(No Model.)

2 Sheets—Sheet 1.

E. NICOLAISEN.

ELECTRIC MAIL CONVEYER.

No. 271,904. Patented Feb. 6, 1883.

Fig. 1

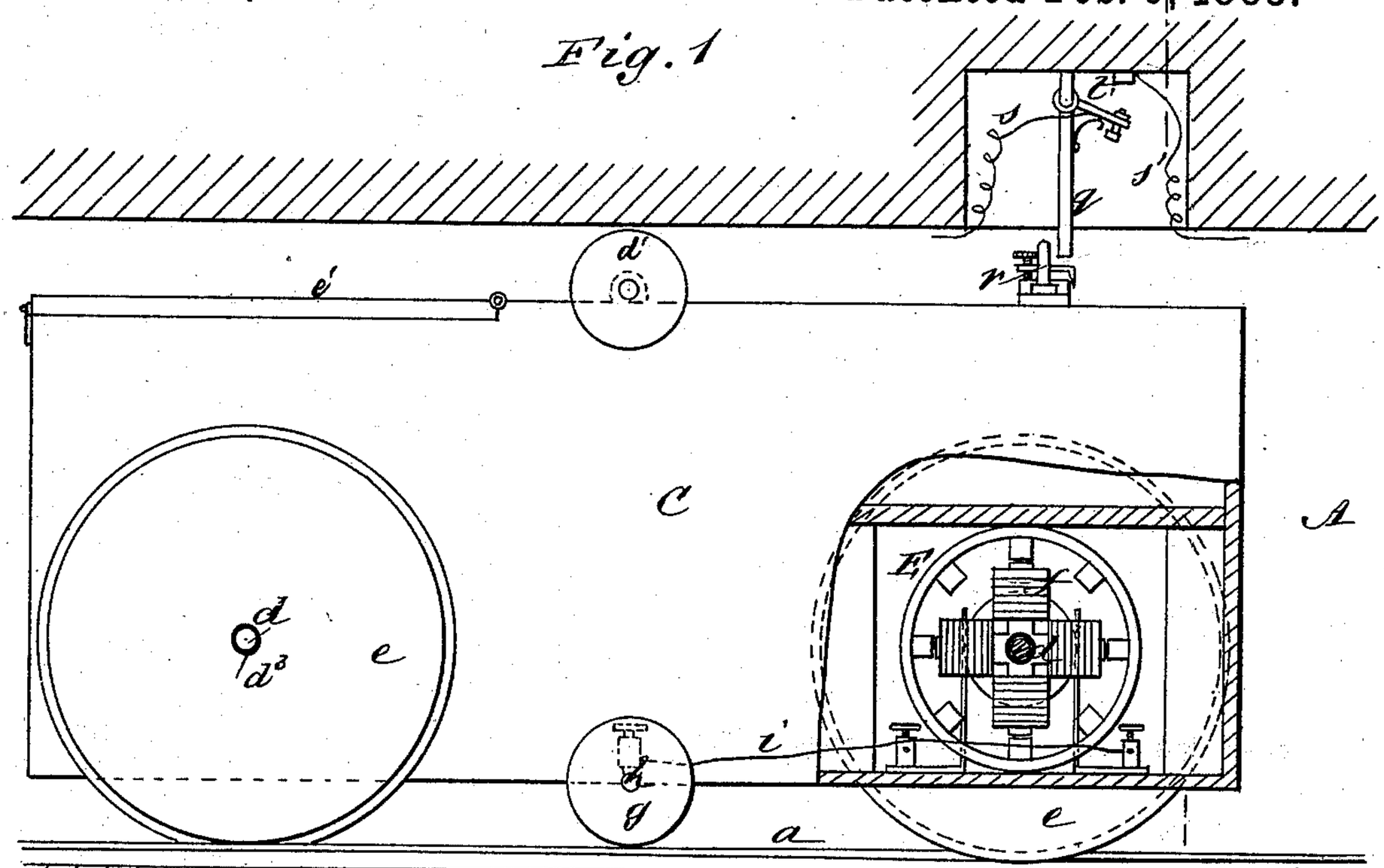


Fig. 2

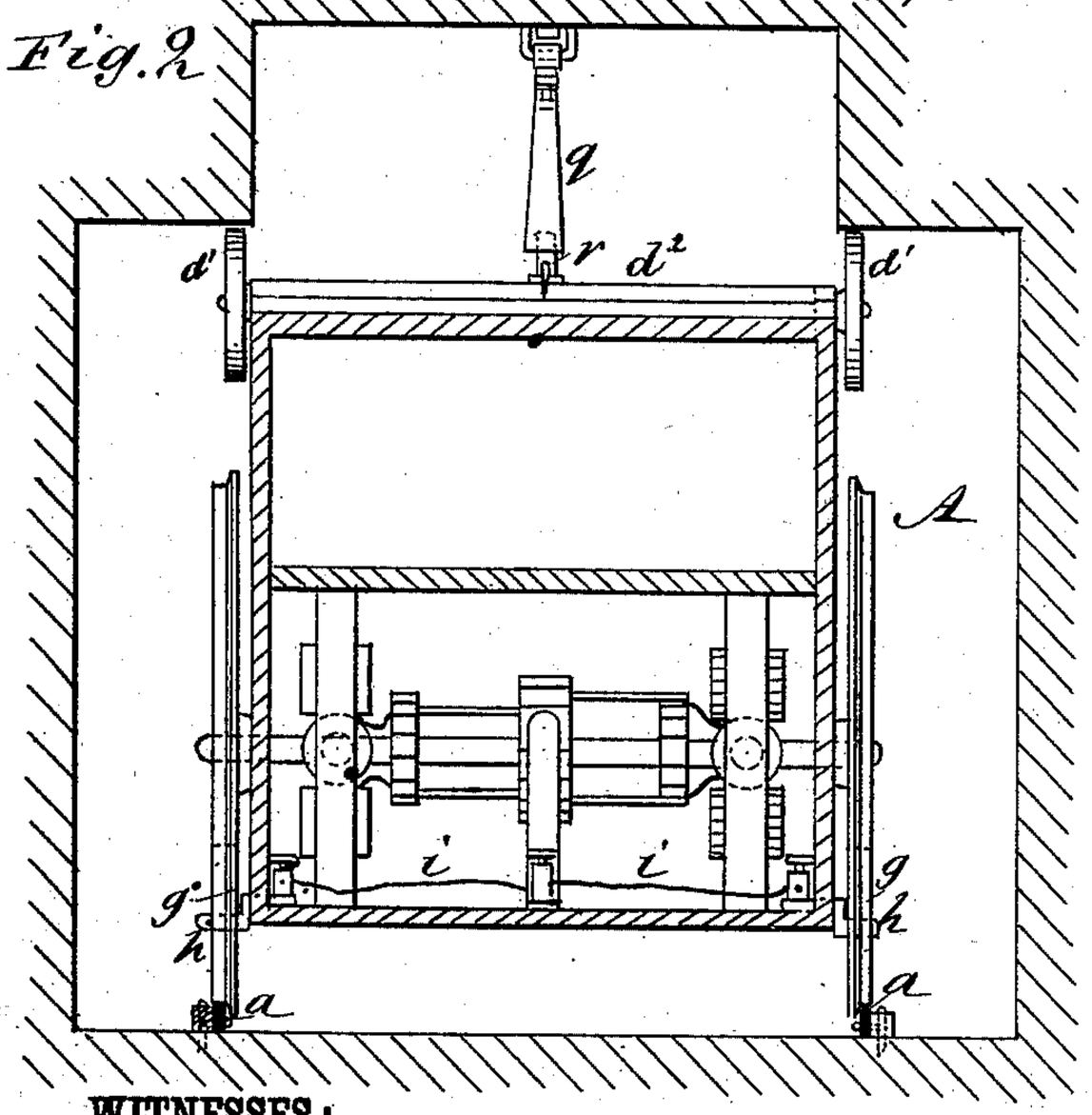
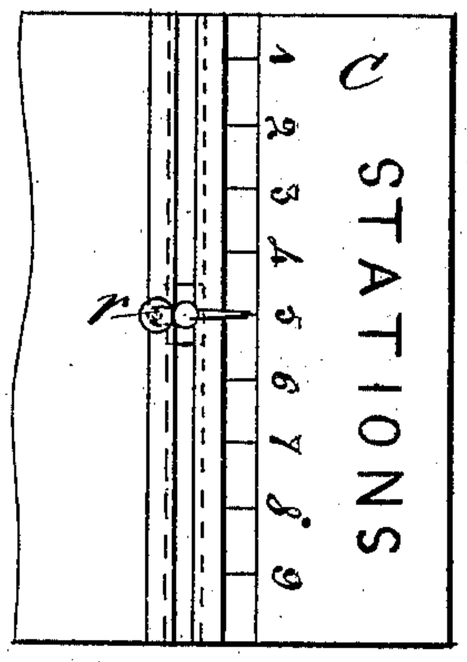


