IM1

SWITCHING SYSTEM

2 Sheets-Sheet 1

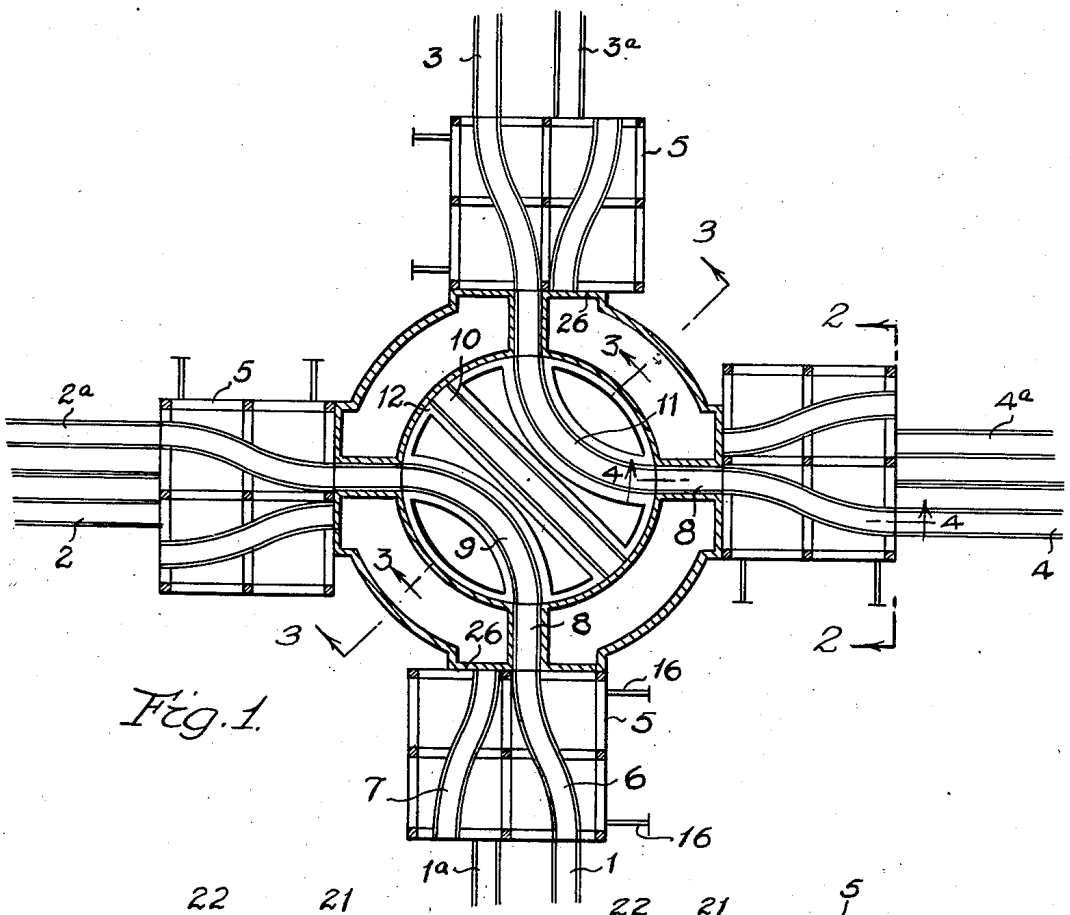

Fig. 1.

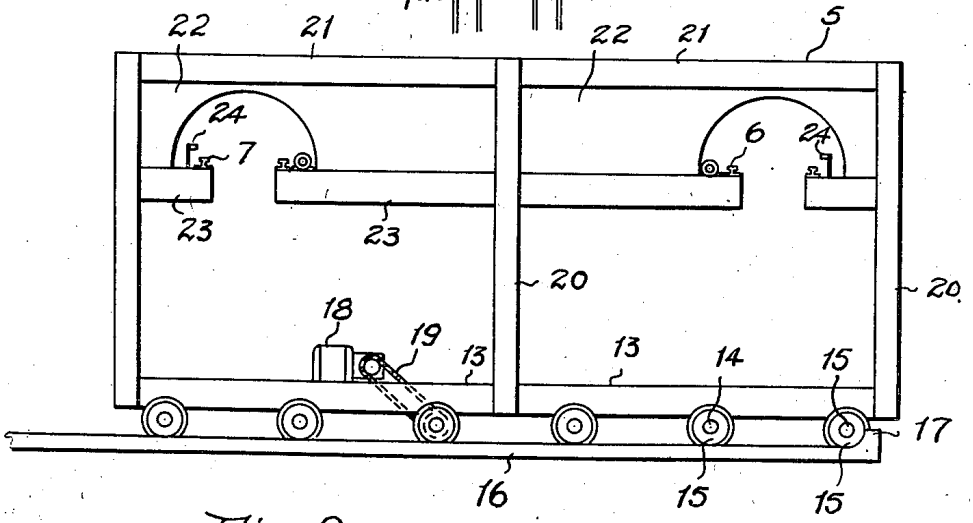

Fig. 2.

