

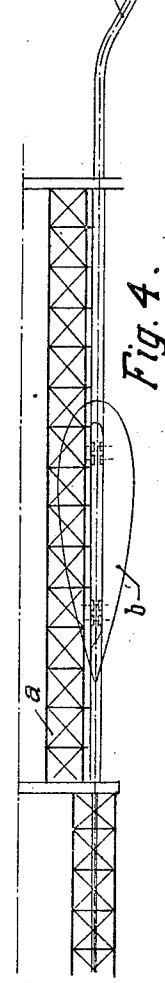
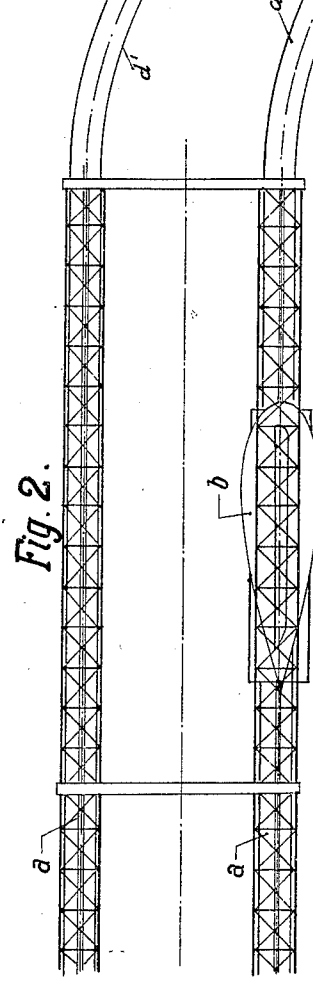
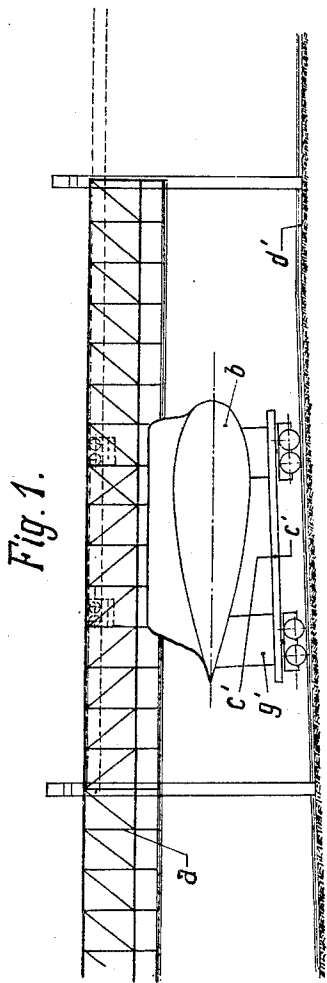
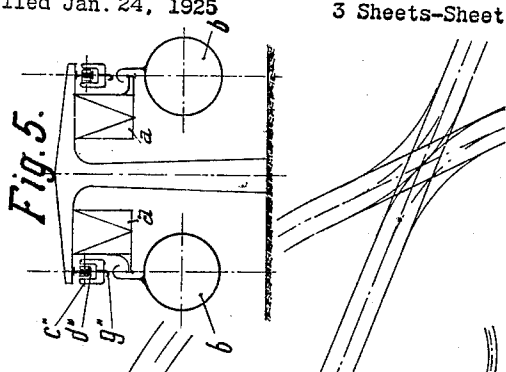
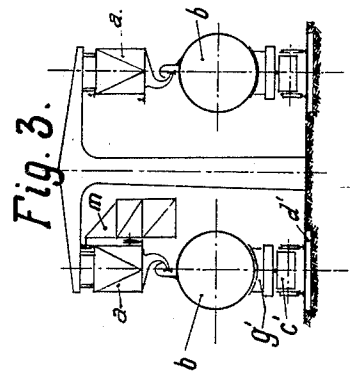
Jan. 17, 1928.

1,656,589

F. KRUCKENBERG ET AL
SHUNTING ARRANGEMENT AND ARRANGEMENT FOR REMOVING CARS FROM
AND PLACING CARS ON TO THE RAILS OF SUSPENSION RAILWAYS

Filed Jan. 24, 1925

3 Sheets-Sheet 1



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Fig. 8.

