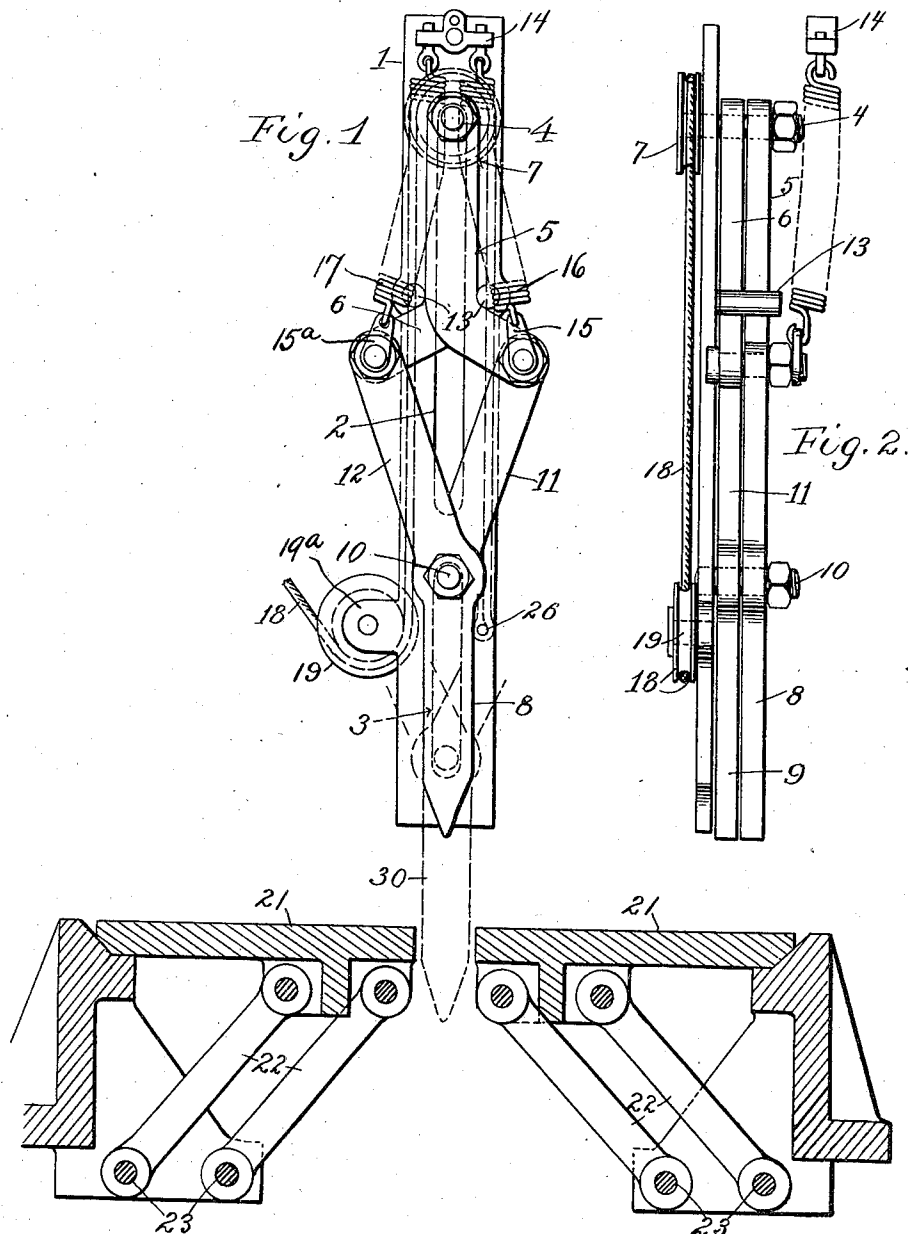


D. D. SAMAIA.
 APPARATUS FOR ACTUATING THE CONDUIT COVERS OF ELECTRIC RAILWAYS.
 APPLICATION FILED APR. 28, 1910.

1,028,394.

Patented June 4, 1912.