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SWITCHING SYSTEM

2 Sheets-Sheet 2

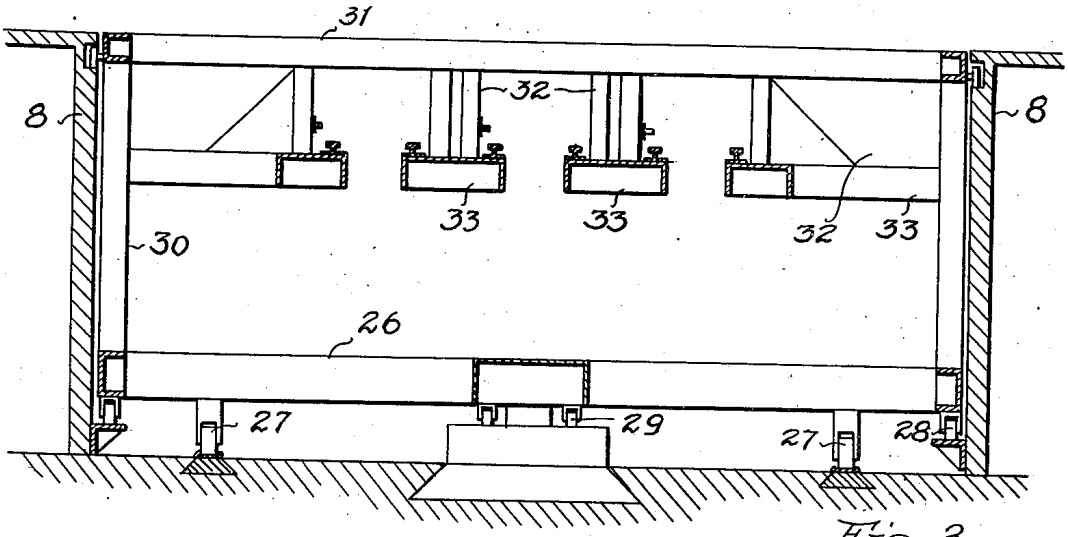

Fig. 3.

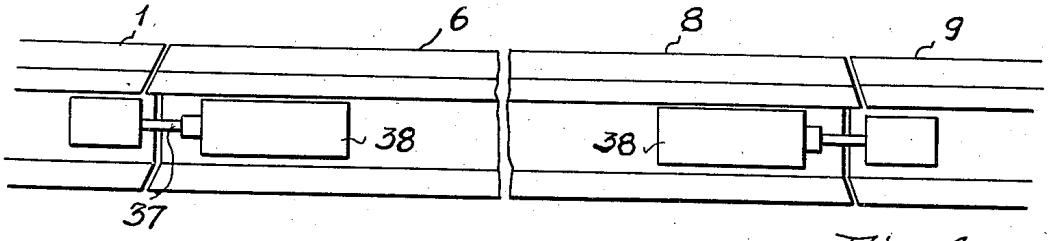

Fig. 4.

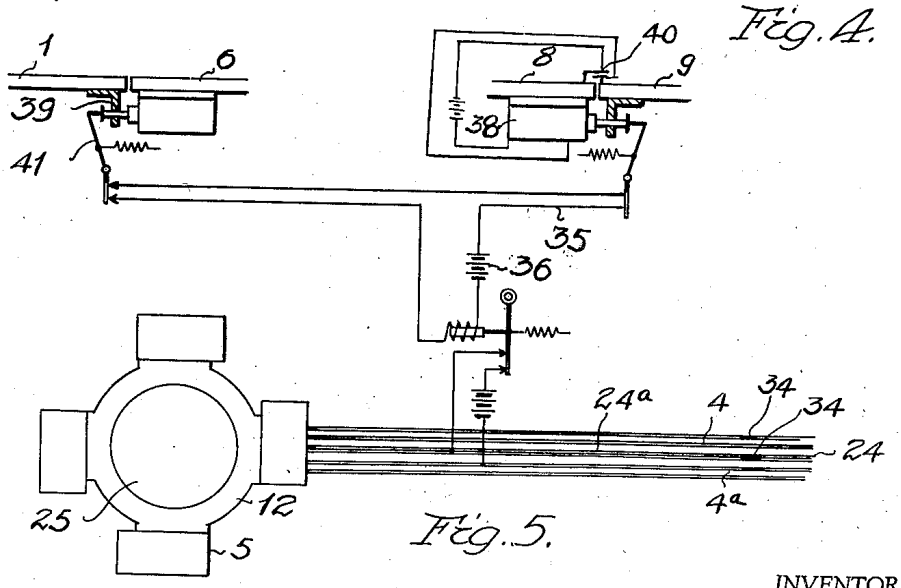

Fig. 5.