Fig. 8



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(No Model.) 2 Sheets—Sheet 2.

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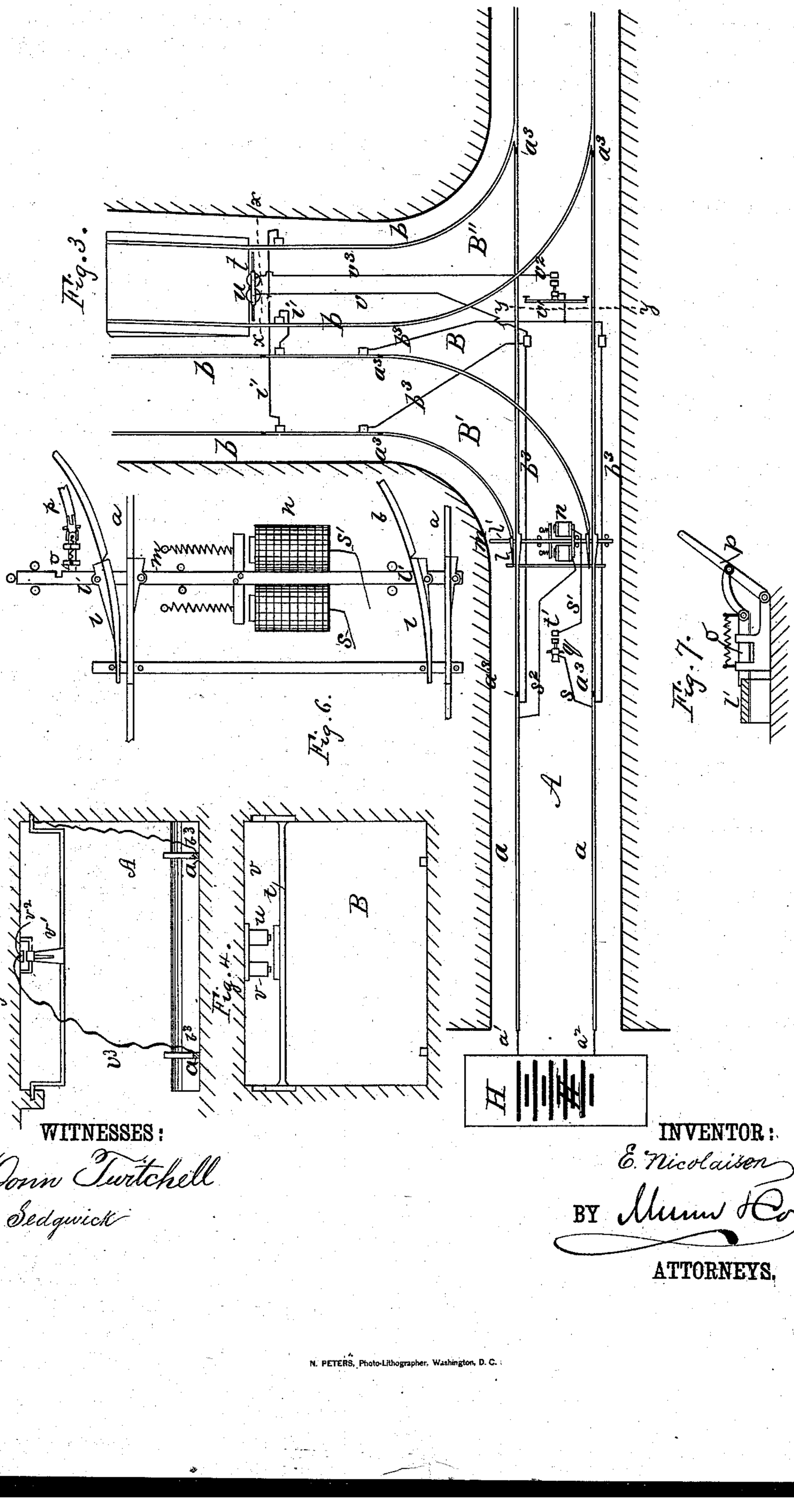

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UNITED STATES PATENT OFFICE.