2 SHEETS—SHEET 1.



WITNESSES
H. Hunsberger
M. Keeling

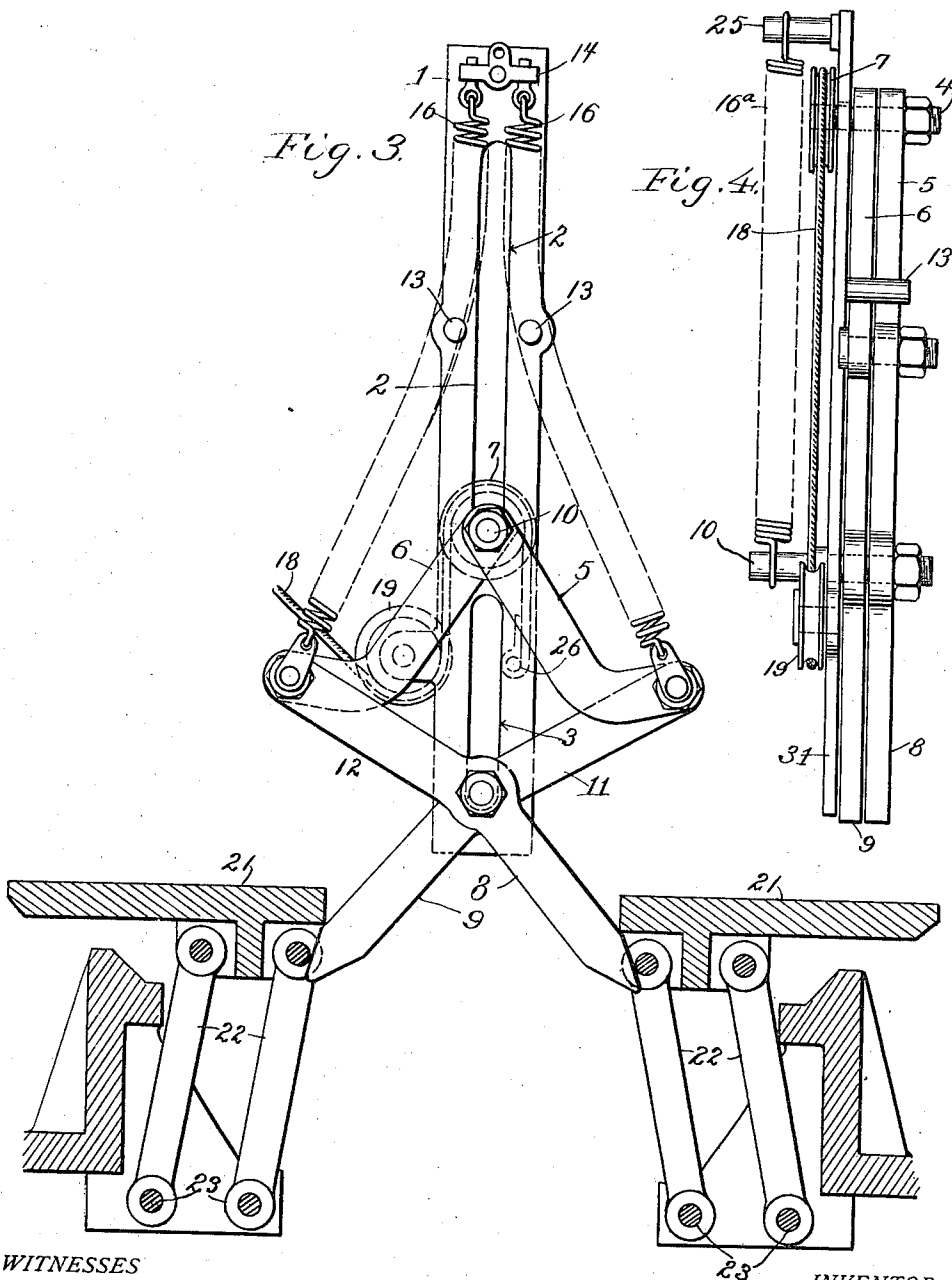
INVENTOR
Dino Davide Samaia.
by B. Singer. Attorney

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UNITED STATES PATENT OFFICE.

DINO DAVIDE SAMAIA, OF VICENZA, ITALY.

APPARATUS FOR ACTUATING THE CONDUIT-COVERS OF ELECTRIC RAILWAYS.

1,028,394.

Specification of Letters Patent.

Patented June 4, 1912.

