

No. 652,564.

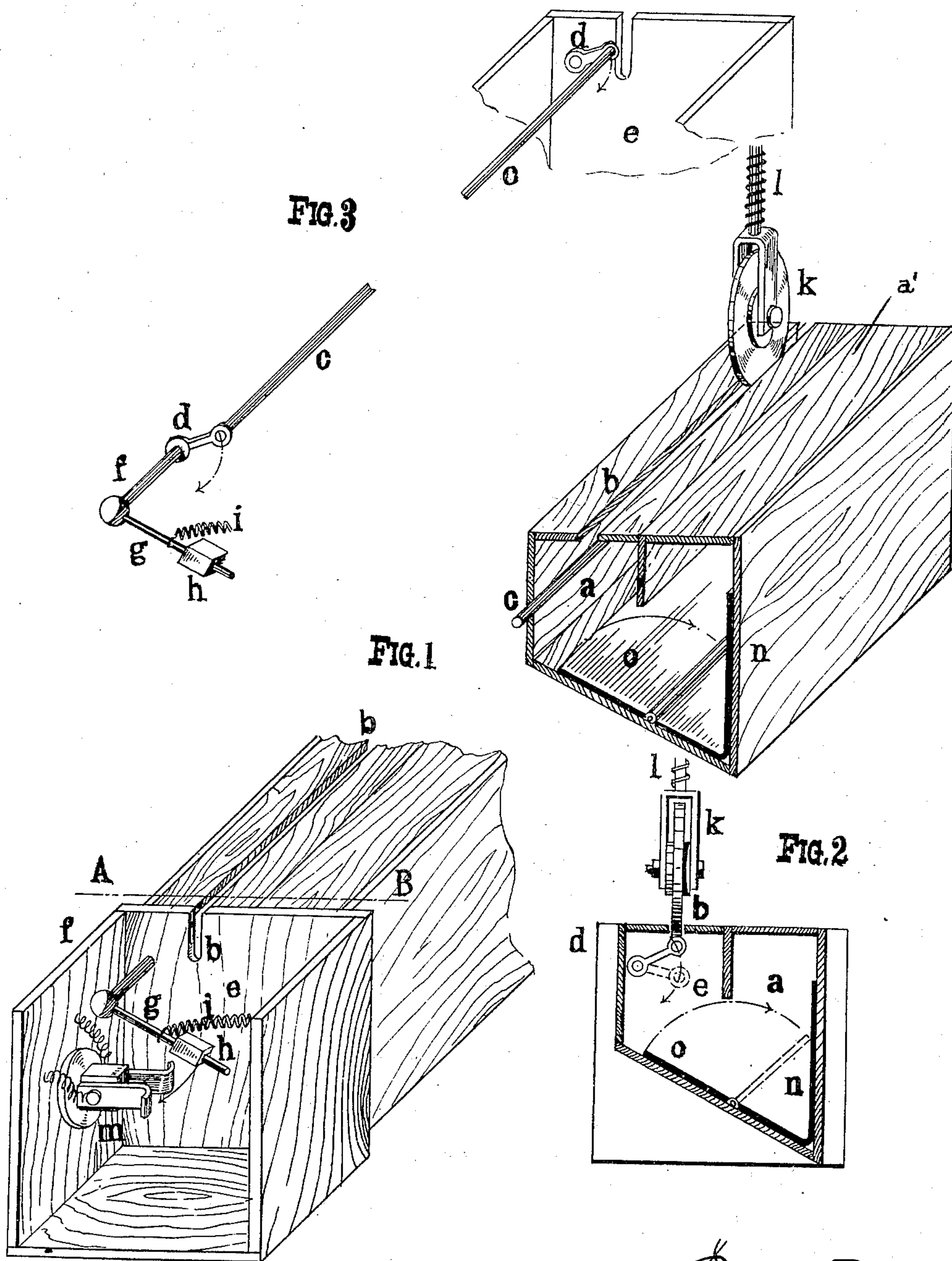
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E. VON MAIRHOFEN.

SUBTERRANEAN CURRENT DISTRIBUTION FOR ELECTRIC STREET CARS.

(Application filed Mar. 9, 1900.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

EDUARD VON MAIRHOFEN, OF WÜRZBURG, GERMANY.

SUBTERRANEAN CURRENT DISTRIBUTION FOR ELECTRIC STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 652,564, dated June 26, 1900.

Application filed March 9, 1900. Serial No. 8,039. (No model.)

To all whom it may concern:

Be it known that I, EDUARD VON MAIRHOFEN, a subject of the King of Bavaria, and a resident of Würzburg, Bavaria, Germany, have invented certain new and useful Improvements in Subterranean Current Distribution for Electric Street-Cars, of which the following is a specification.