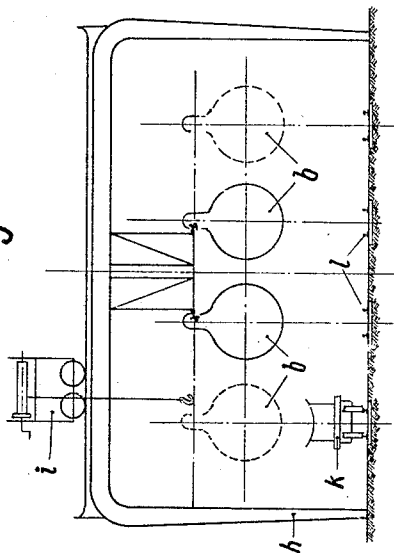


Fig. 9.

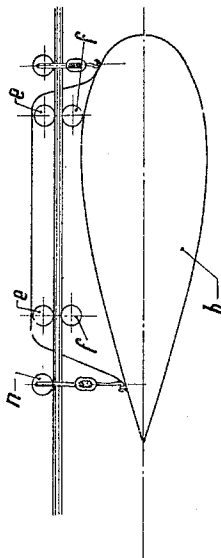


Fig. 6.

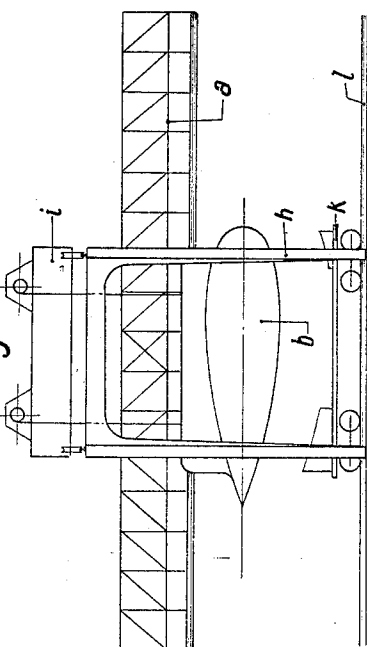
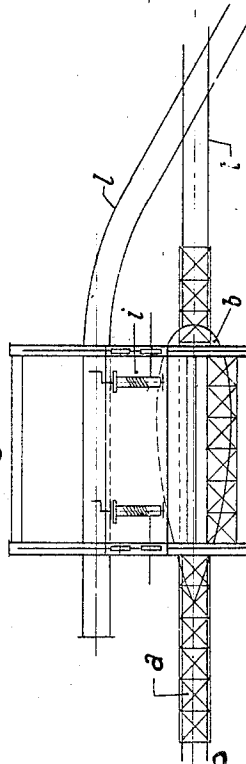


Fig. 7.



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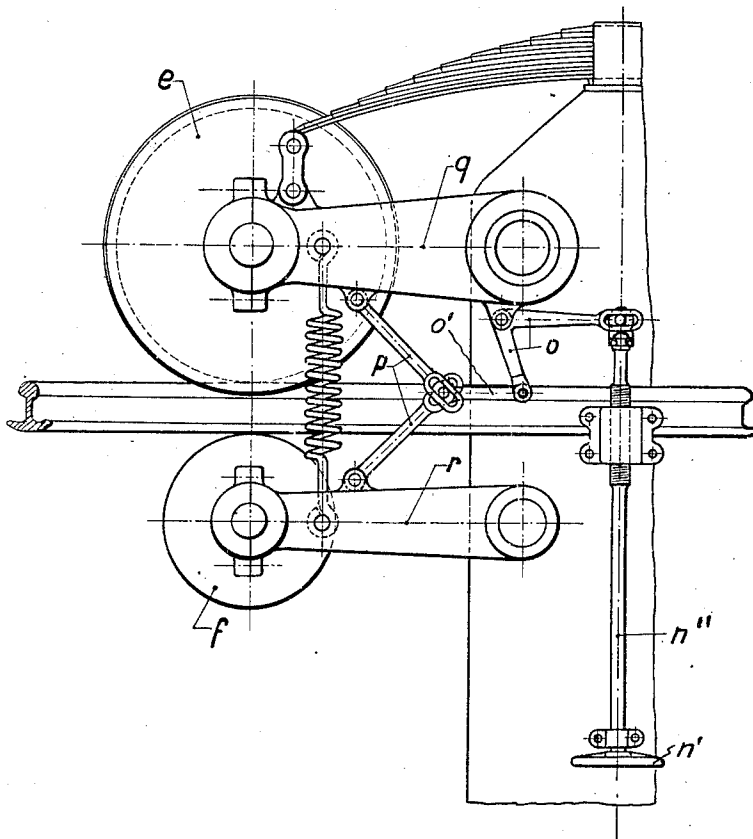
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Fig. 10.