Application filed April 28, 1910. Serial No. 558,219.

To all whom it may concern:

Be it known that I, DINO DAVIDE SAMAIA, a subject of the King of Italy, residing at Vicenza, Italy, have invented certain new and useful Improvements in Apparatus for Actuating the Conduit-Covers of Electric Railways, of which the following is a specification.

The present invention relates to a device, which enables the motorman or driver of an electric car to actuate, directly from the electric car, the covers of the underground electric conduit, in order to permit of the entrance into, or withdrawal from the underground conduit, of the conductor which supplies current to the car motor.

The apparatus constituting the present invention is adapted to be fastened in a suitable position to an electric car, in such a manner that it will be in a position directly above the ordinary slot between the conduit covers of an underground electric system, so that the particular portion of the apparatus which directly acts upon the conduit covers and moves them sidewise will be moved downwardly into the slot between the conduit covers by means hereinafter described.

The invention is illustrated in the accompanying drawings in which like reference characters indicate like parts throughout the several views, and in which:—

Figure 1 is a front elevation of the apparatus constituting the present invention, and showing a vertical section through the conduit covers, both being shown in their normal position; Fig. 2 is a side view of the apparatus according to the present invention; Fig. 3 is a view similar to Fig. 1, but showing the parts in their operative positions and after they have moved the conduit covers sidewise; and Fig. 4 shows a modified form of construction hereinafter referred to.

The apparatus constituting the present invention is adapted to be placed in a suitable position upon an electric car, preferably attached beneath the bottom of the car, and comprises essentially a support or bar 1 which will be placed in a position on the car above the conduit slot of the underground feed wire. The support or bar 1 is provided with two longitudinal slots 2 and 3 which are disposed one above the other and both extending vertically when the apparatus is mounted upon the car. The slots should be

placed in alinement with each other, and slot 2 is of greater length than the lower slot 3. In the upper slot 2, is placed a stud or pivot pin 4, upon which are pivotally connected two arms 5 and 6. The arms 5 and 6 register, that is, the arm 5 covers the arm 6 throughout a greater portion of their lengths from the pivot pin 4 downwardly, but after a certain point is reached, the arm 5 is turned angularly outward to one side of bar 1, while the arm 6 is correspondingly turned angularly outward to the opposite side of the bar 1. The stud or pivot pin 4 also serves as an axle for a grooved pulley 7 which is disposed at the rear of the support or bar 1. The lower slot 3 above referred to serves for guiding the stud or pivot pin 10 which passes through the slot; upon the stud 10 are pivoted two levers 11 and 12, which levers are arranged like scissors, and the lower arms 8 and 9 of the levers normally register with each other, that is they are normally superposed, as will be seen upon reference to Fig. 1. The extremities of these levers are normally located above the slot between the conduit covers. The levers are bent in angular form as shown, the upper portion of lever 11 extending slightly outwardly from one side of bar 1 and being pivotally connected to the end of lever 5 before referred to, and the bent portion of lever 12 extending outwardly from the opposite side of bar 1 and being pivotally connected to the lower end of lever 6. The whole lever and pivot structure described forms a body adapted to slide vertically along the slots 2 and 3.

The support 1 is provided with two projections or pins 13 for the purpose of guiding the arms 5 and 6 during a portion of their movement, so as to keep the straight portions of said arms 5 and 6 superposed one on the other and in a vertical position, as is shown in Fig. 1. The distance through which the arms 5 and 6 will be maintained in this position during the downward movement by the two pins 13 corresponds in length to the stroke of the pivot 10 before the latter reaches the lower end of the slot 3.

The whole structure formed by the arms 5 and 6 and levers 11 and 12 is held raised in its normal position by the two springs 16 and 17, the upper ends of which are connected to a bracket 14 which may be either attached to the bar or support 1 or it may be secured to any suitable place on