EBERHARDT NICOLAISEN, OF NEW YORK, N. Y., ASSIGNOR OF NINE-SIXTEENTHS TO NICHOLAS USSING AND JACOB A. RÜS, BOTH OF BROOKLYN, AND J. T. NAGLE, OF NEW YORK, N. Y.

ELECTRIC MAIL-CONVEYER.

SPECIFICATION forming part of Letters Patent No. 271,904, dated February 6, 1883.

Application filed May 24, 1882. (No model.)

To all whom it may concern:

Be it known that I, EBERHARDT NICOLAISEN, of New York, in the county of New York and State of New York, have invented a new and useful Improvement in Electric Mail-Conveyers, of which the following is a full, clear, and exact description.

The object of my invention is to construct an electrical railway for the conveyance of mail-matter from station to station, and to provide for the automatic transfer of the cars or carriages from the main track to the side tracks of the several stations.

To that end my invention consists in a railway and cars constructed and operated as hereinafter set forth.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of one of the mail-cars shown in place upon the track. Fig. 2 is a vertical transverse section of the cars and of the tunnel or way in which they move. Fig. 3 is a plan view, showing the main and side tracks. Fig. 4 is a cross-section of the outgoing track of the side or station tunnel on line *x x* of Fig. 3. Fig. 5 is a cross-section of the main tunnel on line *y y* of Fig. 3. Fig. 6 is a plan view in larger size of the switch. Fig. 7 is a detail section of the switch-lock. Fig. 8 is a partial plan view of the top of the car, showing the devices for shifting the switch.

The railway is constructed in underground tunnels or ways, as shown at A, with the side tunnels, B, which connect with the several stations.

a a are the rails in the main tunnel, which are preferably metal plates attached to stringers by which the rails are insulated from the ground.

b b are the rails of the station-tunnel B, the tracks in these tunnels being made double and curved to connect with the main rails *a* in opposite directions, so that one track, B′, receives the cars coming in from the main track, and the other, B″, takes them out. The main rails *a* are connected one to one pole of a battery, H, (see Fig. 3,) or other generator of electricity, and the other rail to the other pole by the wires *a′ a²*. By means of the insulators a^3 the section of main track in front of the tunnel and the outer portion of the incoming side track are insulated from the battery H. Wires b^3 connect the rails *a* to the inner portion of the incoming side tracks, and the latter connect by the wires *i′* to the outgoing side tracks.

s s′ s^2 are the circuit-wires of switch-magnet *n*, and wires *v* v^3 form the circuit-wires of magnet *u* and swing-bar *v′*.

C represents one of the cars or conveyers, made in box form to serve as a receptacle for the mail-matter, and supported on axles *d d* and flanged wheels *e e*.

d′ d′ (see Figs. 1 and 2) represent friction-wheels on an axle, d^2, secured to the top of the car C, and adapted in the movement of the car to bear on the upper face of the tunnel.

e′ represents a door in the top of the car for the insertion and removal of the mail.

Upon the forward axle, *d*, is fixed a revolving armature, *f*, of an electrical engine, E, that is preferably placed within the car.

g g are small contact-wheels, fitted on studs *h* at the side of the car, so as to bear upon the rails *a*, and the studs *h*, carrying the contact-wheels, are connected by wires *i* with the binding-posts of the engine E. The large wheels *e* on the axles *d* of the car C are insulated from the axle, by the insulating-bands d^3, surrounding the axle, so that the circuit through the rails shall be closed only through the wires *i* and the contact-wheels *g*.