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UNITED STATES PATENT OFFICE.

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SHUNTING ARRANGEMENT AND ARRANGEMENT FOR REMOVING CARS FROM AND PLACING CARS ON TO THE RAILS OF SUSPENSION RAILWAYS.

Application filed January 24, 1925, Serial No. 4,570, and in Germany February 6, 1924.

Cars running on rails are usually propelled by means of additional vehicles (locomotives, motor-coaches or the like), running on the same rail over switches, turntables or traverse-tables for the purpose of changing the track, in order to reach work- or repair-shops or for other purposes. With suspension railways all these arrangements are very complicated and involve large and costly constructions. When the suspension railway is used for high speed traffic, with rapid sequence of cars, the construction of such arrangements becomes either impossible or extraordinarily difficult, if they are to fulfill the requirements of such a high speed railway, namely that the rail shall have a running surface as exact as possible, without any unevenness at joints, crossings or switches.

The principal object of the present invention is to provide means whereby the cars may be transferred to and from the suspension rails without the use of the conventional rail switches or by otherwise interrupting the continuity of the rail surface. The use of such switches is restricted to places where two main lines of track cross as in Fig. 1 or where several branch lines converge, or the like.

Referring to the drawings:—

Fig. 1 is a side elevation view of one form of our invention;

Fig. 2 is a plan view of the arrangement shown in Fig. 1;

Fig. 3 is an end elevation of a crane arrangement and illustrates one method of transferring the cars to and from the suspension rails to the car carrying tractors;

Figs. 4 and 5 are plan and end views, respectively, of another form of our invention in which the car is shunted by means of a crane mounted on an auxiliary track which is also mounted overhead;

Figs. 6, 7 and 8 are side, plan, and end elevational views of another form of transferring means comprising an overhead crane;

Fig. 9 is a side view of a car fitted with auxiliary wheels for use in case the ordinary running gear breaks down;

Fig. 10 is a side view of a device used for holding the suspension counter-wheels out of contact with the suspension rail during the shunting operation.

In the stations where the velocity of shunting is very small the special rail arrangements "d'" and "d'" of the high speed track "a" can be replaced by normal switches, crossings, joints and so on. If we can use the surface of the ground we can lay the rails "d'" for the auxiliary shunting cars thereon or "d'" can advantageously be laid above the suspension rail on an extension of the girderwork system. The shunting rails "d'" must be, in this case, constructed in a similar manner to the suspension railway, the requirements however of the travelling motor crane "c'" are not so exacting with regard to space for running gears, accuracy of switches, radius of curves and so on, as the suspension car "b" itself, so that the whole arrangement involves much less constructional work, than is the case with the suspension railways "a" proper. In the case of the transference from the suspension line to the auxiliary line, the auxiliary locomotives "c'" and "c'" must naturally support the weight of the suspension car, while removing it from the rail. If the suspension car has only running wheels "e", above the rail without counter wheels "f" below it, it would be sufficient for the auxiliary rail to be raised shortly before the car is to be removed from the rail of the suspension railway by a ramp or the like, so that the shunting locomotive "c'" and "c'", which until now has only been propelling the suspension car "b", lifts it free from its running gear "e". If these counter wheels "f" are used they must be moved downwards out of contact with the rail by some convenient arrangement, for instance, that shown in Fig. 10, in order that the suspension car "b" be moved sideways clear of the rail. In order that the suspension car "b" may be handled by the auxiliary locomotives "c'" and "c'" without shock it would be advantageous to provide the latter for example, with a movable platform "g'" to lift the car up and down or a crane-like arrangement "g'" to lift the car from above.