the car in proximity to the bar 1; the lower end of spring 16 is connected by means of a link 15 to the pivot pin which joins together levers 5 and 11, and correspondingly the lower end of spring 17 is connected by a link 15^a to the pivot pin which connects levers 6 and 12. If desired, one spring may be used as is shown in Fig. 4, instead of the two springs 16 and 17. In this figure, the spring 16^a is shown as arranged to the rear of the bar 1, and is fastened at its upper end to a pin or projection 25 which latter is secured to the bar or support 1, and the spring is connected at its lower end to the pivot pin or stud 10. In either arrangement the springs will tend to maintain the lever system in its normal position, that is, the position shown in Fig. 1. The actuation of these levers is effected by the motorman or other attendant on the car by means of a device consisting of a pulley 19 which is journaled in a projection 19^a of the bar or support 1 and a cable 18 which passes over the said pulley 19, extends upwardly, passes over the pulley 7 hereinbefore referred to, passes downwardly and is fastened to a pin 26 disposed upon the bar or support 1. A pull exerted on the cable or rope 18 results, as will be obvious, the rear end of the cable being held in fixed position, in a lowering of the pulley 7 as well as of the stud or pin 4 and the arms 5 and 6 pivoted thereon, which lowering will cause the springs 16 and 17 (or 16^a) to extend. When the pull exerted on the cable ceases, the springs will bring the whole structure back to its initial position.

In Figs. 1 and 3, the numeral 21 represents the pair of conduit covers suitably spaced apart as shown, which covers are supported in the usual manner by means of small connecting links 22, which latter may oscillate about their pivots 23 for the purpose of guiding the plates in their opening and closing movements.

The operation of the device is as follows: The device constructed as before described is normally placed in the position shown in Fig. 1, that is, with the scissors-like arms 8 and 9 of the levers 11 and 12 in a position directly above the slot or opening between the two conduit covers 21. When it is desired to open the conduit covers 21 in order to raise or lower the conductor from or into contact with the electric feed wire, the motorman will exert a pull upon the cable or rope 18, which will, as before set forth, result in lowering the lever system 5, 6, 11, 12, along the bar 1, on account of the strain on the cable causing the pulley 7 to be pulled downwardly, the action causing a stretching of the spring 16, 17 (or 16^a). During the first part of this lowering movement, the arms 5 and 6 are guided and maintained in a vertical position by the studs or

pins 13, and the levers 11 and 12 descend until their pivot 10 strikes against the lower extremity of the slot 3; meanwhile the extremities 8 and 9 of the levers 11 and 12 enter the slot or space between the conduit covers 21, in the position shown by dotted lines 30 (Fig. 1). In this position the arms 5 and 6 will be completely disengaged from the pins 13, and the pulley 7, on account of the pull exerted on the cable, will continue to be lowered. The stud or pivot pin 10 has however, as before pointed out, arrived at the farthest extremity of its movement, and this fact together with the continued downward movement of the pulley 7 and its pivot pin 4, will cause the levers 5 and 6 to open out into the positions shown in Fig. 3, thereby spreading apart the upper ends of levers 11 and 12, causing the lower parts 8 and 9 of said last named levers to spread and to force apart the conduit covers 21 a sufficient distance which will permit of the insertion or withdrawal of the electric conductor. In order to close the conduit covers again, it is sufficient for the operator to release hold of the cable 18, whereupon the springs 16, 17, (or 16^a) which have been placed under tension restore the arms and levers to their original position, while the conduit covers 21 fall back to their original position by virtue of their own weight.

1. I claim:—

1. Apparatus for actuating the conduit covers of electric railways, comprising a support adapted to be mounted upon a car, a pair of levers mounted on said support and movable up and down thereon, a second pair of levers connected to said first named pair of levers and movable up and down therewith, the latter having two arms adapted to normally lie adjacent each other, means for moving both pair of levers downwardly on said support and to cause said two arms to spread or diverge from each other, and means for returning the levers to their normal position.

2. Apparatus for actuating the conduit covers of electric railways, comprising a support adapted to be mounted upon a car, a pair of levers mounted on said support and movable up and down thereon, a second pair of levers connected to said first named pair of levers and movable up and down therewith, the latter having two arms adapted to normally register with each other, means for guiding the movement of said pairs of levers, means for moving both pairs of levers downwardly in said guiding means and to cause said normally registering arms to spread or diverge from each other, and means for returning the levers to their normal position.