This invention relates to subterranean installations for the supply or distribution of electrical current to street-cars wherein sections of line may be mechanically thrown into or out of circuit. These switching operations are effected by the car, as in passing it imparts to a rail a partial revolution about its longitudinal axis by means of a finger-piece or key, such fractional revolution being transmitted to a lever adapted by its direct action to "close" the corresponding portion of the conductor. Broadly, arrangements of this description are already known, one in particular being disclosed by the United States Patent No. 511,452 to H. D. Oler, dated December 26, 1893. Those arrangements, however, have been attended by the drawback that the switch mechanism lay in the same channel in which the rail was turned and which necessarily, therefore, communicates with the street or road, whence mud and moisture find access into it and render the switch mechanism liable to damage or destruction. In the arrangement carried out in accordance with this invention the defect just referred to is avoided, as the switch mechanism is entirely separate and disconnected from the channel in which the movable rail in question rotates, though it forms an axial continuation thereof, the only means of connection between it and the said channel being an extension which prolongs the axis of rotation of the rail and which passes through a stuffing-box or body of tight packing. By such means the switch mechanism proper, which of course is hermetically cut off from communication with the roadway above, is effectively protected from impurities and moisture. The channel in which the said rail revolves and which is connected to the roadway by the guide-groove of the key has a somewhat-steep downward gradient toward one side at the bottom, which by forming a collector for any water that may find its way

into the channel assists efficient drainage and helps to keep the apparatus clean. Into the channel is placed a caisson corresponding to the lower part of the channel in sectional outline and adapted to intercept any dust or mud that may tend to enter the channel, which can thus be readily removed, together with the caisson, the latter being for the purpose raised and thoroughly cleansed from time to time.

In the accompanying drawings, Figure 1 is a perspective view of the arrangement in accordance with this invention, the channel being partially broken away, so as to show its sectional outline, and one end wall, as well as the upper wall, being omitted from the switch apparatus. Fig. 2 is a cross-section on line A B, Fig. 1; and Fig. 3 is a detail view representing the revoluble rail and the switch-lever connected therewith.

In the center of the section of line parallel to the rails there is provided a subterranean channel or "tunnel" *a*, having a slot *b* at the top. Under this slot is placed a rail *c*, mounted upon revoluble arms *d*. One arm *d* of this longitudinal rail or rod is fitted with a pin or pivot *f* at one end, which is adapted to turn, together with the arm, and projects into the interior of the contact-box *e*. This pivot or pin at its end carries a further cam *g*, to the end of which a contact-piece *h* is attached. This arm is constantly being drawn outward by a spring *i*, the effect being that the rail or rod *c* below the slot *b* is maintained in the raised position.

Under the car there is arranged a key-wheel *k*, which is depressed by a spring *l*. This wheel travels in the groove *b* and as it does so presses the rail *c* downward, in doing which it overcomes the resistance of the spring *i*. At the same time the arms *d* turn and move the revoluble arm *g*, fitted with the contact *h*, so that the contact-piece *h* takes up its position between the contact-springs *m*, electrically connected with the rails of the superstructure or line, whereby current is conducted to the motor in the usual manner. The moment the key-wheel *k* has left the section of line the spring *i* draws the contact-piece away from between the contact-springs and causes the rail *c* once more to resume its raised position. It will thus be seen

that the rail *c* does not itself act as a conductor, but is simply the mechanical medium for closing the contact in the box *e*.

The sectional area of the channel or tunnel 5 is as shown in Fig. 2. Its bottom surface slopes downward. Within it is located a caisson *n*, of sheet-iron, fitted with a hinged lid *o*. As this caisson or trough is inserted 10 its lid *o* comes to rest upon the bottom of the channel *a*, as illustrated in Fig. 2. Into this trough and over the said lid is admitted any dust or mud which may have collected upon the rail *c* and which is swept off such rail by the key *k* as it moves past. So, also, does any 15 water run down into the said trough, which may be connected to the sewer in the usual manner. The trough *n* is removed from time to time after first turning back the lid *o* in the direction of the arrow and after having 20 been cleaned is lowered again into the channel. To permit this to be done, the top portion *a'* of the channel *a* may be removably fitted thereto.

What I claim as my invention, and desire 25 to secure by Letters Patent, is—

1. In an electric railway, the combination of a closed switch-box, containing fixed circuit-terminals, a rod not itself acting as a conductor, entering the box, and carrying a

circuit-completing piece, and a rail connected 30 to the rod and adapted to be operated by a key-wheel for mechanically closing the circuit between the terminals in the box, substantially as described.

2. In an electric railway, an angular conduit and a removable trough fitting the lower 35 angle, substantially as described.

3. In an electric railway, an angular conduit, and a removable trough with a lid, fitting the lower angle, substantially as described. 40

4. In an electric railway, the combination of a closed switch-box having contact-terminals, a rod not itself acting as a conductor entering the box and carrying a contact-piece, a rail connected to the rod and adapted to be 45 operated by a key-wheel for mechanically closing the contacts in the box, the said rail being pivoted within an angular conduit, and a removable trough with a lid fitting the lower angle, substantially as described. 50

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDUARD VON MAIRHOFEN.

Witnesses:

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