The break down of a car on the track with the high speed suspension railway is a serious occurrence, because the whole train of cars and all traffic must be held up while the disabled car is either repaired or removed from the track. Since the use of switches or traverse-tables for the removal of the cars is to be avoided, the car must be raised

upwards and moved sideways out of contact with the rail. This can be done as already described by means of an auxiliary shunting locomotive "c'", "c'", which runs on rails below the suspension-car track "a". If these methods are found to be too slow in operation, or if a normal railway is not below or beside the suspension track, short ramps can be arranged at certain distances, where possible at signal stations or the like, provided with emergency platforms for the passengers and on these short ramps can be run auxiliary cars very simply, for example, by a winch, below the suspension car. The latter can then by means of the ramp be lifted clear of the rail, moved sideways and transported on a branch line to the nearest railway. Another solution for removing the car "b" at emergency depots, as shown for example in Fig. 6 (side view) Fig. 7 (plan view) and Fig. 8 (section), consists of a travelling crane "h" with a mechanism "i" for transferring the broken down high speed suspension car "b" to special cars "k". Such lifting arrangements must naturally be constructed so that, if a normal railway runs below the suspension track, they do not interfere with its working or with the other track of the suspension railway. If the driver has been unable to stop the broken down car "b" at an emergency station and if the car is incapable of proceeding under its own power and if it is undesirable to use the following car for propelling it, the nearest inspection car (indicated by "m" in Fig. 3) running on separate rails on the suspension railway girderwork, can be signalled for, and can then tow the broken down suspension car to the next emergency station. If the running-gear of the suspension car is so damaged, that it cannot move along the rail at all, auxiliary wheels "n" (Fig. 9) can very simply be employed, which running on the suspension rail can support the weight of the car, while it is moved along. If it should happen that the car is disabled on some part of the track where it cannot be reached by any of the above mentioned auxiliary means, e. g. on long suspension-bridges, the car must be towed by a rope until it can be reached by other auxiliary means.

In Fig. 9 a high speed suspension car is shown to which are fitted auxiliary wheels "n" that enable the car "b" to travel along the rail, if the running gears proper are so damaged, that they cannot be used further.

Fig. 10 shows the means for holding the counter wheel out of contact with the rail. The running wheel *e* is supported in a movable arm *g*, and the counter wheel *f* is supported in a movable arm *r*, and the two arms are connected with each other by a toggle-lever which is connected by a rod *o'* to a bell-crank lever *o*. This lever can be turned by means of a threaded spindle *n''*

provided with a hand-wheel *n'*. It is obvious that the arms *g* and *r* and with them the wheels *e* and *f* can be moved asunder by turning the spindle *n''* in the proper direction, the motion being then transmitted by the bell-crank lever *o* and the rod *o'* to the toggle-lever *p*.

What we claim is:

1. In a shunting arrangement for high speed railway suspension cars suspended from continuous elevated rails by running gear, in combination, an auxiliary track disposed in proximity to said elevated rails, tractors capable of transporting said suspension cars mounted on the auxiliary track, said tractors having transfer mechanism mounted thereon, so constructed and arranged that the suspension cars may be attached to and detached from the elevated rails.

2. In a shunting arrangement for high speed cars suspended from continuous elevated rails by running gear, in combination, auxiliary tracks provided at convenient intervals below said continuous suspension rail, tractors capable of transporting said suspension cars mounted on the auxiliary track, means for disconnecting said suspension cars from the elevated rails and means for transferring the suspension cars to and from said tractors.

3. In a shunting arrangement for high speed cars suspended from continuous elevated rails, in combination, ramps provided at convenient intervals below said continuous suspension rails and having an auxiliary track attached thereto, tractors mounted on the auxiliary track capable of transporting the suspension cars, said tractors having supports fixed thereto whereby the suspension car may be lifted from or attached to the elevated rails by running the tractors on and off the ramps.

4. In a shunting arrangement for high speed cars suspended from elevated rails by running gear comprising suspension wheels and counter wheels which bear, respectively, on the upper and lower surfaces of said elevated rails, in combination, mechanism for lifting the cars to and from said elevated rails, and means for maintaining the counter wheels free from contact with the rails during the lifting operations.

5. A shunting device for a high speed car suspended from continuous elevated rails by running gear, comprising auxiliary suspension wheels mounted on said rails, car supporting means depending from the suspension wheels, and means attachable to the car, whereby the car may be supported from and move along the elevated rails by said auxiliary suspension wheels.

In testimony whereof we affix our signatures,

FRANZ KRUCKENBERG,
CURT STEDEFELD.