof from said smoke box, a stack extending through the water tank, a pair of trucks supporting said frame and one arranged at each end thereof, steam cylinder means for actuating the wheels of each truck carried by the truck, exhaust connections from the cylinder means of one of said trucks to said smoke box and stack, and means to selectively connect the exhaust from said cylinder means with said smoke box or stack.

6. In a duplex locomotive, a frame supporting a locomotive boiler including the usual smoke box, water-heating means supported by said frame and arranged at the opposite end thereof from said smoke box, a pair of trucks supporting said frame and one arranged at each end thereof, steam cylinder means for actuating the wheels of each truck carried by the truck, exhaust connections from the cylinder means of one of said trucks to said smoke box and water-heating means, and means to selectively connect the exhaust from said cylinder means with said smoke box or stack.

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