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SWITCHING SYSTEM

This invention relates to a switch system for double tracks of an overhead railway at the region of cross-over by other double tracks and has for its object to provide a switch system for switching a train on any track from either direction to either track and either direction on the intersecting tracks or to a cross-over position on its original track whereby the direction may be changed.

In the case of overhead rails it is very difficult if not impossible to arrange a simple switching system supported solely from the suspended beams from which the tracks are hung. It is also impractical to obtain the multiplicity of track connecting possibilities in a simple turn table without a large number of cross-overs which make for discomfort, noise and undue wear on the wheels, flanges and tracks. It is, therefore, the principal object of this invention to provide a compound switch comprising laterally shifting units and a rotating or turntable unit, each supported directly from the ground on individual track units and to provide coordinated actuating means for operation thereof.

Derailment of any rail vehicle is serious at high speed but derailment of an overhead rail vehicle may be fatal or quite costly even at low speeds so that when an overhead rail is disconnected at some point, safeguards against train operation in the vicinity are of utmost importance. It is, therefore, another object to provide a switch system, as above described, in combination with a power control system automatically operative in response to the relative position of the track portions which will preclude train operation unless and until the track sections are aligned and ready to receive the weight of a train.

Other objects and advantages will become more fully apparent as reference is had to the accompanying drawings wherein my invention is illustrated, and in which

Fig. 1 is a plan view of my improved switch system;

Fig. 2 is a side elevation of one of the laterally shifting units taken along the line 2—2 of Fig. 1;

Fig. 3 is a vertical diametric section of the rotating or turn table unit taken along the line 3—3 of Fig. 1;

Fig. 4 is a vertical section taken along the line 4—4 of Fig. 1 showing the track locking devices, and

Fig. 5 is a diagrammatic showing of a portion of the power control circuits.

More particularly, the double tracks 1, 1*a*, 2, 2*a*, 3, 3*a* and 4, 4*a* of an overhead rail system are shown in Fig. 1 as approaching the switching system from four directions. The tracks are suspended from overhead beams in any special or conventional manner (not shown), each track being shown as of the two-rail type although the invention is equally applicable to mono-rail tracks. The track sections of all of these tracks terminate at laterally movable units 5 each of which has two track sections 6 and 7 carried thereby for selective connection of the main track ends with a single stationary track section 8 which, in turn, is selectively connectible to the track sections 9, 10 and 11 of the turn table 12.

The units 5 are all of identical construction, one being illustrated in Fig. 2. The description of this figure, which is assumed to be the one carrying track sections 6 and 7, is, therefore, descriptive of all of these units. The main base members 13 are supported by axles 14 each having wheels 15 at each end thereof. The wheels rest on parallel rails 16 which run normal to the direction of the main tracks 1, 1*a* and which rest on the ground substantially below the tracks 1, 1*a*. A wheel stop 17 limits the travel of the wheels 15 at each end of the tracks 16, these tracks being only long enough to shift the section 7 into alignment with the track 1*a* and the section 6 into alignment with the section 1. A motor 18 mounted on the base 13 connected to one axle 14 by the driving chains 19 serves as the prime mover for impelling all wheels.

Arising from the base members 13 are vertical pillars 20 connected at their tops by the horizontal beams 21 from which web members 22 depend, these web members supporting the heavy beams 23 upon which the rails 7 are mounted. The third or power carrying rails 24 are also carried by the beams 23. The beams 23 are divided between the rails 6 and the rails 7 to permit passage of the train suspension means from the train trucks which ride the rails, the car bodies residing between the base 13 and the beams 23.

The next unit to be described is the stationary portion 25 which carries the single stationary track sections 8. The exterior of this unit has wall portions 26 which, preferably, parallel and reside immediately adjacent the inner edges of the units 5. The interior is circular in order to receive the turn table 12. This unit 25 is supported directly on the ground and may be made of steel, concrete or any desirable materials and may be built with passenger waiting accommodations to serve as a station with facilities for loading and unloading the trains.

The turn table 12 has a base frame 26 sup-

ported on the wheels 27, 28 and 29, which run on circular tracks. Arising from the base 26 are pillars 30 which are connected at their tops by the horizontal members 31 from which depend structural portions 32 which support other horizontal beams which, in turn, support the track sections 9, 10 and 11. The sections 9 and 11 are arcuate in plan view, thus serving to connect any section 8 with either adjacent section 8, and the section 10 is straight for connecting any two opposite sections 8.