At the connection between the incoming side tracks, *b*, and the main tracks *a* is fitted a switch moved by electric action, either to divert the cars to the side track or allow them to continue upon the main track.

l l are switch-points, pivoted at their inner ends to a fixed support, and also pivoted at *l′* to the sliding cross-bar *m*, that is fitted for movement by an electro-magnet, *n*, the arrangement being such that a slight movement of the armature of the magnet is sufficient to carry the switch-points in line with the main rails *a*.

o is a spring-catch engaging a notch in the bar *m*, for retaining the switch-points in position after being moved by the magnet; and *p* is a lever connected to the catch *o*, projecting upward to the side track for contact with a stud or projection that is placed in the car, and which strikes the lever *p* after the car has passed the switch, thereby relieving the bar *m* and allowing the armature-springs to move the bar and the switch-points back to their first position, so that the main track shall be left intact.

For operating the switch automatically, there is placed above the track, in front of the switch, a pivoted arm, *q*, which projects downward in position for being moved by a slide-piece, *r*, fitted upon the top of the car. To the arm *q* is connected a wire, *s*, from one rail *a*, and a wire, *s'*, from the magnet is connected to an anvil, *t'*, that is placed above the arm, while a wire, s^2, extends from the magnet to the other rail *a*, so that when the arm *q* is moved by the passage of the car it comes in contact with the anvil, and the circuit being thereby closed to the magnet, the switch is operated and the car passes into the side tunnel, B. The contact-pieces *r* on the cars are fitted for movement transversely in suitable guides, so that they may be set for contact with the circuit-closing arm *q*, according to the station at which the car is to be switched off. The contact-arm at each station will be placed more or less at one side, to correspond with the adjustment of the slides. As shown in Fig. 8, a numbered scale is provided, in connection with the slide *r*, for regulating the adjustment of the slide, so that when the car is started the slide can be placed according to the station at which it is to be stopped. The outgoing track from each station connects with the main rails, so that as soon as the car is started it shall pass outward and upon the main track. To prevent any possibility of collision with a passing train, there is fixed above the outgoing track, as shown in Figs. 3 and 4, a cross-bar, *t*, arranged for a limited vertical movement, which bar, in its downward position, will be in front of the car, and thus prevent the starting of the car. Above this bar is an electro-magnet, *u*, for raising the bar *t* sufficiently high to allow the car to pass beneath. A swinging bar, *v'*, is hung across the main tunnel in connection with an anvil, v^2, placed above the swing-bar. The swing-bar *v'* is connected by a wire to one main-current wire b^3. The anvil v^2 connects by wire v^3 to the magnet *u*, which magnet connects by wire *v* with the other main-line wire b^3, so as to establish an electrical circuit, which is broken at the swing-bar *v'*, as it hangs in its normal position. Suppose the car to be started to be upon the side track, held back by the cross-bar *t*, and a car to be passing the station on the main track, the passing car will raise swing-bar *v'* by contact therewith, thereby closing the circuit by contact of an arm moved by the bar *v'* with the anvil v^2. The magnet *u* being thereby energized, the bar *t* is raised, and the waiting car, being thus released, immediately starts outward and passes upon the main track behind the previous car.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a car having an electric motor, of a main and side tracks whose rails form an electric circuit, including the motor on the car, the railway-switch *l l'*, arm *q*, anvil *t'*, slide *r*, and magnet *n*, with circuit-connections from the main track to the magnet and arm *q* and anvil *t'*, whereby the cars may be automatically shifted from the main track to the side track, as described.

2. The combination, with the car C, main rails *a*, and side rails, *b*, of the switch consisting of the pivoted switch-points *l*, slide-bar *m*, operating-magnet *n*, and catch *o*, provided with the arm *p*, substantially as shown and described.

3. The combination of the switches *l*, fitted for operation by a magnet, *n*, the swinging contact-arm *q*, connected by wires *s s'* to the switch-magnet, and the adjustable slide-piece *r* upon the car, substantially as described, for operation to move the switch automatically, as set forth.

4. The combination of the sliding stop-bar *t*, swing-bar *v'*, magnet *u*, means for operating the swing-bar, and the circuit-connections to the electrical switch and track, substantially as described, and for the purpose set forth.

5. The combination of the sliding catch *o* and lever *p* with the switch-bar *m* and magnet *n*, substantially as described.

EBERHARDT NICOLAISEN.

Witnesses:

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JACOB A. RÜS.