3. Apparatus for actuating the conduit covers of electric railways, comprising a

support adapted to be mounted upon a car, a pair of levers mounted on said support and movable up and down thereon, a second pair of levers connected to said first named pair of levers and movable up and down therewith, a pivot common to said second pair of levers, the latter having two arms below said pivot adapted to normally register with each other, means for guiding the movement of said two pairs of levers and said pivot, means to move both pairs of levers downwardly in said guiding means and to continue the downward movement of said first named pair of levers after said pivot has reached the downward limit of its movement, whereby said first named pair of levers will be caused to diverge from each other and cause the diverging movement of said normally registering arms, and means for returning the levers to their normal position.

4. Apparatus for actuating the conduit covers of electric railways, comprising a support adapted to be mounted upon a car, a pair of levers mounted on said support and movable up and down thereon, a second pair of levers connected to said first named pair of levers and movable up and down therewith, the latter having two arms adapted to normally register with each other, means for guiding the movement of said two pairs of levers, means for moving both of said pairs of levers downwardly in said guiding means and to cause said normally registering arms to spread or diverge from each other, additional means for guiding the movement of said first named pair of levers to prevent the same from spreading during the first part of their movement, and means for returning the levers to their normal position.

5. Apparatus for actuating the conduit covers of electric railways, comprising a support adapted to be mounted upon a car, a pair of levers mounted on said support and movable up and down thereon, a pivot common to both levers, a second pair of levers connected to said first named pair of levers and movable up and down therewith, a pivot common to said second pair of levers, the latter having two arms below said pivot adapted to normally register with each other, a guideway for the movement of said pivots, means for moving both of said pivots downwardly in said guideway and to cause said normally registering arms to spread or diverge from each other, and means for returning the levers to their normal position.

6. Apparatus for actuating the conduit covers of electric railways, comprising a support adapted to be mounted upon a car, a pair of levers mounted on said support and movable up and down thereon, a pivot common to both levers, a second pair of levers

connected to said first named pair of levers and movable up and down therewith, a pivot common to said second pair of levers, the latter having two arms below said pivot adapted to normally register with each other and adapted simultaneously to enter a slot between two conduit covers, a guideway for the movement of said pivots, means to move both of said pivots downwardly in said guideway and to continue the downward movement of said first named pivot after said second named pivot has reached the downward limit of its movement, whereby said first named pair of levers will be caused to diverge from each other and cause the diverging movement of said normally registering arms, and means for returning the levers to their normal position.

7. Apparatus for actuating the conduit covers of electric railways, comprising a support adapted to be mounted upon a car, a pair of levers mounted on said support and movable up and down thereon, a pivot common to both levers, a second pair of levers connected to said first named pair of levers and movable up and down therewith, a pivot common to said second pair of levers, the latter having two arms below said pivot adapted to normally register with each other and adapted simultaneously to enter a slot between two conduit covers, a guideway for the movement of said pivots, means to move both of said pivots downwardly in said guideway and to continue the downward movement of said first named pivot after said second named pivot has reached the downward limit of its movement, whereby said first named pair of levers will be caused to diverge from each other and cause the diverging movement of said normally registering arms, a pair of guide pins adapted to guide the movement of said first named pair of levers to prevent the same from spreading during the first part of their movement, and a spring connected with said second pair of levers to return the same to their normal position.

8. Apparatus for actuating the conduit covers of electric railways, comprising a support adapted to be mounted upon a car, a pair of levers mounted on said support and movable up and down thereon, a pivot common to both levers, a second pair of levers connected to said first named pair of levers and movable up and down therewith, a pivot common to said second pair of levers, the latter having two arms below said pivot adapted to normally register with each other and to simultaneously enter a slot between two conduit covers, a guideway for the movement of said pivots, a pulley mounted on said first named pivot and movable therewith, a cable fixed to said support and passing over said pulley whereby said pivots and their levers will be caused to

move downwardly when a pull is exerted on said cable and whereby the downward movement of said first named pivot will be continued after said second named pivot has reached the downward limit of its movement so as to cause said first named pair of levers to diverge and said normally registering arms to diverge, and means for returning said levers to their normal position.