The safety system will now be described. In Fig. 5, the tracks 4 and 4*a* are illustrated with the third power rails 24 therebetween, approaching the switching units 5, 12 and 25. At some distance, say twenty-five hundred feet away from the switching units, power breaks or insulating interrupters 34 are inserted in the third rails and also in the tracks, if necessary, in order that the motors which drive the train can no longer receive power from the original source of power supply. The insulated sections 24*a* of the third rails can be energized from a shunt circuit or an entirely separate circuit 35 supplied from a power source 36.

Cooperating with each rail section 6 and with each rail section 7 is a slidably mounted plunger 37 which may be the core of a solenoid 38 or the piston rod of an air motor 38, for instance, which passes through an opening 39 in the track supporting structure of the track 1 or 1*a*. When and only when a track section 6 or 7 is in alignment with its corresponding section 1 or 1*a*, the solenoid is energized by the closing of the switch 40 and the plungers 37 enter the holes 39. As they pass through their holes 39 the ends of the plungers 37 engage a switch arm 41, thus closing the circuit 35 and energizing the third rail sections 24*a*. The sections 8 and 9, 10, 11 are also each provided with a similar solenoid, plunger and switch arm mechanism, as has just been described and all switch arms 41 are in the circuit 35, only two being illustrated in Fig. 5, so that every switch must be closed before the circuit 35 can operate to energize the motors of the train.

What is claimed is:

1. In a railway switch system for a plurality of double tracks, a turntable interposed at the region where said tracks tend to intersect, said turntable having a straight single track section carried thereby for continuation of the aligned double tracks and at least one arcuate single track section for connection of tracks approaching each other angularly, and means for selectively connecting any of the double tracks with the adjacent single track sections of the turntable.

2. In a railway switch system for a plurality of double tracks, a turntable interposed at the region where said tracks tend to intersect, said turntable having a single straight track section and at least one arcuate track section carried thereby, and converging track sections mounted for movement transversely between the ends of each of said double tracks and said turntable whereby a train on any one of said double tracks may pass onto the straight or arcuate single section of track on said turntable and onto any other one of said plurality of tracks.

3. In a railway switch system for a plurality of double tracks, a turntable interposed at the region where said tracks tend to intersect, said turntable having a single straight track section and at least one arcuate track section carried thereby, a pair of converging track sections between said turntable and the ends for each of said double tracks, and means for moving said converging track sections transversely of their respective double tracks for alternately connecting either section of said pair of converging sections with one of the adjacent tracks of said double tracks whereby a train from any of said plurality of tracks may be directed onto either single track section of said turntable and to any other one of said plurality of tracks.

4. In a railway switch system for a plurality of double tracks, a turntable interposed at the region where said tracks tend to intersect, said turntable having a single straight track section and at least one arcuate track section carried thereby, a track carrying unit having two converging track sections between said turntable and each double track end, said units each being laterally shiftable to connect either track of any of said double tracks with a selected track section of said turntable.

5. In an overhead railway wherein elevated tracks are suspended on a main track supporting structure, and wherein a plurality of tracks approach each other from different directions, a plurality of movable track carrying units between the adjacent ends of said plurality of tracks for selectively connecting said tracks to form a continuous path for a train, one of said units being a turntable centrally disposed with respect to the ends of said tracks, the remainder of said units each shiftable laterally of said tracks between the ends thereof and said turntable to connect a selected track to a selected section of track on said turntable.

6. A switch system for an overhead railway for interposition at the intersection of double parallel tracks comprising a turntable having a straight track section and at least one arcuate track section carried thereby and rotatable therewith, a stationary unit having a circular interior of substantially the same diameter as the diameter of said turntable and having single circumferentially spaced track sections arranged radially of said circular interior, and a laterally movable unit carrying double track sections between each of said single track sections and the adjacent end of said double tracks, the track sections of said double units being movable to connect either track of said double track with said adjacent single track.

7. A switch system for a double track railway wherein trains from a plurality of directions are to be switched to other tracks or to a different direction, comprising a circular unit having circumferentially spaced stationary, radially arranged single track sections, double tracks extending in the direction of each of said single track sections and spaced longitudinally therefrom, laterally movable units between said double tracks and said single tracks each having double tracks carried thereby, said laterally movable units being shiftable in one direction to connect a single section with one of said double tracks and shiftable in reverse direction to connect the other of said double tracks with the same single track sections, and a turntable rotatable about a center coincidental with the center of said stationary unit, said turntable having track sections for connecting said single tracks alternately in a straight ahead direction or at an angle thereto.