9. Apparatus for actuating the conduit covers of electric railways, comprising a support adapted to be mounted upon a car, a pair of levers mounted on said support and movable up and down thereon, a pivot common to both levers, a second pair of levers connected to said first named pair of levers and movable up and down therewith, a pivot common to said second pair of levers, the latter having two arms below said pivot adapted to normally register with each other and to simultaneously enter a slot between two conduit covers, a guideway for the movement of said pivots, a pulley mounted on said first named pivot and movable therewith, a cable fixed to said support and passing over said pulley whereby said pivots and their levers will be caused to move downwardly when a pull is exerted on said cable and whereby the downward movement of said first named pivot will be continued after said second named pivot has reached the downward limit of its movement so as to cause said first named pair of levers to diverge and said normally registering arms to diverge, a pair of guide pins adapted to guide the movement of said first named pair of levers to prevent the same from spreading during the first part of their movement, and a spring connected with said second pair of levers to return the same to their normal position.

10. Apparatus for actuating the conduit covers of electric railways, comprising a support adapted to be mounted upon a car, a pair of levers mounted on said support and movable up and down thereon, a pivot common to both levers, a second pair of levers connected to said first named pair of levers and movable up and down therewith, a pivot common to said second pair of levers, the latter having two arms below said pivot adapted to normally register with each other and to simultaneously enter a slot between two conduit covers, a slotted guideway in said support in which said pivots are adapted to move, a pulley mounted on said first named pivot and movable therewith, a cable fixed to said support and passing over said pulley whereby said pivots and their levers will be caused to move downwardly when a pull is exerted on said cable and whereby the downward movement of said first named pivot will be continued after said second named pivot has reached the downward limit of its movement so as

to cause said first named pair of levers to diverge and said normally registering arms to diverge, a second pulley mounted on said support over which said cable also passes, a pair of guide pins adapted to guide the movement of said first named pair of levers to prevent the same from spreading during the first part of their movement, and a spring having one end connected with said support and the other end connected with said second pair of levers to return the same to their normal position.

11. Apparatus for actuating the conduit covers of electric railways, comprising a support adapted to be mounted upon a car, said support being provided with a pair of longitudinally disposed slotted guideways in alinement with each other, a pivot pin movable up and down in one of said slotted guideways, a second pivot pin movable up and down in the other of said slotted guideways, a pair of levers mounted upon said first named pivot pin said levers registering throughout a portion of their length and having arms which diverge, a second pair of levers mounted upon said second named pivot pin having two arms below said pivot pin adapted to normally register with each other and adapted to enter a slot between two conduit covers, said second pair of levers having two diverging arms pivotally connected to the two diverging arms of said first named pair of levers, means to move both of said pivots downwardly in said slotted guideways and to continue the downward movement of said first named pivot and its pair of levers after said second named pivot has reached the downward limit of its movement, whereby said first named pair of levers will be caused to diverge and to cause the diverging movement of said normally registering pair of arms of said second named pair of levers, a pair of guide pins adapted to guide the movement of said first named pair of levers to prevent the same from spreading during the first part of their movement, and a spring to return said levers to their normal position.

12. Apparatus for actuating the conduit covers of electric railways, comprising a support adapted to be mounted upon a car, said support being provided with a pair of longitudinally disposed slotted guideways in alinement with each other, a pivot pin movable up and down in one of said slotted guideways, a second pivot pin movable up and down in the other of said slotted guideways, a pair of levers mounted upon said first named pivot pin said levers registering throughout a portion of their length and having arms which diverge, a second pair of levers mounted upon said second named pivot pin having two arms below said pivot pin adapted to normally register with each

other and adapted to enter a slot between two conduit covers, said second pair of levers having two diverging arms pivotally connected to the two diverging arms of said first named pair of levers, a pulley mounted upon said first named pivot pin, a cable fixed on said support and passing over said pulley, a second pulley fixed to said support and over which said cable also passes, whereby, when a pull is exerted on said cable, said pivot pins and their levers will be caused to move downwardly and whereby said first named pivot pin can continue its movement after said second named pivot pin has reached the downward limit of its movement, so as to cause said levers to diverge, a pair of guide pins mounted on said support to guide the movement of said first named pair of levers during the first part of their movement and to prevent the same from spreading during such movement, and a spring having one end fixed to said support and the other end connected to said levers to return the same to their normal position.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

DINO DAVIDE SAMAIA.

Witnesses:

FERDINANDO GINESE,
CHAS. H. FISCHER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."